Subpart 1

STRESS TABLES

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TABLE 1A
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	Carbon steel	Sheet	SA-620	...	K00040	...	...	1	1
2	Carbon steel	Bar	SA-675	45	...	...	...	1	1
3	Carbon steel	Wld. pipe	SA-134	A283A	...	...	...	1	1
4	Carbon steel	Plate	SA-283	A	...	...	...	1	1
5	Carbon steel	Plate	SA-285	A	K01700	...	...	1	1
6	Carbon steel	Plate	SA-285	A	K01700	...	...	1	1
7	Carbon steel	Wld. pipe	SA-672	A45	K01700	...	...	1	1
8	Carbon steel	Sheet	SA-414	A	K01501	...	...	1	1
9	Carbon steel	Wld. tube	SA-178	A	K01200	...	...	1	1
10	Carbon steel	Wld. tube	SA-178	A	K01200	...	...	1	1
11	Carbon steel	Wld. tube	SA-178	A	K01200	...	...	1	1
12	Carbon steel	Wld. tube	SA-178	A	K01200	...	...	1	1
13	Carbon steel	Smls. tube	SA-179	...	K01200	...	...	1	1
14	Carbon steel	Smls. tube	SA-192	...	K01201	...	...	1	1
15	Carbon steel	Smls. tube	SA-192	...	K01201	...	...	1	1
16	Carbon steel	Wld. tube	SA-214	...	K01807	...	...	1	1
17	Carbon steel	Wld. tube	SA-226	...	K01201	...	...	1	1
18	Carbon steel	Wld. tube	SA-226	...	K01201	...	...	1	1
19	Carbon steel	Wld. tube	SA-226	...	K01201	...	...	1	1
20	Carbon steel	Wld. tube	SA-226	...	K01201	...	...	1	1
21	Carbon steel	Smls. tube	SA-556	A2	K01807	...	...	1	1
22	Carbon steel	Wld. tube	SA-557	A2	K01807	...	...	1	1
23	Carbon steel	Wld. pipe	SA-53	E/A	K02504	...	...	1	1
24	Carbon steel	Wld. pipe	SA-53	E/A	K02504	...	...	1	1
25	Carbon steel	Wld. pipe	SA-53	E/A	K02504	...	...	1	1
26	Carbon steel	Wld. pipe	SA-53	F	...	...	...	1	1
27	Carbon steel	Smls. pipe	SA-53	S/A	K02504	...	...	1	1
28	Carbon steel	Smls. pipe	SA-53	S/A	K02504	...	...	1	1
29	Carbon steel	Smls. pipe	SA-106	A	K02501	...	...	1	1
30	Carbon steel	Smls. pipe	SA-106	A	K02501	...	...	1	1
31	Carbon steel	Wld. pipe	SA-135	A	...	...	...	1	1
32	Carbon steel	Forged pipe	SA-369	FPA	K02501	...	...	1	1
33	Carbon steel	Wld. pipe	SA-587	...	K11500	...	...	1	1
34	Carbon steel	Wld. pipe	SA-587	...	K11500	...	...	1	1
35	Carbon steel	Bar	SA-675	50	...	...	...	1	1
36	Carbon steel	Bar	SA-675	50	...	...	...	1	1
37	Carbon steel	Bar	SA-675	50	...	...	...	1	1

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TABLE 1A
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	40	20	NP	NP	650	CS-6	...
2	45	22.5	NP	650 (Cl. 3 only)	900	CS-6	G10, G22, G35, T2
3	45	24	NP	300 (Cl. 3 only)	NP	CS-1	G37, W12
4	45	24	NP	300 (Cl. 3 only)	650	CS-1	G34, G37
5	45	24	900	NP	NP	CS-1	G10, T2
6	45	24	NP	700	900	CS-1	G10, G35, T2
7	45	24	NP	700	NP	CS-1	S6, W10, W12
8	45	25	NP	NP	900	CS-1	G10, G35, T2
9	47	26	1000	NP	NP	CS-1	G10, S1, T2, W13
10	47	26	1000	NP	NP	CS-1	G4, G10, S1, T2
11	47	26	1000	NP	NP	...	G3, G10, S1, T2
12	47	26	NP	NP	1000	CS-1	G24, G35, T2, W6
13	47	26	NP	NP	900	CS-1	G10, G35, T2
14	47	26	1000	NP	NP	CS-1	G10, S1, T2
15	47	26	NP	NP	1000	CS-1	G10, T2
16	47	26	NP	NP	1000	CS-1	G24, G35, T2, W6
17	47	26	1000	NP	NP	CS-1	G10, S1, T2, W13
18	47	26	1000	NP	NP	CS-1	G4, G10, S1, T2
19	47	26	1000	NP	NP	CS-1	G3, G10, S1, T2
20	47	26	NP	NP	1000	CS-1	G24, G35, T2, W6
21	47	26	NP	NP	1000	CS-1	G10, T2
22	47	26	NP	NP	1000	CS-1	G24, G35, T2, W6
23	48	30	900	NP	NP	CS-2	G3, G10, S1, T2
24	48	30	900	300 (Cl. 3 only)	NP	CS-2	G10, S1, T2, W12, W13
25	48	30	NP	NP	900	CS-2	G24, G35, T2, W6
26	48	30	750	NP	NP	...	G2, G10, G18, T2
27	48	30	900	300 (Cl. 3 only)	NP	CS-2	G10, S1, T2
28	48	30	NP	700 (SPT)	900	CS-2	G10, G35, T2
29	48	30	1000	700	NP	CS-2	G10, S1, T2
30	48	30	NP	NP	1000	CS-2	G10, T1
31	48	30	NP	NP	900	CS-2	G24, G35, T2, W6
32	48	30	1000	NP	NP	CS-2	G10, S1, T1
33	48	30	NP	300 (Cl. 3 only)	NP	CS-2	G37
34	48	30	NP	NP	850	CS-2	G24, T2, W6
35	50	25	850	NP	NP	...	G10, G15, G18, S1, T2
36	50	25	NP	650 (Cl. 3 only)	NP	...	...
37	50	25	NP	700 (SPT)	900	CS-1	G10, G22, G35, T2

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TABLE 1A
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	11.4	11.4	11.4	...	11.4	11.4	10.9	10.2	9.9	...	...	...	...	...
2	12.9	12.9	12.9	...	12.9	12.8	12.2	11.5	11.1	10.7	*10.4*	*9.0*	*7.8*	*5.0*
3	12.9	...	12.9	...	12.9	...	...	...	...	...	...	...	...	...
4	12.9	12.9	12.9	...	12.9	12.9	12.9	12.3	11.9	...	...	...	...	...
5	12.9	...	12.9	...	12.9	12.9	12.9	12.3	11.9	11.5	*10.7*	*8.3*	*6.6*	*5.0*
6	12.9	12.9	12.9	...	12.9	12.9	12.9	12.3	11.9	11.5	*10.7*	*9.0*	*7.8*	*6.5*
7	12.9	...	12.9	...	12.9	12.9	12.9	12.3	11.9	11.5	...	...	...	...
8	12.9	12.9	12.9	...	12.9	12.9	12.9	12.8	12.4	11.9	*10.7*	*9.0*	*7.8*	*6.5*
9	13.4	...	13.4	...	13.4	13.4	13.4	13.3	12.8	12.4	*10.7*	*9.0*	*7.1*	*5.0*
10	13.4	...	13.4	...	13.4	13.4	13.4	13.3	12.8	12.4	*10.7*	*9.0*	*7.1*	*4.3*
11	11.4	...	11.4	...	11.4	11.4	11.4	11.3	10.9	10.5	*9.1*	*7.7*	*6.1*	*4.3*
12	11.4	11.4	11.4	...	11.4	11.4	11.4	11.3	10.9	10.5	*9.1*	*7.8*	*6.7*	*5.5*
13	13.4	13.4	13.4	...	13.4	13.4	13.4	13.3	12.8	12.4	*10.7*	*9.2*	*7.9*	*6.5*
14	13.4	...	13.4	...	13.4	13.4	13.4	13.3	12.8	12.4	*10.7*	*9.0*	*7.1*	*5.0*
15	13.4	13.4	13.4	...	13.4	13.4	13.4	13.3	12.8	12.4	*10.7*	*9.2*	*7.9*	*6.5*
16	11.4	11.4	11.4	...	11.4	11.4	11.4	11.3	10.9	10.5	*9.1*	*7.8*	*6.7*	*5.5*
17	13.4	...	13.4	...	13.4	13.4	13.4	13.3	12.8	12.4	*10.7*	*9.0*	*7.1*	*5.0*
18	13.4	...	13.4	...	13.4	13.4	13.4	13.3	12.8	12.4	*10.7*	*9.0*	*7.1*	*4.3*
19	11.4	...	11.4	...	11.4	11.4	11.4	11.3	10.9	10.5	*9.1*	*7.7*	*6.1*	*4.3*
20	11.4	11.4	11.4	...	11.4	11.4	11.4	11.3	10.9	10.5	*9.1*	*7.8*	*6.7*	*5.5*
21	13.4	13.4	13.4	...	13.4	13.4	13.4	13.3	12.8	12.4	*10.7*	*9.2*	*7.9*	*6.5*
22	11.4	11.4	11.4	...	11.4	11.4	11.4	11.3	10.9	10.5	*9.1*	*7.8*	*6.7*	*4.3*
23	11.7	...	11.7	...	11.7	11.7	11.7	11.7	11.7	10.6	*9.1*	*7.7*	*6.1*	*4.3*
24	13.7	...	13.7	...	13.7	13.7	13.7	13.7	13.7	12.5	*10.7*	*9.0*	*7.1*	*5.0*
25	11.7	11.7	11.7	...	11.7	11.7	11.7	11.7	11.7	10.6	*9.1*	*7.9*	*6.7*	*5.5*
26	8.2	...	8.2	...	8.2	8.2	8.2	8.2	8.2	7.5	*6.4*	...	...	...
27	13.7	...	13.7	...	13.7	13.7	13.7	13.7	13.7	12.5	*10.7*	*9.0*	*7.1*	*5.0*
28	13.7	13.7	13.7	...	13.7	13.7	13.7	13.7	13.7	12.5	*10.7*	*9.3*	*7.9*	*6.5*
29	13.7	...	13.7	...	13.7	13.7	13.7	13.7	13.7	12.5	*10.7*	*9.0*	*7.1*	*5.0*
30	13.7	13.7	13.7	...	13.7	13.7	13.7	13.7	13.7	*12.5*	*10.7*	*9.3*	*7.9*	*6.5*
31	11.7	11.7	11.7	...	11.7	11.7	11.7	11.7	11.7	10.6	*9.1*	*7.9*	*6.7*	*5.5*
32	13.7	...	13.7	...	13.7	13.7	13.7	13.7	13.7	*12.5*	*10.7*	*9.0*	*7.1*	*5.0*
33	13.7	...	13.7	...	13.7	...	...	...	...	...	...	...	...	...
34	11.7	11.7	11.7	...	11.7	11.7	11.7	11.7	11.7	10.6	*9.1*	*7.9*	*6.7*	...
35	14.3	...	14.3	...	14.3	14.2	13.6	12.8	12.4	11.9	*10.7*	*9.4*	*7.3*	...
36	14.3	...	14.3	...	14.3	14.2	13.6	12.8	12.4	...	...	...	...	...
37	14.3	14.3	14.3	...	14.3	14.2	13.6	12.8	12.4	11.9	*11.0*	*9.4*	*7.8*	*5.0*

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TABLE 1A
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	*3.0*	*1.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
10	*2.6*	*1.3*	...	...	...	...	...	...	...	...	...	...	...	...	...
11	*2.6*	*1.3*	...	...	...	...	...	...	...	...	...	...	...	...	...
12	*3.8*	*2.1*	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	*3.0*	*1.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
15	*4.5*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
16	*3.8*	*2.1*	...	...	...	...	...	...	...	...	...	...	...	...	...
17	*3.0*	*1.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
18	*2.6*	*1.3*	...	...	...	...	...	...	...	...	...	...	...	...	...
19	*2.6*	*1.3*	...	...	...	...	...	...	...	...	...	...	...	...	...
20	*3.8*	*2.1*	...	...	...	...	...	...	...	...	...	...	...	...	...
21	*4.5*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
22	*2.6*	*1.3*	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	*3.0*	*1.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
30	*4.5*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	*3.0*	*1.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	Carbon steel	Wld. pipe	SA-134	A283B	...	...	...	1	1
2	Carbon steel	Plate	SA-283	B	...	...	...	1	1
3	Carbon steel	Plate	SA-285	B	K02200	...	...	1	1
4	Carbon steel	Plate	SA-285	B	K02200	...	...	1	1
5	Carbon steel	Wld. pipe	SA-672	A50	K02200	...	...	1	1
6	Carbon steel	Sheet	SA-414	B	K02201	...	...	1	1
7	Carbon steel	Bar	SA-675	55	...	...	...	1	1
8	Carbon steel	Bar	SA-675	55	...	...	...	1	1
9	Carbon steel	Wld. pipe	SA-134	A283C	K02401	...	...	1	1
10	Carbon steel	Plate	SA-283	C	K02401	...	...	1	1
11	Carbon steel	Plate	SA-285	C	K02801	...	...	1	1
12	Carbon steel	Smls. & wld. pipe	SA-333	1	K03008	...	...	1	1
13	Carbon steel	Smls. & wld. tube	SA-334	1	K03008	...	...	1	1
14	Carbon steel	Wld. tube	SA-334	1	K03008	...	...	1	1
15	Carbon steel	Plate	SA-516	55	K01800	...	...	1	1
16	Carbon steel	Smls. pipe	SA-524	II	K02104	...	...	1	1
17	Carbon steel	Wld. pipe	SA-671	CA55	K02801	...	...	1	1
18	Carbon steel	Wld. pipe	SA-671	CE55	K02202	...	...	1	1
19	Carbon steel	Wld. pipe	SA-672	A55	K02801	...	...	1	1
20	Carbon steel	Wld. pipe	SA-672	B55	K02001	...	...	1	1
21	Carbon steel	Wld. pipe	SA-672	C55	K01800	...	...	1	1
22	Carbon steel	Wld. pipe	SA-672	E55	K02202	...	...	1	1
23	Carbon steel	Sheet	SA-414	C	K02503	...	...	1	1
24	Carbon steel	Bar	SA-36	...	K02600	...	...	1	1
25	Carbon steel	Bar	SA-36	...	K02600	...	...	1	1
26	Carbon steel	Plate, sheet	SA-36	...	K02600	...	...	1	1
27	Carbon steel	Plate, sheet	SA-662	A	K01701	...	...	1	1
28	Carbon steel	Forgings	SA-181	...	K03502	60	...	1	1
29	Carbon steel	Castings	SA-216	WCA	J02502	...	...	1	1
30	Carbon steel	Forgings	SA-266	1	K03506	...	...	1	1
31	Carbon steel	Forgings	SA-350	LF1	K03009	1	...	1	1
32	Carbon steel	Castings	SA-352	LCA	J02504	...	...	1	1
33	Carbon steel	Cast pipe	SA-660	WCA	J02504	...	...	1	1
34	Carbon steel	Bar	SA-675	60	...	...	...	1	1
35	Carbon steel	Bar	SA-675	60	...	...	...	1	1
36	Carbon steel	Forgings	SA-765	I	K03046	...	...	1	1

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	50	27	NP	300 (Cl. 3 only)	NP	CS-1	G37, W12
2	50	27	NP	300 (Cl. 3 only)	650	CS-1	G34, G37
3	50	27	900	NP	NP	CS-1	G10, S1, T1
4	50	27	NP	700	900	CS-1	G10, G35, T1
5	50	27	NP	700	NP	CS-1	S6, T1, W10, W12
6	50	30	NP	NP	900	CS-2	G10, G35, T1
7	55	27.5	850	700 (SPT)	900	CS-1	G10, G15, G18, G22, S1, T2
8	55	27.5	NP	650 (Cl. 3 only)	NP	...	...
9	55	30	NP	300 (Cl. 3 only)	NP	CS-2	G37, W12
10	55	30	NP	300 (Cl. 3 only)	650	CS-2	G34, G37
11	55	30	900	700	900	CS-2	G10, G35, S1, T2
12	55	30	NP	700	650	CS-2	W12
13	55	30	NP	700	650	CS-2	W12
14	55	30	NP	NP	650	CS-2	G24, W6
15	55	30	850	700	1000	CS-2	G10, S1, T2
16	55	30	NP	NP	1000	CS-2	G10, T2
17	55	30	NP	700	NP	CS-2	S6, W10, W12
18	55	30	NP	700	NP	CS-2	S6, W10, W12
19	55	30	NP	700	NP	CS-2	S6, W10, W12
20	55	30	NP	700	NP	CS-2	S6, W10, W12
21	55	30	NP	700	NP	CS-2	S6, W10, W12
22	55	30	NP	700	NP	CS-2	S6, W10, W12
23	55	33	NP	700	900	CS-2	G10, G35, T1
24	58	36	650	NP	NP	...	G10, G15, G18
25	58	36	NP	650 (SPT)	900	CS-2	G10, G35, T1
26	58	36	NP	700	650	CS-2	G10, G34, G35, G36, T1
27	58	40	NP	NP	700	CS-3	T1
28	60	30	1000	700	1000	CS-2	G10, G18, G35, S1, T2
29	60	30	1000	700	1000	CS-2	G1, G10, G17, G18, S1, T2
30	60	30	1000	700	1000	CS-2	G10, G18, S1, T2
31	60	30	NP	700	1000	CS-2	G10, T2
32	60	30	NP	700	NP	...	G17
33	60	30	1000	700	NP	CS-2	G1, G10, G17, G18, S1, T2
34	60	30	850	700 (SPT)	NP	...	G10, G15, G18, S1, T2
35	60	30	NP	650 (Cl. 3 only)	900	CS-2	G10, G22, G35, T2
36	60	30	NP	NP	650	CS-2	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	14.3	...	14.3	...	14.3	...	...	...	...	...	...	...	...	...
2	14.3	14.3	14.3	...	14.3	14.3	14.3	13.8	13.3	...	...	...	...	...
3	14.3	...	14.3	...	14.3	14.3	14.3	13.8	13.3	*12.5*	*11.0*	*9.4*	*7.3*	*5.0*
4	14.3	14.3	14.3	...	14.3	14.3	14.3	13.8	13.3	*12.5*	*11.2*	*9.6*	*8.1*	*5.9*
5	14.3	...	14.3	...	14.3	14.3	14.3	13.8	13.3	*12.5*	...	...	...	...
6	14.3	14.3	14.3	...	14.3	14.3	14.3	14.3	14.3	*12.5*	*11.2*	*9.6*	*8.1*	*5.9*
7	15.7	15.7	15.7	...	15.7	15.7	14.9	14.1	13.6	13.1	*12.7*	*10.8*	*8.7*	*5.9*
8	15.7	...	15.7	...	15.7	15.7	14.9	14.1	13.6	...	...	...	...	...
9	15.7	...	15.7	...	15.7	...	...	...	...	...	...	...	...	...
10	15.7	15.7	15.7	...	15.7	15.7	15.7	15.3	14.8	...	...	...	...	...
11	15.7	15.7	15.7	...	15.7	15.7	15.7	15.3	14.8	14.3	*13.0*	*10.8*	*8.7*	*5.9*
12	15.7	...	15.7	...	15.7	15.7	15.7	15.3	14.8	14.3	...	...	...	...
13	15.7	...	15.7	...	15.7	15.7	15.7	15.3	14.8	14.3	...	...	...	...
14	13.4	13.4	13.4	...	13.4	13.4	13.4	13.0	12.6	...	...	...	...	...
15	15.7	15.7	15.7	...	15.7	15.7	15.7	15.3	14.8	14.3	*13.0*	*10.8*	*8.7*	*5.9*
16	15.7	15.7	15.7	...	15.7	15.7	15.7	15.3	14.8	14.3	*13.0*	*10.8*	*8.7*	*5.9*
17	15.7	...	15.7	...	15.7	15.7	15.7	15.3	14.8	14.3	...	...	...	...
18	15.7	...	15.7	...	15.7	15.7	15.7	15.3	14.8	14.3	...	...	...	...
19	15.7	...	15.7	...	15.7	15.7	15.7	15.3	14.8	14.3	...	...	...	...
20	15.7	...	15.7	...	15.7	15.7	15.7	15.3	14.8	14.3	...	...	...	...
21	15.7	...	15.7	...	15.7	15.7	15.7	15.3	14.8	14.3	...	...	...	...
22	15.7	...	15.7	...	15.7	15.7	15.7	15.3	14.8	14.3	...	...	...	...
23	15.7	15.7	15.7	...	15.7	15.7	15.7	15.7	15.7	*15.6*	*13.0*	*10.8*	*8.7*	*5.9*
24	15.2	...	15.2	...	15.2	15.2	15.2	15.2	15.2	...	...	...	...	...
25	16.6	16.6	16.6	...	16.6	16.6	16.6	16.6	16.6	*15.6*	*13.0*	*10.8*	*8.7*	*5.9*
26	16.6	...	16.6	...	16.6	16.6	16.6	16.6	16.6	*15.6*	...	...	...	...
27	16.6	16.6	16.6	...	16.6	16.6	16.6	16.6	16.6	*15.6*	...	...	...	...
28	17.1	17.1	17.1	...	17.1	17.1	16.3	15.3	14.8	14.3	*13.0*	*10.8*	*8.7*	*5.9*
29	17.1	...	17.1	...	17.1	17.1	16.3	15.3	14.8	14.3	*13.0*	*10.8*	*8.7*	*5.9*
30	17.1	17.1	17.1	...	17.1	17.1	16.3	15.3	14.8	14.3	*13.0*	*10.8*	*8.7*	*5.9*
31	17.1	17.1	17.1	...	17.1	17.1	16.3	15.3	14.8	14.3	*13.0*	*10.8*	*8.7*	*5.9*
32	17.1	...	17.1	...	17.1	17.1	16.3	15.3	14.8	14.3	...	...	...	...
33	17.1	...	17.1	...	17.1	17.1	16.3	15.3	14.8	14.3	*13.0*	*10.8*	*8.7*	*5.9*
34	17.1	...	17.1	...	17.1	17.1	16.3	15.3	14.8	14.3	*13.0*	*10.8*	*8.7*	...
35	17.1	17.1	17.1	...	17.1	17.1	16.3	15.3	14.8	14.3	*13.0*	*10.8*	*8.7*	*5.9*
36	17.1	17.1	17.1	...	17.1	17.1	16.3	15.3	14.8	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
16	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
29	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
30	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
31	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	Carbon steel	Plate	SA-515	60	K02401	...	...	1	1
2	Carbon steel	Plate	SA-516	60	K02100	...	...	1	1
3	Carbon steel	Wld. pipe	SA-671	CB60	K02401	...	...	1	1
4	Carbon steel	Wld. pipe	SA-671	CC60	K02100	...	...	1	1
5	Carbon steel	Wld. pipe	SA-671	CE60	K02402	...	...	1	1
6	Carbon steel	Wld. pipe	SA-672	B60	K02401	...	...	1	1
7	Carbon steel	Wld. pipe	SA-672	C60	K02100	...	...	1	1
8	Carbon steel	Wld. pipe	SA-672	E60	K02402	...	...	1	1
9	Carbon steel	Wld. pipe	SA-134	A283D	K02702	...	...	1	1
10	Carbon steel	Plate	SA-283	D	K02702	...	...	1	1
11	Carbon steel	Wld. pipe	SA-53	E/B	K03005	...	...	1	1
12	Carbon steel	Wld. pipe	SA-53	E/B	K03005	...	...	1	1
13	Carbon steel	Smls. pipe	SA-53	S/B	K03005	...	...	1	1
14	Carbon steel	Smls. pipe	SA-53	S/B	K03005	...	...	1	1
15	Carbon steel	Smls. pipe	SA-106	B	K03006	...	...	1	1
16	Carbon steel	Wld. pipe	SA-135	B	...	...	...	1	1
17	Carbon steel	Smls. & wld. fittings	SA-234	WPB	K03006	...	...	1	1
18	Carbon steel	Smls. & wld. pipe	SA-333	6	K03006	...	...	1	1
19	Carbon steel	Smls. & wld. tube	SA-334	6	K03006	...	...	1	1
20	Carbon steel	Wld. tube	SA-334	6	K03006	...	...	1	1
21	Carbon steel	Forged pipe	SA-369	FPB	K03006	...	...	1	1
22	Carbon steel	Forgings	SA-372	A	K03002	...	...	1	1
23	Carbon steel	Sheet	SA-414	D	K02505	...	...	1	1
24	Carbon steel	Smls. & wld. fittings	SA-420	WPL6	...	...	...	1	1
25	Carbon steel	Smls. pipe	SA-524	I	K02104	...	...	1	1
26	Carbon steel	Bar	SA-695	B/35	K03504	...	...	1	1
27	Carbon steel	Bar	SA-696	B	K03200	...	...	1	1
28	Carbon steel	Forgings	SA-727	...	K02506	...	...	1	1
29	Carbon steel	Wld. tube	SA-178	C	K03503	...	...	1	1
30	Carbon steel	Wld. tube	SA-178	C	K03503	...	...	1	1
31	Carbon steel	Wld. tube	SA-178	C	K03503	...	...	1	1
32	Carbon steel	Smls. tube	SA-210	A-1	K02707	...	...	1	1
33	Carbon steel	Smls. tube	SA-556	B2	K02707	...	...	1	1
34	Carbon steel	Wld. tube	SA-557	B2	K03007	...	...	1	1
35	Carbon steel	Plate, bar	SA/CSA-G40.21	38W	...	...	...	1	1
01 36	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...	> 4	1	1
37	Carbon steel	Bar	SA-675	65	...	...	...	1	1

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	60	32	1000	700	1000	CS-2	G10, S1, T2
2	60	32	850	700	1000	CS-2	G10, S1, T2
3	60	32	NP	700	NP	CS-2	S6, W10, W12
4	60	32	NP	700	NP	CS-2	S6, W10, W12
5	60	32	NP	700	NP	CS-2	S6, W10, W12
6	60	32	NP	700	NP	CS-2	S6, W10, W12
7	60	32	NP	700	NP	CS-2	S6, W10, W12
8	60	32	NP	700	NP	CS-2	S6, W10, W12
9	60	33	NP	300 (Cl. 3 only)	NP	CS-2	G37, W12
10	60	33	NP	300 (Cl. 3 only)	650	CS-2	G34, G37
11	60	35	900	300 (Cl. 3 only)	NP	CS-2	G10, S1, T1, W12, W13
12	60	35	900	NP	900	CS-2	G3, G10, G24, G35, S1, T1, W6
13	60	35	900	300 (Cl. 3 only)	NP	CS-2	G10, S1, T1
14	60	35	NP	700 (SPT)	900	CS-2	G10, G35, T1
15	60	35	1000	700	1000	CS-2	G10, S1, T1
16	60	35	NP	NP	900	CS-2	G24, G35, T1, W6
17	60	35	1000	700	1000	CS-2	G10, G18, S1, T1
18	60	35	NP	700	1000	CS-2	G10, T1, W12
19	60	35	NP	700	650	CS-2	T1, W12
20	60	35	NP	NP	650	CS-2	G24, W6
21	60	35	1000	NP	NP	...	G10, G18, S1, T1
22	60	35	NP	NP	650	CS-2	...
23	60	35	NP	NP	900	CS-2	G10, G35, T1
24	60	35	NP	700	850	CS-2	G10, T1
25	60	35	NP	NP	1000	CS-2	G10, T1
26	60	35	NP	700	1000	CS-2	G10, G22, T1
27	60	35	NP	700	NP	...	T1
28	60	36	NP	700	1000	CS-2	G10, G22, T1
29	60	37	1000	NP	NP	CS-2	G4, G10, S1, T2
30	60	37	1000	700	NP	CS-2	G10, S1, T1, W13
31	60	37	1000	NP	1000	CS-2	G3, G10, G24, G35, S1, T2, W6
32	60	37	1000	700	1000	CS-2	G10, S1, T1
33	60	37	NP	NP	1000	CS-2	G10, T1
34	60	37	NP	NP	1000	CS-2	G24, G35, T1, W6
35	60	38	NP	NP	650	CS-2	G34, G35, G37, G38
36	64	34	850	NP	1000	CS-2	G10, S1, T2 **01**
37	65	32.5	850	650 (Cl. 3 only)	1000	CS-2	G10, G15, G18, G22, G35, S1, T2

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	17.1	17.1	17.1	...	17.1	17.1	17.1	16.4	15.8	15.3	*13.0*	*10.8*	*8.7*	*5.9*
2	17.1	17.1	17.1	...	17.1	17.1	17.1	16.4	15.8	15.3	*13.0*	*10.8*	*8.7*	*5.9*
3	17.1	...	17.1	...	17.1	17.1	17.1	16.4	15.8	15.3	...	...	...	...
4	17.1	...	17.1	...	17.1	17.1	17.1	16.4	15.8	15.3	...	...	...	...
5	17.1	...	17.1	...	17.1	17.1	17.1	16.4	15.8	15.3	...	...	...	...
6	17.1	...	17.1	...	17.1	17.1	17.1	16.4	15.8	15.3	...	...	...	...
7	17.1	...	17.1	...	17.1	17.1	17.1	16.4	15.8	15.3	...	...	...	...
8	17.1	...	17.1	...	17.1	17.1	17.1	16.4	15.8	15.3	...	...	...	...
9	17.1	...	17.1	...	17.1	...	...	...	...	...	...	...	...	...
10	17.1	17.1	17.1	...	17.1	17.1	17.1	16.9	16.3	...	...	...	...	...
11	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	*13.0*	*10.8*	*8.7*	*5.9*
12	14.6	14.6	14.6	...	14.6	14.6	14.6	14.6	14.6	*13.3*	*11.1*	*9.2*	*7.4*	*5.0*
13	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	*13.0*	*10.8*	*8.7*	*5.9*
14	17.1	17.1	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	*13.0*	*10.8*	*8.7*	*5.9*
15	17.1	17.1	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	*13.0*	*10.8*	*8.7*	*5.9*
16	14.6	14.6	14.6	...	14.6	14.6	14.6	14.6	14.6	*13.3*	*11.1*	*9.2*	*7.4*	*5.0*
17	17.1	17.1	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	*13.0*	*10.8*	*8.7*	*5.9*
18	17.1	17.1	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	*13.0*	*10.8*	*8.7*	*5.9*
19	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	...	...	...	...
20	14.6	14.6	14.6	...	14.6	14.6	14.6	14.6	14.6	...	...	...	...	...
21	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	*13.0*	*10.8*	*8.7*	*5.9*
22	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	...	...	...	...	...
23	17.1	17.1	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	*13.0*	*10.8*	*8.7*	*5.9*
24	17.1	17.1	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	*13.0*	*10.8*	*8.7*	...
25	17.1	17.1	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	*13.0*	*10.8*	*8.7*	*5.9*
26	17.1	17.1	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	*13.0*	*10.8*	*8.7*	*5.9*
27	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	...	...	...	...
28	17.1	17.1	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	*13.0*	*10.8*	*8.7*	*5.9*
29	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	15.6	*13.0*	*10.8*	*8.7*	*5.0*
30	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	*13.0*	*10.8*	*8.7*	*5.9*
31	14.6	...	14.6	...	14.6	14.6	14.6	14.6	14.6	13.3	*11.1*	*9.2*	*7.4*	*5.0*
32	17.1	17.1	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	*13.0*	*10.8*	*8.7*	*5.9*
33	17.1	17.1	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	*13.0*	*10.8*	*8.7*	*5.9*
34	14.6	14.6	14.6	...	14.6	14.6	14.6	14.6	14.6	*13.3*	*11.1*	*9.2*	*7.4*	*5.0*
35	16.6	...	16.6	...	16.6	16.6	16.6	16.6	16.6	...	...	...	...	...
01 36	18.3	18.3	18.3	18.3	18.3	18.3	18.3	17.4	16.8	16.2	*13.9*	*11.4*	*8.7*	*5.9*
37	18.6	18.6	18.6	18.6	18.6	18.5	17.7	16.6	16.1	15.5	*13.9*	*11.4*	*8.7*	*5.0*

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
2	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
18	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
26	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
29	*3.4*	*2.1*	...	...	...	...	...	...	...	...	...	...	...	...	...
30	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
31	*3.4*	*2.1*	...	...	...	...	...	...	...	...	...	...	...	...	...
32	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
33	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
34	*3.4*	*2.1*	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
37	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...

01

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
	1	Carbon steel	Castings	SA-352	LCB	J03003	...	...	1	1
	2	Carbon steel	Plate	SA-515	65	K02800	...	...	1	1
	3	Carbon steel	Plate	SA-516	65	K02403	...	...	1	1
	4	Carbon steel	Wld. pipe	SA-671	CB65	K02800	...	...	1	1
	5	Carbon steel	Wld. pipe	SA-671	CC65	K02403	...	...	1	1
	6	Carbon steel	Wld. pipe	SA-672	B65	K02800	...	...	1	1
	7	Carbon steel	Wld. pipe	SA-672	C65	K02403	...	...	1	1
	8	Carbon steel	Sheet	SA-414	E	K02704	...	...	1	1
	9	Carbon steel	Plate	SA-662	B	K02203	...	...	1	1
	10	Carbon steel	Plate	SA-537	...	K12437	1	$2\frac{1}{2} < t \leq 4$	1	2
	11	Carbon steel	Wld. pipe	SA-691	CMSH-70	K12437	...	$2\frac{1}{2} < t \leq 4$	1	2
01	12	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...	$2\frac{1}{4} < t \leq 4$	1	1
01	13	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...	$\leq 2\frac{1}{4}$	1	1
01	14	...	...	...	...	...	...	...	...	...
	15	Carbon steel	Plate	SA-455	...	K03300	...	$0.58 < t \leq \frac{3}{4}$	1	2
	16	Carbon steel	Bar	SA-675	70	...	...	...	1	2
	17	Carbon steel	Forgings	SA-105	...	K03504	...	...	1	2
	18	Carbon steel	Forgings	SA-181	...	K03502	70	...	1	2
	19	Carbon steel	Castings	SA-216	WCB	J03002	...	...	1	2
01	20	Carbon steel	Forgings	SA-266	2	K03506	...	...	1	2
	21	Carbon steel	Forgings	SA-266	4	K03017	...	...	1	2
	22	Carbon steel	Forgings	SA-350	LF2	K03011	...	...	1	2
	23	Carbon steel	Forgings	SA-508	1	K13502	...	...	1	2
	24	Carbon steel	Forgings	SA-508	1A	K13502	...	...	1	2
	25	Carbon steel	Forgings	SA-541	1	K03506	...	...	1	2
	26	Carbon steel	Forgings	SA-541	1A	K03506	...	...	1	2
	27	Carbon steel	Cast pipe	SA-660	WCB	J03003	...	...	1	2
	28	Carbon steel	Forgings	SA-765	II	K03047	...	...	1	2
	29	Carbon steel	Plate	SA-515	70	K03101	...	...	1	2
	30	Carbon steel	Plate	SA-516	70	K02700	...	...	1	2
	31	Carbon steel	Wld. pipe	SA-671	CB70	K03101	...	...	1	2
	32	Carbon steel	Wld. pipe	SA-671	CC70	K02700	...	...	1	2
	33	Carbon steel	Wld. pipe	SA-672	B70	K03101	...	...	1	2
	34	Carbon steel	Wld. pipe	SA-672	C70	K02700	...	...	1	2

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	65	35	NP	700	650	CS-2	G1, G17	
2	65	35	1000	700	1000	CS-2	G10, S1, T2	
3	65	35	850	700	1000	CS-2	G10, S1, T2	
4	65	35	NP	700	NP	CS-2	S6, W10, W12	
5	65	35	NP	700	NP	CS-2	S6, W10, W12	
6	65	35	NP	700	NP	CS-2	S6, W10, W12	
7	65	35	NP	700	NP	CS-2	S6, W10, W12	
8	65	38	NP	NP	900	CS-2	G10, G35, T1	
9	65	40	NP	NP	700	CS-3	T1	
10	65	45	NP	700	650	CS-4	T1	
11	65	45	NP	700	NP	CS-4	G26, T1, W10, W12	
12	66.5	37.5	850	NP	1000	CS-2	G10, S1, T1	**01**
13	66.5	...	850	NP	1000	CS-2	G10, G43, S1, T1	**01**
14	...	...	...	...	...	...	...	**01**
15	70	35	NP	400 (Cl. 3 only)	650	CS-2	...	
16	70	35	850	650 (Cl. 3 only)	1000	CS-2	G10, G15, G18, G22, G35, S1, T2	
17	70	36	1000	700	1000	CS-2	G10, G18, G35, S1, T2	
18	70	36	1000	700	1000	CS-2	G10, G18, G35, S1, T2	
19	70	36	1000	700	1000	CS-2	G1, G10, G17, G18, S1, T2	
20	70	36	1000	700	1000	CS-2	G10, G18, S1, T2	**01**
21	70	36	NP	NP	1000	CS-2	G10, T2	
22	70	36	NP	700	1000	CS-2	G10, T2	
23	70	36	NP	700	1000	CS-2	G10, T2	
24	70	36	NP	700	1000	CS-2	G10, T2	
25	70	36	NP	700	1000	CS-2	G10, T2	
26	70	36	NP	700	1000	CS-2	G10, T2	
27	70	36	1000	700	NP	CS-2	G1, G10, G17, G18, S1, T2	
28	70	36	NP	NP	650	CS-2	...	
29	70	38	1000	700	1000	CS-2	G10, S1, T2	
30	70	38	850	700	1000	CS-2	G10, S1, T2	
31	70	38	NP	700	NP	CS-2	S5, W10, W12	
32	70	38	NP	700	NP	CS-2	S6, W10, W12	
33	70	38	NP	700	NP	CS-2	S5, W10, W12	
34	70	38	NP	700	NP	CS-2	S6, W10, W12	

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SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
		–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
	1	18.6	18.6	18.6	...	18.6	18.6	18.6	17.9	17.3	16.7	...	...	...	...
	2	18.6	18.6	18.6	...	18.6	18.6	18.6	17.9	17.3	16.7	*13.9*	*11.4*	*8.7*	*5.9*
	3	18.6	18.6	18.6	...	18.6	18.6	18.6	17.9	17.3	16.7	*13.9*	*11.4*	*8.7*	*5.9*
	4	18.6	...	18.6	...	18.6	18.6	18.6	17.9	17.3	16.7	...	...	...	...
	5	18.6	...	18.6	...	18.6	18.6	18.6	17.9	17.3	16.7	...	...	...	...
	6	18.6	...	18.6	...	18.6	18.6	18.6	17.9	17.3	16.7	...	...	...	...
	7	18.6	...	18.6	...	18.6	18.6	18.6	17.9	17.3	16.7	...	...	...	...
	8	18.6	18.6	18.6	...	18.6	18.6	18.6	18.6	18.6	*16.9*	*13.9*	*11.4*	*8.7*	*5.9*
	9	18.6	18.6	18.6	...	18.6	18.6	18.6	18.6	18.6	*16.9*	...	...	...	...
	10	18.6	...	18.6	...	18.6	18.6	18.6	18.6	18.6	*16.9*	...	...	...	...
	11	18.6	...	18.6	...	18.6	18.6	18.6	18.6	18.6	*16.9*	...	...	...	...
01	12	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	18.5	*16.9*	*13.9*	*11.4*	*8.7*	*5.9*
01	13	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	*16.9*	*13.9*	*11.4*	*8.7*	*5.9*
01	14	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	15	20.0	20.0	20.0	...	20.0	19.9	19.0	17.9	17.3	...	...	...	...	...
	16	20.0	20.0	20.0	...	20.0	19.9	19.0	17.9	17.3	16.7	*14.8*	*12.0*	*9.3*	*6.7*
	17	20.0	20.0	20.0	...	20.0	20.0	19.6	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
	18	20.0	20.0	20.0	...	20.0	20.0	19.6	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
	19	20.0	20.0	20.0	...	20.0	20.0	19.6	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
01	20	20.0	...	20.0	...	20.0	20.0	19.6	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
	21	20.0	20.0	20.0	...	20.0	20.0	19.6	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
	22	20.0	20.0	20.0	...	20.0	20.0	19.6	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
	23	20.0	20.0	20.0	...	20.0	20.0	19.6	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
	24	20.0	20.0	20.0	...	20.0	20.0	19.6	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
	25	20.0	20.0	20.0	...	20.0	20.0	19.6	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
	26	20.0	20.0	20.0	...	20.0	20.0	19.6	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
	27	20.0	...	20.0	...	20.0	20.0	19.6	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
	28	20.0	20.0	20.0	...	20.0	20.0	19.6	18.4	17.8	...	...	...	...	...
	29	20.0	20.0	20.0	...	20.0	20.0	20.0	19.4	18.8	18.1	*14.8*	*12.0*	*9.3*	*6.7*
	30	20.0	20.0	20.0	...	20.0	20.0	20.0	19.4	18.8	18.1	*14.8*	*12.0*	*9.3*	*6.7*
	31	20.0	...	20.0	...	20.0	20.0	20.0	19.4	18.8	18.1	...	...	...	...
	32	20.0	...	20.0	...	20.0	20.0	20.0	19.4	18.8	18.1	...	...	...	...
	33	20.0	...	20.0	...	20.0	20.0	20.0	19.4	18.8	18.1	...	...	...	...
	34	20.0	...	20.0	...	20.0	20.0	20.0	19.4	18.8	18.1	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
13	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
21	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	Carbon steel	Smls. pipe	SA-106	C	K03501	...	...	1	2
2	Carbon steel	Wld. tube	SA-178	D	...	...	...	1	2
3	Carbon steel	Wld. tube	SA-178	D	...	...	...	1	2
4	Carbon steel	Wld. tube	SA-178	D	...	...	...	1	2
5	Carbon steel	Smls. tube	SA-210	C	K03501	...	...	1	2
6	Carbon steel	Castings	SA-216	WCC	J02503	...	...	1	2
7	Carbon steel	Smls. & wld. fittings	SA-234	WPC	K03501	...	...	1	2
8	Carbon steel	Castings	SA-352	LCC	J02505	...	...	1	2
9	Carbon steel	Castings	SA-487	16	...	A	...	1	2
10	Carbon steel	Plate	SA-537	...	K12437	3	$4 < t \le 6$	1	3
11	Carbon steel	Smls. tube	SA-556	C2	K03006	...	...	1	2
12	Carbon steel	Tube	SA-557	C2	K03505	...	...	1	2
13	Carbon steel	Cast pipe	SA-660	WCC	J02505	...	...	1	2
14	Carbon steel	Bar	SA-695	B/40	K03504	...	...	1	2
15	Carbon steel	Bar	SA-696	C	K03200	...	...	1	2
16	Carbon steel	Sheet	SA-414	F	K03102	...	...	1	2
17	Carbon steel	Plate	SA-662	C	K02007	...	...	1	2
18	Carbon steel	Plate	SA-537	...	K12437	2	$4 < t \le 6$	1	3
19	Carbon steel	Plate	SA-738	C	...	...	$4 < t \le 6$	1	3
20	Carbon steel	Plate	SA-537	...	K12437	1	$\le 2\frac{1}{2}$	1	2
21	Carbon steel	Wld. pipe	SA-671	CD70	K12437	...	$\le 2\frac{1}{2}$	1	2
22	Carbon steel	Wld. pipe	SA-672	D70	K12437	...	$\le 2\frac{1}{2}$	1	2
23	Carbon steel	Wld. pipe	SA-691	CMSH-70	K12437	...	$\le 2\frac{1}{2}$	1	2
24	Carbon steel	Plate	SA-455	...	K03300	...	$\frac{3}{8} < t \le 0.58$	1	2
25	Carbon steel	Forgings	SA-266	3	K05001	...	...	1	2
26	Carbon steel	Plate	SA-455	...	K03300	...	$\le \frac{3}{8}$	1	2
27	Carbon steel	Plate	SA-299	...	K02803	...	> 1	1	2
28	Carbon steel	Wld. pipe	SA-671	CK75	K02803	...	> 1	1	2
29	Carbon steel	Wld. pipe	SA-672	N75	K02803	...	> 1	1	2
30	Carbon steel	Wld. pipe	SA-691	CMS-75	K02803	...	> 1	1	2
31	Carbon steel	Plate	SA-299	...	K02803	...	≤ 1	1	2
32	Carbon steel	Wld. pipe	SA-691	CMS-75	K02803	...	≤ 1	1	2
33	Carbon steel	Forgings	SA-372	B	K04001	...	...	1	2
34	Carbon steel	Sheet	SA-414	G	K03103	...	...	1	2
35	Carbon steel	Plate	SA-738	A	K12447	...	...	1	2
36	Carbon steel	Plate	SA-537	...	K12437	3	$2\frac{1}{2} < t \le 4$	1	3
37	Carbon steel	Plate	SA-537	...	K12437	2	$2\frac{1}{2} < t \le 4$	1	3
38	Carbon steel	Wld. pipe	SA-691	CMSH-80	K12437	...	$2\frac{1}{2} < t \le 4$	1	3
39	Carbon steel	Plate	SA-738	C	...	...	$2\frac{1}{2} < t \le 4$	1	3

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	70	40	1000	700	1000	CS-3	G10, S1, T1
2	70	40	1000	NP	NP	...	G10, S1, T1, W13
3	70	40	1000	NP	NP	...	G4, G10, S1, T4
4	70	40	1000	NP	NP	...	G3, G10, S1, T2
5	70	40	1000	NP	1000	CS-3	G10, S1, T1
6	70	40	1000	700	1000	CS-3	G1, G10, G17, G18, S1, T1
7	70	40	800	700	800	CS-3	G10, G18, T1
8	70	40	NP	700	NP	...	G17, T1
9	70	40	NP	700	NP	...	...
10	70	40	NP	NP	700	CS-3	G21, G23, W11
11	70	40	NP	NP	800	CS-3	G10, T1
12	70	40	NP	NP	1000	CS-3	G24, G35, T2, W6
13	70	40	1000	700	NP	...	G1, G10, G17, G18, S1, T1
14	70	40	NP	700	800	CS-3	G10, T1
15	70	40	NP	700	NP	...	T1
16	70	42	NP	NP	900	CS-3	G10, G35, T1
17	70	43	NP	NP	700	CS-3	T1
18	70	46	NP	700	700	CS-4	G21, G23, T1, W11
19	70	46	NP	650	650	CS-4	G21, G23, W11
20	70	50	NP	700	650	CS-4	G23, T1
21	70	50	NP	700	NP	...	S6, T1, W10, W12
22	70	50	NP	700	NP	...	S6, T1, W10, W12
23	70	50	NP	700	NP	CS-4	S6, T1, W10, W12
24	73	37	NP	400 (Cl. 3 only)	650	CS-2	...
25	75	37.5	1000	700	1000	CS-2	G10, G18, S1, T2, W2, W8, W11
26	75	38	NP	400 (Cl. 3 only)	650	CS-2	...
27	75	40	1000	700	1000	CS-3	G10, S1, T2
28	75	40	NP	700	NP	...	S6, W10, W12
29	75	40	NP	700	NP	...	S6, W10, W12
30	75	40	NP	700	NP	...	S6, W10, W12
31	75	42	1000	700	1000	CS-3	G10, S1, T1
32	75	42	NP	700	NP	...	T1, W10, W12
33	75	45	NP	NP	650	CS-3	W2, W11
34	75	45	NP	NP	900	CS-3	G10, G35, T1
35	75	45	NP	NP	700	CS-4	T1
36	75	50	NP	NP	700	CS-3	G23, T1, W11
37	75	55	NP	700	650	CS-4	G23, T1, W11
38	75	55	NP	700	NP	CS-4	G26, T1, W10, W12
39	75	55	NP	650	650	CS-4	G21, G23, W11

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	20.0	20.0	20.0	20.0	19.8	*18.3*	*14.8*	*12.0*	*9.3*	*6.7*
2	20.0	...	20.0	...	20.0	20.0	20.0	20.0	19.8	*18.3*	*14.8*	*12.0*	*9.3*	*6.7*
3	20.0	...	20.0	...	20.0	20.0	20.0	20.0	19.8	18.3	14.8	12.0	9.3	*5.7*
4	17.0	...	17.0	...	17.0	17.0	17.0	17.0	16.8	15.5	*12.6*	*10.2*	*7.9*	*5.7*
5	20.0	...	20.0	...	20.0	20.0	20.0	20.0	19.8	*18.3*	*14.8*	*12.0*	*9.3*	*6.7*
6	20.0	20.0	20.0	...	20.0	20.0	20.0	20.0	19.8	*18.3*	*14.8*	*12.0*	*9.3*	*6.7*
7	20.0	...	20.0	...	20.0	20.0	20.0	20.0	19.8	*18.3*	*14.8*	*12.0*	...	...
8	20.0	...	20.0	...	20.0	20.0	20.0	20.0	19.8	*18.3*	...	...	...	...
9	20.0	...	19.9	...	18.8	18.1	17.9	17.9	17.9	17.9	...	...	...	...
10	20.0	20.0	20.0	...	19.7	19.5	18.9	18.0	17.6	17.2	...	...	...	...
11	20.0	20.0	20.0	...	20.0	20.0	20.0	20.0	19.8	*18.3*	*14.8*	*12.0*	...	...
12	17.0	17.0	17.0	...	17.0	17.0	17.0	17.0	16.8	15.5	*12.6*	*10.2*	*7.9*	*5.7*
13	20.0	...	20.0	...	20.0	20.0	20.0	20.0	19.8	*18.3*	*14.8*	*12.0*	*9.3*	*6.7*
14	20.0	20.0	20.0	...	20.0	20.0	20.0	20.0	19.8	*18.3*	*14.8*	*12.0*	...	...
15	20.0	...	20.0	...	20.0	20.0	20.0	20.0	19.8	*18.3*	...	...	...	...
16	20.0	20.0	20.0	...	20.0	20.0	20.0	20.0	20.0	*18.3*	*14.8*	*12.0*	*9.3*	*6.7*
17	20.0	20.0	20.0	...	20.0	20.0	20.0	20.0	20.0	*18.3*	...	...	...	...
18	20.0	...	20.0	...	19.7	19.5	19.5	19.5	19.5	*18.3*	...	...	...	...
19	20.0	...	20.0	...	19.7	19.5	19.5	19.5	19.5	...	...	...	...	...
20	20.0	...	20.0	...	19.7	19.5	19.5	19.5	19.5	*18.3*	...	...	...	...
21	20.0	...	20.0	...	19.7	19.5	19.5	19.5	19.5	*18.3*	...	...	...	...
22	20.0	...	20.0	...	19.7	19.5	19.5	19.5	19.5	*18.3*	...	...	...	...
23	20.0	...	20.0	...	19.7	19.5	19.5	19.5	19.5	*18.3*	...	...	...	...
24	20.9	20.9	20.9	...	20.9	20.9	20.1	18.9	18.3	...	...	...	...	...
25	21.4	21.4	21.4	...	21.4	21.4	20.4	19.2	18.5	17.9	*15.7*	*12.6*	*9.3*	*6.7*
26	21.4	21.4	21.4	...	21.4	21.4	20.6	19.4	18.8	...	...	...	...	...
27	21.4	21.4	21.4	...	21.4	21.4	21.4	20.4	19.8	19.1	*15.7*	*12.6*	*9.3*	*6.7*
28	21.4	...	21.4	...	21.4	21.4	21.4	20.4	19.8	19.1	...	...	...	...
29	21.4	...	21.4	...	21.4	21.4	21.4	20.4	19.8	19.1	...	...	...	...
30	21.4	...	21.4	...	21.4	21.4	21.4	20.4	19.8	19.1	...	...	...	...
31	21.4	21.4	21.4	...	21.4	21.4	21.4	21.4	20.8	*19.6*	*15.7*	*12.6*	*9.3*	*6.7*
32	21.4	...	21.4	...	21.4	21.4	21.4	21.4	20.8	*19.6*	...	...	...	...
33	21.4	...	21.4	...	21.4	21.4	21.4	21.4	21.4	...	...	...	...	...
34	21.4	21.4	21.4	...	21.4	21.4	21.4	21.4	21.4	*19.6*	*15.7*	*12.6*	*9.3*	*6.7*
35	21.4	...	21.4	...	21.4	21.4	21.4	21.4	21.4	*19.6*	...	...	...	...
36	21.4	...	21.4	...	21.1	20.9	20.9	20.9	20.9	*18.3*	...	...	...	...
37	21.4	...	21.4	...	21.1	20.9	20.9	20.9	20.9	*19.6*	...	...	...	...
38	21.4	...	21.4	...	21.1	20.9	20.9	20.9	20.9	*19.6*	...	...	...	...
39	21.4	...	21.4	...	21.1	20.9	20.9	20.9	20.9	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
2	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
3	*3.4*	*2.1*	...	...	...	...	...	...	...	...	...	...	...	...	...
4	*3.4*	*2.1*	...	...	...	...	...	...	...	...	...	...	...	...	...
5	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
6	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	*3.4*	*2.1*	...	...	...	...	...	...	...	...	...	...	...	...	...
13	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	Carbon steel	Plate	SA-537	...	K12437	3	$\le 2\frac{1}{2}$	1	3
2	Carbon steel	Plate	SA-537	...	K12437	2	$\le 2\frac{1}{2}$	1	3
3	Carbon steel	Wld. pipe	SA-671	CD80	K12437	...	$\le 2\frac{1}{2}$	1	3
4	Carbon steel	Wld. pipe	SA-672	D80	K12437	...	$\le 2\frac{1}{2}$	1	3
5	Carbon steel	Wld. pipe	SA-691	CMSH-80	K12437	...	$\le 2\frac{1}{2}$	1	3
6	Carbon steel	Plate	SA-738	C	...	...	$\le 2\frac{1}{2}$	1	3
7	Carbon steel	Plate	SA-612	...	K02900	...	$\frac{1}{2} < t \le 1$	10C	1
8	Carbon steel	Plate	SA-612	...	K02900	...	$\le \frac{1}{2}$	10C	1
9	Carbon steel	Plate	SA-612	...	K02900	...	$\frac{1}{2} < t \le 1$	10C	1
10	Carbon steel	Plate	SA-738	B	K12447	...	...	1	3
11	Carbon steel	Forgings	SA-372	C	K04801	...	...	...	...
12	Carbon steel	Plate	SA-724	A	K11831	...	...	1	4
13	Carbon steel	Plate	SA-724	C	K12037	...	...	1	4
14	Carbon steel	Plate	SA-724	B	K12031	...	...	1	4
15	C–Mn–Cb	Sheet	SA-812	65	...	...	...	1	3
16	C–Mn–Si–Cb	Plate	SA-737	B	K12001	...	...	1	2
17	C–Mn–Si–Cb	Sheet	SA-812	80	...	...	...	1	4
18	C–Mn–Si–V	Plate	SA-737	C	K12202	...	...	1	3
19	C–Mn–Ti	Plate, sheet	SA-562	...	K11224	...	...	1	1
20	C–Si–Ti	Forgings	SA-836	...	...	1	...	1	1
21	C–$\frac{1}{2}$Mo	Smls. tube	SA-209	T1b	K11422	...	...	3	1
22	C–$\frac{1}{2}$Mo	Wld. tube	SA-250	T1b	K11422	...	...	3	1
23	C–$\frac{1}{2}$Mo	Wld. tube	SA-250	T1b	K11422	...	...	3	1
24	C–$\frac{1}{2}$Mo	Smls. tube	SA-209	T1	K11522	...	...	3	1
25	C–$\frac{1}{2}$Mo	Smls. & wld. fittings	SA-234	WP1	K12821	...	...	3	1
26	C–$\frac{1}{2}$Mo	Wld. tube	SA-250	T1	K11522	...	...	3	1
27	C–$\frac{1}{2}$Mo	Wld. tube	SA-250	T1	K11522	...	...	3	1
28	C–$\frac{1}{2}$Mo	Smls. pipe	SA-335	P1	K11522	...	...	3	1
29	C–$\frac{1}{2}$Mo	Forged pipe	SA-369	FP1	K11522	...	...	3	1
30	C–$\frac{1}{2}$Mo	Smls. tube	SA-209	T1a	K12023	...	...	3	1
31	C–$\frac{1}{2}$Mo	Wld. tube	SA-250	T1a	K12023	...	...	3	1
32	C–$\frac{1}{2}$Mo	Wld. tube	SA-250	T1a	K12023	...	...	3	1
33	C–$\frac{1}{2}$Mo	Castings	SA-217	WC1	J12524	...	...	3	1
34	C–$\frac{1}{2}$Mo	Castings	SA-352	LC1	J12522	...	...	3	1
35	C–$\frac{1}{2}$Mo	Cast pipe	SA-426	CP1	J12521	...	...	3	1
36	C–$\frac{1}{2}$Mo	Plate	SA-204	A	K11820	...	...	3	1
37	C–$\frac{1}{2}$Mo	Wld. pipe	SA-672	L65	K11820	...	...	3	1
38	C–$\frac{1}{2}$Mo	Wld. pipe	SA-691	CM-65	K11820	...	...	3	1
39	C–$\frac{1}{2}$Mo	Wld. pipe	SA-691	CM-65	K11820	...	...	3	1

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	80	55	NP	NP	700	CS-3	G23, T1, W11
2	80	60	NP	700	650	CS-4	G23, S6, T1, W10, W11, W12
3	80	60	NP	700	NP	CS-4	S6, T1, W10, W12
4	80	60	NP	700	NP	CS-3	S6, T1, W10, W12
5	80	60	NP	700	NP	CS-4	S6, T1, W10, W12
6	80	60	NP	650	650	CS-4	G23, W11
7	81	50	NP	700	NP	CS-3	T1
8	83	50	NP	650	650	CS-3	...
9	81	50	NP	NP	650	CS-3	...
10	85	60	NP	NP	650	CS-4	G20
11	90	55	NP	NP	650	CS-3	W2, W11
12	90	70	NP	NP	700	CS-3	...
13	90	70	NP	NP	700	CS-3	...
14	95	75	NP	NP	700	CS-3	...
15	85	65	NP	NP	650	CS-2	...
16	70	50	NP	700	700	CS-3	G19, T1
17	100	80	NP	NP	650	CS-2	...
18	80	60	NP	700	700	CS-3	G20
19	55	30	NP	NP	650	CS-6	G30
20	55	25	NP	NP	650	CS-1	...
21	53	28	1000	NP	1000	CS-1	G11, S3, T5
22	53	28	1000	NP	NP	CS-1	G11, S2, T5, W13
23	53	28	1000	NP	1000	CS-1	G3, G11, G24, S2, T5
24	55	30	1000	NP	1000	CS-2	G11, S3, T4
25	55	30	1000	700	1000	CS-2	G11, G18, T4
26	55	30	1000	NP	NP	CS-2	G11, S2, T4, W13
27	55	30	1000	NP	1000	CS-2	G3, G11, G24, S2, T4
28	55	30	1000	700	1000	CS-2	G11, S2, T4
29	55	30	1000	700	1000	CS-2	G11, S2, T4
30	60	32	1000	NP	1000	CS-2	G11, S3, T4
31	60	32	1000	NP	NP	CS-2	G11, S2, T4, W13
32	60	32	1000	NP	1000	CS-2	G3, G11, G24, S2, T4
33	65	35	1000	700	1000	CS-2	G1, G11, G17, G18, S2, T4
34	65	35	NP	700	650	CS-2	G1, G17
35	65	35	NP	700	NP	...	G17
36	65	37	1000	700	1000	CS-2	G11, S2, T4
37	65	37	NP	700	NP	CS-2	G26, W10, W12
38	65	37	NP	700	NP	CS-2	G26, W10, W12
39	65	37	NP	300 (Cl. 3 only)	NP	CS-2	G27, W10, W12

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	22.9	...	22.9	...	22.6	22.3	22.3	22.3	22.3	*19.6*	...	...	...	...
2	22.9	...	22.9	...	22.6	22.3	22.3	22.3	22.3	*19.6*	...	...	...	...
3	22.9	...	22.9	...	22.6	22.3	22.3	22.3	22.3	*19.6*	...	...	...	...
4	22.9	...	22.9	...	22.6	22.3	22.3	22.3	22.3	*19.6*	...	...	...	...
5	22.9	...	22.9	...	22.6	22.3	22.3	22.3	22.3	*19.6*	...	...	...	...
6	22.9	...	22.9	...	22.6	22.3	22.3	22.3	22.3	...	...	...	...	...
7	23.1	...	23.1	...	22.8	22.6	22.6	22.5	22.0	*19.6*	...	...	...	...
8	23.7	...	23.7	...	23.4	23.2	23.2	22.5	22.0	...	...	...	...	...
9	23.1	...	23.1	...	22.8	22.6	22.6	22.5	22.0	...	...	...	...	...
10	24.3	24.3	24.3	...	24.0	23.7	23.7	23.7	23.7	...	...	...	...	...
11	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	24.4	...	...	...	...	...
12	25.7	25.7	25.7	25.6	25.4	25.1	25.1	25.1	24.4	21.9	...	...	...	...
13	25.7	25.7	25.7	25.6	25.4	25.1	25.1	25.1	24.4	21.9	...	...	...	...
14	27.1	27.1	27.1	27.0	26.8	26.5	26.5	26.5	24.4	23.1	...	...	...	...
15	24.3	24.3	24.3	...	24.3	24.3	24.3	24.3	24.3	...	...	...	...	...
16	20.0	20.0	20.0	...	20.0	20.0	20.0	20.0	20.0	*19.6*	...	...	...	...
17	28.6	...	28.5	...	28.1	28.1	28.1	28.1	24.4	...	...	...	...	...
18	22.9	...	22.9	...	22.9	22.9	22.9	22.9	22.9	20.0	...	...	...	...
19	12.9	...	11.5	...	10.6	10.4	10.4	10.4	10.4	...	...	...	...	...
20	15.7	...	14.3	...	13.3	13.0	13.0	12.9	12.7	...	...	...	...	...
21	15.1	15.1	15.1	...	15.1	15.1	15.1	15.1	15.0	14.7	14.3	14.0	13.5	13.0
22	15.1	...	15.1	...	15.1	15.1	15.1	15.1	15.0	14.7	14.3	14.0	13.5	13.0
23	12.9	12.9	12.9	...	12.9	12.9	12.9	12.9	12.7	12.5	12.2	11.9	11.5	11.1
24	15.7	15.7	15.7	...	15.7	15.7	15.7	15.7	15.7	15.7	15.4	14.9	14.5	*13.7*
25	15.7	15.7	15.7	...	15.7	15.7	15.7	15.7	15.7	15.7	15.4	14.9	14.5	*13.7*
26	15.7	...	15.7	...	15.7	15.7	15.7	15.7	15.7	15.7	15.4	14.9	14.5	*13.7*
27	13.4	13.4	13.4	...	13.4	13.4	13.4	13.4	13.4	13.4	13.1	12.7	12.3	*11.6*
28	15.7	15.7	15.7	...	15.7	15.7	15.7	15.7	15.7	15.7	15.4	14.9	14.5	*13.7*
29	15.7	15.7	15.7	...	15.7	15.7	15.7	15.7	15.7	15.7	15.4	14.9	14.5	*13.7*
30	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	16.8	16.4	15.9	15.4	*13.7*
31	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	16.8	16.4	15.9	15.4	*13.7*
32	14.6	...	14.6	...	14.6	14.6	14.6	14.6	14.6	14.3	13.9	13.6	13.1	*11.6*
33	18.6	...	18.6	...	18.6	18.6	18.6	18.6	18.6	18.4	17.9	17.4	16.9	*13.7*
34	18.6	...	18.6	...	18.6	18.6	18.6	18.6	18.6	18.4	...	...	...	...
35	18.6	...	18.6	...	18.6	18.6	18.6	18.6	18.6	18.4	...	...	...	...
36	18.6	...	18.6	...	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.4	17.9	*13.7*
37	18.6	...	18.6	...	18.6	18.6	18.6	18.6	18.6	18.6	...	...	...	...
38	18.6	...	18.6	...	18.6	18.6	18.6	18.6	18.6	18.6	...	...	...	...
39	18.6	...	18.6	...	18.6	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...
22	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...
23	*7.0*	*4.1*	...	...	...	...	...	...	...	...	...	...	...	...	...
24	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...
25	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...
26	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...
27	*7.0*	*4.1*	...	...	...	...	...	...	...	...	...	...	...	...	...
28	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...
29	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...
30	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...
31	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...
32	*7.0*	*4.1*	...	...	...	...	...	...	...	...	...	...	...	...	...
33	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	C–½Mo	Forgings	SA-182	F1	K12822	...	...	3	2
2	C–½Mo	Plate	SA-204	B	K12020	...	...	3	2
3	C–½Mo	Forgings	SA-336	F1	K12520	...	...	3	2
4	C–½Mo	Wld. pipe	SA-672	L70	K12020	...	...	3	2
5	C–½Mo	Wld. pipe	SA-691	CM-70	K12020	...	...	3	2
6	C–½Mo	Wld. pipe	SA-691	CM-70	K12020	...	...	3	2
7	C–½Mo	Plate	SA-204	C	K12320	...	...	3	2
8	C–½Mo	Wld. pipe	SA-672	L75	K12320	...	...	3	2
9	C–½Mo	Wld. pipe	SA-691	CM-75	K12320	...	...	3	2
10	C–½Mo	Wld. pipe	SA-691	CM-75	K12320	...	...	3	2
11	C–½Mo	Plate	SA-517	J	K11625	...	≤ 1¼	11B	6
12	½Cr–⅕Mo–V	Plate	SA-517	B	K11630	...	≤ 1¼	11B	4
13	½Cr–¼Mo–Si	Plate	SA-517	A	K11856	...	≤ 1¼	11B	1
14	½Cr–¼Mo–Si	Forgings	SA-592	A	K11856	...	≤ 2½	11B	1
15	½Cr–½Mo	Smls. pipe	SA-335	P2	K11547	...	...	3	1
16	½Cr–½Mo	Forged pipe	SA-369	FP2	K11547	...	...	3	1
17	½Cr–½Mo	Plate	SA-387	2	K12143	1	...	3	1
18	½Cr–½Mo	Wld. pipe	SA-691	½CR	K12143	...	...	3	1
19	½Cr–½Mo	Wld. pipe	SA-691	½CR	K12143	...	...	3	1
20	½Cr–½Mo	Smls. tube	SA-213	T2	K11547	...	...	3	1
21	½Cr–½Mo	Cast pipe	SA-426	CP2	J11547	...	...	3	1
22	½Cr–½Mo	Forgings	SA-182	F2	K12122	...	...	3	2
23	½Cr–½Mo	Plate	SA-387	2	K12143	2	...	3	2
24	½Cr–½Mo	Wld. pipe	SA-691	½CR	K12143	...	...	3	2
25	½Cr–1¼Mn–Si	Plate	SA-202	A	K11742	...	...	4	1
26	½Cr–1¼Mn–Si	Plate	SA-202	B	K12542	...	...	4	1
27	¾Cr–½Ni–Cu	Smls. & wld. tube	SA-423	1	K11535	...	...	4	2
28	¾Cr–½Ni–Cu	Wld. tube	SA-423	1	K11535	...	...	4	2
29	¾Cr–¾Ni–Cu–Al	Pipe	SA-333	4	K11267	...	...	4	2
30	1Cr–⅕Mo	Forgings	SA-372	E	K13047	65	...	...	...
31	1Cr–⅕Mo	Forgings	SA-372	J	K13548	65	...	...	...
32	1Cr–⅕Mo	Forgings	SA-372	E	K13047	70	...	...	...
33	1Cr–⅕Mo	Forgings	SA-372	F	G41350	70	...	...	...
34	1Cr–⅕Mo	Forgings	SA-372	G	K13049	70	...	...	...
35	1Cr–⅕Mo	Forgings	SA-372	H	K13547	70	...	...	...
36	1Cr–⅕Mo	Forgings	SA-372	J	K13548	70	...	...	...
37	1Cr–⅕Mo	Forgings	SA-372	J	G41370	110	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	70	40	1000	700	1000	CS-3	G11, G18, S2, T4
2	70	40	1000	700	1000	CS-3	G11, S2, T4
3	70	40	1000	700	1000	CS-3	G11, G18, S2, T4
4	70	40	NP	700	NP	CS-3	G26, W10, W12
5	70	40	NP	700	NP	CS-3	G26, W10, W12
6	70	40	NP	300 (Cl. 3 only)	NP	CS-3	G27, W10, W12
7	75	43	1000	700	1000	CS-3	G11, S2, T4, W12
8	75	43	NP	700	NP	CS-3	G26, W10, W12
9	75	43	NP	700	NP	CS-3	G26, W10, W12
10	75	43	NP	300 (Cl. 3 only)	NP	CS-3	G27, W10, W12
11	115	100	NP	650 (SPT)	650	HT-1	...
12	115	100	NP	650 (SPT)	650	HT-1	...
13	115	100	NP	650 (SPT)	650	HT-1	...
14	115	100	NP	650 (SPT)	650	HT-1	...
15	55	30	1000	700	1000	CS-2	T5
16	55	30	1000	700	1000	CS-2	T5
17	55	33	1000	700	1000	CS-2	T5
18	55	33	NP	700	NP	CS-2	G26, W10, W12
19	55	33	NP	300 (Cl. 3 only)	NP	CS-2	G27, W10, W12
20	60	30	1000	700	1000	CS-2	T5
21	60	30	NP	700	NP	CS-2	G17
22	70	40	1000	NP	1000	CS-3	G18, T5
23	70	45	NP	700	1000	CS-3	T5
24	70	45	NP	700	NP	CS-3	G26, W10, W12
25	75	45	1000	NP	1000	CS-3	S1, T2
26	85	47	1000	NP	1000	CS-3	S1, T2
27	60	37	700	NP	650	CS-2	W13
28	60	37	700	NP	650	CS-2	G3, G24
29	60	35	NP	NP	650	CS-2	...
30	105	65	NP	NP	650	CS-2	W2, W11
31	105	65	NP	NP	650	CS-2	W2, W11
32	120	70	NP	NP	650	CS-2	W2, W11
33	120	70	NP	NP	650	CS-2	W2, W11
34	120	70	NP	NP	200	CS-2	W2, W11
35	120	70	NP	NP	200	CS-2	W2, W11
36	120	70	NP	NP	650	CS-2	W2, W11
37	135	110	NP	NP	650	CS-2	W2, W11

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.9	19.3	*13.7*
2	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.9	19.3	*13.7*
3	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.9	19.3	*13.7*
4	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	...	...	...	...
5	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	...	...	...	...
6	20.0	...	20.0	...	20.0	...	...	...	...	...	...	...	...	...
7	21.4	...	21.4	...	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	20.7	*13.7*
8	21.4	...	21.4	...	21.4	21.4	21.4	21.4	21.4	21.4	...	...	...	...
9	21.4	...	21.4	...	21.4	21.4	21.4	21.4	21.4	21.4	...	...	...	...
10	21.4	...	21.4	...	21.4	...	...	...	...	...	...	...	...	...
11	32.9	...	32.9	...	32.9	32.9	32.9	32.9	32.9	...	...	...	...	...
12	32.9	...	32.9	32.9	32.9	32.9	32.9	32.9	32.8	...	...	...	...	...
13	32.9	...	32.9	32.9	32.9	32.9	32.9	32.9	32.8	...	...	...	...	...
14	32.9	...	32.9	...	32.9	32.9	32.9	32.9	32.8	...	...	...	...	...
15	15.7	...	15.7	...	15.7	15.7	15.7	15.7	15.7	15.7	15.4	14.9	14.5	13.9
16	15.7	...	15.7	...	15.7	15.7	15.7	15.7	15.7	15.7	15.4	14.9	14.5	13.9
17	15.7	...	15.7	...	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.3	14.3
18	15.7	...	15.7	...	15.7	15.7	15.7	15.7	15.7	15.7	...	...	...	...
19	15.7	...	15.7	...	15.7	...	...	...	...	...	...	...	...	...
20	17.1	...	17.1	...	17.1	17.1	16.9	16.4	16.1	15.7	15.4	14.9	14.5	13.9
21	17.1	...	17.1	...	17.1	17.1	16.9	16.4	16.1	15.7	...	...	...	...
22	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.9	19.3	18.6
23	20.0	20.0	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.5	18.6
24	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	...	...	...	...
25	21.4	...	21.4	...	21.4	21.4	21.4	21.4	21.4	20.2	*15.7*	*12.0*	*7.8*	*5.0*
26	24.3	24.3	24.3	...	24.3	24.3	24.3	23.5	22.4	21.1	*17.7*	*12.0*	*7.8*	*5.0*
27	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	17.1	...	...	...	...
28	14.6	...	14.6	...	14.6	14.6	14.6	14.6	14.6	14.6	...	...	...	...
29	17.1	17.1	17.1	...	17.1	17.1	17.1	17.1	17.1	...	...	...	...	...
30	30.0	...	30.0	...	30.0	30.0	30.0	30.0	29.8	...	...	...	...	...
31	30.0	...	30.0	...	30.0	30.0	30.0	30.0	29.8	...	...	...	...	...
32	34.3	34.3	34.3	...	34.3	34.3	34.3	34.3	34.1	...	...	...	...	...
33	34.3	...	33.3	...	32.6	32.3	32.2	31.8	30.6	...	...	...	...	...
34	34.3	...	34.3	...	...	...	...	...	...	...	...	...	...	...
35	34.3	...	34.3	...	...	...	...	...	...	...	...	...	...	...
36	34.3	...	34.3	...	34.3	34.3	34.3	34.3	34.1	...	...	...	...	...
37	38.5	...	36.9	...	36.7	36.5	36.1	35.9	34.3	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...
2	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...
3	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	*9.2*	*5.9*	...	...	...	...	...	...	...	...	...	...	...	...	...
16	*9.2*	*5.9*	...	...	...	...	...	...	...	...	...	...	...	...	...
17	*9.2*	*5.9*	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	*9.2*	*5.9*	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	*9.2*	*5.9*	...	...	...	...	...	...	...	...	...	...	...	...	...
23	*9.2*	*5.9*	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	*3.0*	*1.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
26	*3.0*	*1.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	1Cr–½Mo	Plate	SA-387	12	K11757	1	...	4	1
2	1Cr–½Mo	Wld. pipe	SA-691	1CR	K11757	...	...	4	1
3	1Cr–½Mo	Cast pipe	SA-426	CP12	J11562	...	...	4	1
4	1Cr–½Mo	Forgings	SA-182	F12	K11562	1	...	4	1
5	1Cr–½Mo	Smls. tube	SA-213	T12	K11562	...	...	4	1
01 6	1Cr–½Mo	Smls. & wld. fittings	SA-234	WP12	K12062	1	...	4	1
7	1Cr–½Mo	Smls. pipe	SA-335	P12	K11562	...	...	4	1
8	1Cr–½Mo	Forged pipe	SA-369	FP12	K11562	...	...	4	1
9	1Cr–½Mo	Plate	SA-387	12	K11757	2	...	4	1
10	1Cr–½Mo	Wld. pipe	SA-691	1CR	K11757	...	...	4	1
11	1Cr–½Mo	Forgings	SA-182	F12	K11564	2	...	4	1
12	1Cr–½Mo	Forgings	SA-336	F12	K11564	...	...	4	1
13	1Cr–V	Smls. tube	SA-213	T17	K12047	...	...	10B	1
14	1¼Cr–½Mo	Castings	SA-217	WC6	J12072	...	...	4	1
15	1¼Cr–½Mo	Cast pipe	SA-426	CP11	J12072	...	...	4	1
16	1¼Cr–½Mo	Bar	SA-739	B11	K11797	...	...	4	1
17	1¼Cr–½Mo–Si	Smls. tube	SA-199	T11	K11597	...	...	4	1
18	1¼Cr–½Mo–Si	Forgings	SA-182	F11	K11597	1	...	4	1
19	1¼Cr–½Mo–Si	Smls. tube	SA-213	T11	K11597	...	...	4	1
20	1¼Cr–½Mo–Si	Smls. & wld. fittings	SA-234	WP11	...	1	...	4	1
21	1¼Cr–½Mo–Si	Smls. pipe	SA-335	P11	K11597	...	...	4	1
22	1¼Cr–½Mo–Si	Forgings	SA-336	F11	K11597	1	...	4	1
23	1¼Cr–½Mo–Si	Forged pipe	SA-369	FP11	K11597	...	...	4	1
24	1¼Cr–½Mo–Si	Plate	SA-387	11	K11789	1	...	4	1
25	1¼Cr–½Mo–Si	Wld. pipe	SA-691	1¼CR	K11789	...	...	4	1
26	1¼Cr–½Mo–Si	Wld. pipe	SA-691	1¼CR	K11789	...	...	4	1
27	1¼Cr–½Mo–Si	Forgings	SA-182	F11	K11572	2	...	4	1
28	1¼Cr–½Mo–Si	Forgings	SA-336	F11	K11572	2	...	4	1
29	1¼Cr–½Mo–Si	Forgings	SA-336	F11	K11572	3	...	4	1
30	1¼Cr–½Mo–Si	Plate	SA-387	11	K11789	2	...	4	1
31	1¼Cr–½Mo–Si	Wld. pipe	SA-691	1¼CR	K11789	...	...	4	1
32	1¾Cr–½Mo–Cu	Forgings	SA-592	E	K11695	...	$2\frac{1}{2} < t \le 4$	11B	2
33	1¾Cr–½Mo–Cu	Forgings	SA-592	E	K11695	...	$\le 2\frac{1}{2}$	11B	2
34	1¾Cr–½Mo–Ti	Plate	SA-517	E	K21604	...	$2\frac{1}{2} < t \le 6$	11B	2
35	1¾Cr–½Mo–Ti	Plate	SA-517	E	K21604	...	$\le 2\frac{1}{2}$	11B	2
36	2¼Cr–1Mo	Tube	SA-199	T22	K21590	...	...	5A	1
37	2¼Cr–1Mo	Forgings	SA-182	F22	K21590	1	...	5A	1
38	2¼Cr–1Mo	Smls. tube	SA-213	T22	K21590	...	...	5A	1
39	2¼Cr–1Mo	Smls. & wld. fittings	SA-234	WP22	K21590	1	...	5A	1

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	55	33	1200	700	1200	CS-2	S4, T5
2	55	33	NP	700	NP	...	G26, W10, W12
3	60	30	NP	700	NP	...	G17
4	60	32	1200	NP	1200	CS-2	T5
5	60	32	1200	700	1200	CS-2	S4, T5
6	60	32	1200	700	1200	CS-2	G18, S4, T5
7	60	32	1200	700	1200	CS-2	S4, T5
8	60	32	1200	700	1200	CS-2	S4, T5
9	65	40	1200	700	1200	CS-3	S4, T5
10	65	40	NP	700	NP	...	G26, W10, W12
11	70	40	1200	700	1200	CS-3	G18, S4, T4
12	70	40	1200	700	1200	CS-3	G18, S4, T4
13	60	30	NP	NP	650	CS-2	...
14	70	40	1100	700	1100	CS-3	G1, G17, G18, T4
15	70	40	NP	700	NP	...	G17
16	70	45	NP	700	1200	CS-3	T4
17	60	25	NP	NP	1200	CS-1	T5
18	60	30	1200	NP	1200	CS-2	G18, S4, T5
19	60	30	1200	700	1200	CS-2	S4, T5
20	60	30	1200	700	1200	CS-2	G18, S4, T5
21	60	30	1200	700	1200	CS-2	S4, T5
22	60	30	1200	NP	NP	...	G18, S4, T5
23	60	30	1200	700	1200	CS-2	S4, T5
24	60	35	1200	700	1200	CS-2	S4, T4
25	60	35	NP	300 (Cl. 3 only)	NP	CS-2	G27, W10, W12
26	60	35	NP	700	NP	CS-2	G26, W10, W12
27	70	40	1200	700	1200	CS-3	G18, S4, T4
28	70	40	1200	NP	1200	CS-2	G18, S4, T4
29	75	45	NP	NP	1200	CS-2	T3
30	75	45	1200	700	1200	CS-3	S4, T3
31	75	45	NP	700	NP	CS-3	G26, W10, W12
32	105	90	NP	650 (SPT)	650	CS-3	S7
33	115	100	NP	NP	650	HT-1	...
34	105	90	NP	700 (SPT)	650	CS-3	...
35	115	100	NP	650 (SPT)	650	HT-1	...
36	60	25	NP	NP	1200	CS-1	T4, W7
37	60	30	1200	700	1200	CS-2	G18, S4, T4, W7, W9
38	60	30	1200	700	1200	CS-2	S4, T4, W7, W9
39	60	30	1200	700	1200	CS-2	G18, S4, T4, W7, W9

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	15.7	...	15.4	...	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	14.7
2	15.7	...	15.4	...	15.1	15.1	15.1	15.1	15.1	15.1	...	...	...	...
3	17.1	...	16.8	...	16.5	16.2	15.7	15.2	15.0	14.8	...	...	...	...
4	17.1	17.1	16.8	...	16.5	16.5	16.5	16.3	16.0	15.8	15.5	15.3	14.9	14.5
5	17.1	...	16.8	...	16.5	16.5	16.5	16.3	16.0	15.8	15.5	15.3	14.9	14.5
01 6	17.1	...	16.8	...	16.5	16.5	16.5	16.3	16.0	15.8	15.5	15.3	14.9	14.5
7	17.1	...	16.8	...	16.5	16.5	16.5	16.3	16.0	15.8	15.5	15.3	14.9	14.5
8	17.1	...	16.8	...	16.5	16.5	16.5	16.3	16.0	15.8	15.5	15.3	14.9	14.5
9	18.6	18.6	18.2	...	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.4
10	18.6	...	18.2	...	17.9	17.9	17.9	17.9	17.9	17.9	...	...	...	...
11	20.0	...	19.6	...	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.1	18.6	*18.0*
12	20.0	20.0	19.6	...	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.1	18.6	*18.0*
13	17.1	17.1	17.1	...	17.1	16.8	16.2	15.7	15.4	...	...	...	...	...
14	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	19.7	19.2	18.7	*13.7*
15	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	...	...	...	...
16	20.0	20.0	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.4	*13.7*
17	16.7	...	15.4	...	14.6	14.0	13.5	13.1	12.8	12.6	12.3	12.0	11.7	11.3
18	17.1	...	17.1	...	17.1	16.8	16.2	15.7	15.4	15.1	14.8	14.4	14.0	13.6
19	17.1	...	17.1	...	17.1	16.8	16.2	15.7	15.4	15.1	14.8	14.4	14.0	13.6
20	17.1	...	17.1	...	17.1	16.8	16.2	15.7	15.4	15.1	14.8	14.4	14.0	13.6
21	17.1	...	17.1	...	17.1	16.8	16.2	15.7	15.4	15.1	14.8	14.4	14.0	13.6
22	17.1	...	17.1	...	17.1	16.8	16.2	15.7	15.4	15.1	14.8	14.4	14.0	13.6
23	17.1	...	17.1	...	17.1	16.8	16.2	15.7	15.4	15.1	14.8	14.4	14.0	13.6
24	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	17.1	17.1	16.8	16.4	*13.7*
25	17.1	...	17.1	...	17.1	...	...	...	...	...	...	...	...	...
26	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	17.1	...	...	...	...
27	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	19.7	19.2	18.7	*13.7*
28	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	19.7	19.2	18.7	*13.7*
29	21.4	21.4	21.4	...	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	*20.2*	*13.7*
30	21.4	...	21.4	...	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	*20.2*	*13.7*
31	21.4	...	21.4	...	21.4	21.4	21.4	21.4	21.4	21.4	...	...	...	...
32	30.0	...	30.0	...	30.0	30.0	30.0	30.0	30.0	...	...	...	...	...
33	32.9	...	32.9	...	32.9	32.9	32.9	32.9	32.9	...	...	...	...	...
34	30.0	...	30.0	30.0	30.0	30.0	30.0	30.0	30.0	29.9	...	...	...	...
35	32.9	...	32.9	32.9	32.9	32.9	32.9	32.9	32.9	...	...	...	...	...
36	16.7	15.9	15.6	...	15.1	15.0	15.0	15.0	15.0	15.0	14.9	14.8	14.5	*13.6*
37	17.1	...	17.1	...	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	*13.6*
38	17.1	...	17.1	...	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	*13.6*
39	17.1	17.1	17.1	...	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	*13.6*

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	*11.3*	*7.2*	*4.5*	*2.8*	*1.8*	*1.1*	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	*11.3*	*7.2*	*4.5*	*2.8*	*1.8*	*1.1*	...	...	...	...	...	...	...	...	...
5	*11.3*	*7.2*	*4.5*	*2.8*	*1.8*	*1.1*	...	...	...	...	...	...	...	...	...
6	*11.3*	*7.2*	*4.5*	*2.8*	*1.8*	*1.1*	...	...	...	...	...	...	...	...	...
7	*11.3*	*7.2*	*4.5*	*2.8*	*1.8*	*1.1*	...	...	...	...	...	...	...	...	...
8	*11.3*	*7.2*	*4.5*	*2.8*	*1.8*	*1.1*	...	...	...	...	...	...	...	...	...
9	*11.3*	*7.2*	*4.5*	*2.8*	*1.8*	*1.1*	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	*11.3*	*7.2*	*4.5*	*2.8*	*1.8*	*1.1*	...	...	...	...	...	...	...	...	...
12	*11.3*	*7.2*	*4.5*	*2.8*	*1.8*	*1.1*	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	*9.3*	*6.3*	*4.2*	*2.8*	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	*9.3*	*6.3*	*4.2*	*2.8*	*1.9*	*1.2*	...	...	...	...	...	...	...	...	...
17	*9.3*	*6.3*	*4.2*	*2.8*	*1.9*	*1.2*	...	...	...	...	...	...	...	...	...
18	*9.3*	*6.3*	*4.2*	*2.8*	*1.9*	*1.2*	...	...	...	...	...	...	...	...	...
19	*9.3*	*6.3*	*4.2*	*2.8*	*1.9*	*1.2*	...	...	...	...	...	...	...	...	...
20	*9.3*	*6.3*	*4.2*	*2.8*	*1.9*	*1.2*	...	...	...	...	...	...	...	...	...
21	*9.3*	*6.3*	*4.2*	*2.8*	*1.9*	*1.2*	...	...	...	...	...	...	...	...	...
22	*9.3*	*6.3*	*4.2*	*2.8*	*1.9*	*1.2*	...	...	...	...	...	...	...	...	...
23	*9.3*	*6.3*	*4.2*	*2.8*	*1.9*	*1.2*	...	...	...	...	...	...	...	...	...
24	*9.3*	*6.3*	*4.2*	*2.8*	*1.9*	*1.2*	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	*9.3*	*6.3*	*4.2*	*2.8*	*1.9*	*1.2*	...	...	...	...	...	...	...	...	...
28	*9.3*	*6.3*	*4.2*	*2.8*	*1.9*	*1.2*	...	...	...	...	...	...	...	...	...
29	*9.3*	*6.3*	*4.2*	*2.8*	*1.9*	*1.2*	...	...	...	...	...	...	...	...	...
30	*9.3*	*6.3*	*4.2*	*2.8*	*1.9*	*1.2*	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	*10.8*	*8.0*	*5.7*	*3.8*	*2.4*	*1.4*	...	...	...	...	...	...	...	...	...
37	*10.8*	*8.0*	*5.7*	*3.8*	*2.4*	*1.4*	...	...	...	...	...	...	...	...	...
38	*10.8*	*8.0*	*5.7*	*3.8*	*2.4*	*1.4*	...	...	...	...	...	...	...	...	...
39	*10.8*	*8.0*	*5.7*	*3.8*	*2.4*	*1.4*	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	2¼Cr–1Mo	Smls. pipe	SA-335	P22	K21590	...	...	5A	1
2	2¼Cr–1Mo	Forgings	SA-336	F22	K21590	1	...	5A	1
3	2¼Cr–1Mo	Forged pipe	SA-369	FP22	K21590	...	...	5A	1
4	2¼Cr–1Mo	Plate	SA-387	22	K21590	1	...	5A	1
5	2¼Cr–1Mo	Wld. pipe	SA-691	2¼CR	K21590	...	...	5A	1
6	2¼Cr–1Mo	Castings	SA-217	WC9	J21890	...	...	5A	1
7	2¼Cr–1Mo	Cast pipe	SA-426	CP22	J21890	...	...	5A	1
8	2¼Cr–1Mo	Forgings	SA-182	F22	K21590	3	...	5A	1
9	2¼Cr–1Mo	Forgings	SA-336	F22	K21590	3	...	5A	1
10	2¼Cr–1Mo	Plate	SA-387	22	K21590	2	...	5A	1
11	2¼Cr–1Mo	Wld. pipe	SA-691	2¼CR	K21590	...	...	5A	1
12	2¼Cr–1Mo	Bar	SA-739	B22	K21390	...	...	5A	1
13	2¼Cr–1Mo	Castings	SA-487	8	J22091	A	...	5C	1
14	2¼Cr–1Mo	Forgings	SA-508	22	K21590	3	...	5C	1
15	2¼Cr–1Mo	Forgings	SA-541	22	K21390	3	...	5C	1
16	2¼Cr–1Mo	Plate	SA-542	B	K21590	4	...	5C	1
17	2¼Cr–1Mo–V	Forgings	SA-182	F22V	K31835	...	...	5C	1
18	2¼Cr–1Mo–V	Forgings	SA-336	F22V	K31835	...	...	5C	1
19	2¼Cr–1Mo–V	Forgings	SA-541	22V	K31835	...	...	5C	1
20	2¼Cr–1Mo–V	Plate	SA-542	D	K31835	4a	...	5C	1
21	2¼Cr–1Mo–V	Plate	SA-832	22V	K31835	...	...	5C	1
22	3Cr–1Mo	Smls. tube	SA-199	T21	K31545	...	...	5A	1
23	3Cr–1Mo	Smls. tube	SA-213	T21	K31545	...	...	5A	1
24	3Cr–1Mo	Smls. pipe	SA-335	P21	K31545	...	...	5A	1
25	3Cr–1Mo	Forgings	SA-336	F21	K31545	1	...	5A	1
26	3Cr–1Mo	Forged pipe	SA-369	FP21	K31545	...	...	5A	1
27	3Cr–1Mo	Plate	SA-387	21	K31545	1	...	5A	1
28	3Cr–1Mo	Cast pipe	SA-426	CP21	J31545	...	...	5A	1
29	3Cr–1Mo	Forgings	SA-182	F21	K31545	...	...	5A	1
30	3Cr–1Mo	Forgings	SA-336	F21	K31545	3	...	5A	1
31	3Cr–1Mo	Plate	SA-387	21	K31545	2	...	5A	1
32	3Cr–1Mo–¼V–Ti–B	Forgings	SA-182	F3V	K31830	...	...	5C	1
33	3Cr–1Mo–¼V–Ti–B	Forgings	SA-336	F3V	K31830	...	...	5C	1
34	3Cr–1Mo–¼V–Ti–B	Forgings	SA-508	3V	K31830	...	...	5C	1
35	3Cr–1Mo–¼V–Ti–B	Forgings	SA-541	3V	K31830	...	...	5C	1
36	3Cr–1Mo–¼V–Ti–B	Plate	SA-542	C	K31830	4a	...	5C	1
37	3Cr–1Mo–¼V–Ti–B	Plate	SA-832	21V	K31830	...	...	5C	1

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	60	30	1200	700	1200	CS-2	S4, T4, W7, W9
2	60	30	1200	700	1200	CS-2	G18, S4, T4, W7, W9
3	60	30	1200	700	1200	CS-2	S4, T4, W7, W9
4	60	30	1200	700	1200	CS-2	S4, T4, W7, W9
5	60	30	NP	700	NP	CS-2	G26, W10, W12
6	70	40	1200	700	1200	CS-3	G1, G17, G18, S4, T4, W7, W9
7	70	40	NP	700	NP	...	G17
8	75	45	1200	700	1200	CS-3	G18, S4, T4, W7, W9
9	75	45	1200	700	1200	CS-3	G18, S4, T4, W7, W9
10	75	45	1200	700	1200	CS-3	S4, T4, W7, W9
11	75	45	NP	700	NP	CS-3	G26, W10, W12
12	75	45	NP	700	1200	CS-3	T4, W7
13	85	55	NP	NP	1000	CS-3	G1, T4, W7
14	85	55	NP	NP	850	CS-2	G39
15	85	55	NP	NP	850	CS-2	G39
16	85	55	NP	NP	850	CS-2	G39
17	85	60	NP	NP	900	CS-2	G39
18	85	60	NP	NP	900	CS-2	G39
19	85	60	NP	NP	900	CS-2	G39
20	85	60	NP	NP	900	CS-2	G39
21	85	60	NP	NP	900	CS-2	G39
22	60	25	NP	NP	1200	CS-1	T4
23	60	30	1200	700	1200	CS-2	S4, T3
24	60	30	1200	700	1200	CS-2	S4, T3
25	60	30	1200	700	1200	CS-2	G18, S4, T3
26	60	30	1200	700	1200	CS-2	S4, T3
27	60	30	1200	700	1200	CS-2	S4, T3
28	60	30	NP	700	NP	...	G17
29	75	45	1200	700	1200	CS-3	G18, S4, T3
30	75	45	1200	700	1200	CS-3	G18, S4, T3
31	75	45	1200	700	1200	CS-3	S4, T3
32	85	60	NP	NP	900	CS-2	G39
33	85	60	NP	NP	900	CS-2	G39
34	85	60	NP	NP	900	CS-2	G39
35	85	60	NP	NP	900	CS-2	G39
36	85	60	NP	NP	900	CS-2	G39
37	85	60	NP	NP	900	CS-2	G39

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	17.1	17.1	17.1	...	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	*13.6*
2	17.1	17.1	17.1	...	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	*13.6*
3	17.1	17.1	17.1	...	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	*13.6*
4	17.1	...	17.1	...	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	*13.6*
5	17.1	...	17.1	...	16.6	16.6	16.6	16.6	16.6	16.6	...	...	...	...
6	20.0	...	20.0	...	19.7	19.4	19.3	19.2	19.1	18.8	18.5	17.9	17.2	*15.8*
7	20.0	...	20.0	...	19.7	19.4	19.3	19.2	19.1	18.8	...	...	...	...
8	21.4	...	21.4	...	20.9	20.6	20.5	20.4	20.2	20.0	19.7	19.3	18.7	*15.8*
9	21.4	...	21.4	...	20.9	20.6	20.5	20.4	20.2	20.0	19.7	19.3	18.7	*15.8*
10	21.4	...	21.4	...	20.9	20.6	20.5	20.4	20.2	20.0	19.7	19.3	18.7	*15.8*
11	21.4	...	21.4	...	20.9	20.6	20.5	20.4	20.2	20.0	...	...	...	...
12	21.4	...	21.4	...	20.9	20.6	20.5	20.4	20.2	20.0	19.7	19.3	18.7	*15.8*
13	24.3	24.3	24.3	...	23.7	23.5	23.5	23.3	23.2	22.9	22.4	21.7	20.8	*15.8*
14	24.3	...	24.3	...	24.3	24.3	23.8	23.3	23.1	22.9	22.6	21.9	20.4	...
15	24.3	...	24.3	...	24.3	24.3	23.8	23.3	23.1	22.9	22.6	21.9	20.4	...
16	24.3	...	24.3	...	24.3	24.3	23.8	23.3	23.1	22.9	22.6	21.9	20.4	...
17	24.3	...	24.3	...	24.3	24.3	24.3	23.7	23.2	22.8	22.2	21.6	21.0	20.3
18	24.3	...	24.3	...	24.3	24.3	24.3	23.7	23.2	22.8	22.2	21.6	21.0	20.3
19	24.3	...	24.3	...	24.3	24.3	24.3	23.7	23.2	22.8	22.2	21.6	21.0	20.3
20	24.3	...	24.3	...	24.3	24.3	24.3	23.7	23.2	22.8	22.2	21.6	21.0	20.3
21	24.3	...	24.3	...	24.3	24.3	24.3	23.7	23.2	22.8	22.2	21.6	21.0	20.3
22	16.7	15.9	15.6	...	15.1	15.0	15.0	15.0	15.0	15.0	14.9	14.8	14.5	*12.0*
23	17.1	...	17.1	...	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	*16.0*	*12.0*
24	17.1	17.1	17.1	...	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	*16.0*	*12.0*
25	17.1	17.1	17.1	...	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	*16.0*	*12.0*
26	17.1	...	17.1	...	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	*16.0*	*12.0*
27	17.1	...	17.1	...	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	*16.0*	*12.0*
28	17.1	...	17.1	...	16.6	16.6	16.6	16.6	16.6	16.6	...	...	...	...
29	21.4	...	21.4	...	20.9	20.6	20.5	20.4	20.2	20.0	19.7	19.3	*18.1*	*13.1*
30	21.4	...	21.4	...	20.9	20.6	20.5	20.4	20.2	20.0	19.7	19.3	*18.1*	*13.1*
31	21.4	...	21.4	...	20.9	20.6	20.5	20.4	20.2	20.0	19.7	19.3	*18.1*	*13.1*
32	24.3	...	24.3	...	23.3	22.6	22.2	21.8	21.6	21.4	21.1	20.8	20.4	20.0
33	24.3	...	24.3	...	23.3	22.6	22.2	21.8	21.6	21.4	21.1	20.8	20.4	20.0
34	24.3	...	24.3	...	23.3	22.6	22.2	21.8	21.6	21.4	21.1	20.8	20.4	20.0
35	24.3	...	24.3	...	23.3	22.6	22.2	21.8	21.6	21.4	21.1	20.8	20.4	20.0
36	24.3	...	24.3	...	23.3	22.6	22.2	21.8	21.6	21.4	21.1	20.8	20.4	20.0
37	24.3	...	24.3	...	23.3	22.6	22.2	21.8	21.6	21.4	21.1	20.8	20.4	20.0

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	*10.8*	*8.0*	*5.7*	*3.8*	*2.4*	*1.4*	...	...	...	...	...	...	...	...	...
2	*10.8*	*8.0*	*5.7*	*3.8*	*2.4*	*1.4*	...	...	...	...	...	...	...	...	...
3	*10.8*	*8.0*	*5.7*	*3.8*	*2.4*	*1.4*	...	...	...	...	...	...	...	...	...
4	*10.8*	*8.0*	*5.7*	*3.8*	*2.4*	*1.4*	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	*11.4*	*7.8*	*5.1*	*3.2*	*2.0*	*1.2*	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	*11.4*	*7.8*	*5.1*	*3.2*	*2.0*	*1.2*	...	...	...	...	...	...	...	...	...
9	*11.4*	*7.8*	*5.1*	*3.2*	*2.0*	*1.2*	...	...	...	...	...	...	...	...	...
10	*11.4*	*7.8*	*5.1*	*3.2*	*2.0*	*1.2*	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	*11.4*	*7.8*	*5.1*	*3.2*	*2.0*	*1.2*	...	...	...	...	...	...	...	...	...
13	*11.4*	*7.8*	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	*9.0*	*7.0*	*5.5*	*4.0*	*2.7*	*1.5*	...	...	...	...	...	...	...	...	...
23	*9.0*	*7.0*	*5.5*	*4.0*	*2.7*	*1.5*	...	...	...	...	...	...	...	...	...
24	*9.0*	*7.0*	*5.5*	*4.0*	*2.7*	*1.5*	...	...	...	...	...	...	...	...	...
25	*9.0*	*7.0*	*5.5*	*4.0*	*2.7*	*1.5*	...	...	...	...	...	...	...	...	...
26	*9.0*	*7.0*	*5.5*	*4.0*	*2.7*	*1.5*	...	...	...	...	...	...	...	...	...
27	*9.0*	*7.0*	*5.5*	*4.0*	*2.7*	*1.5*	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	*9.5*	*6.8*	*4.9*	*3.2*	*2.4*	*1.3*	...	...	...	...	...	...	...	...	...
30	*9.5*	*6.8*	*4.9*	*3.2*	*2.4*	*1.3*	...	...	...	...	...	...	...	...	...
31	*9.5*	*6.8*	*4.9*	*3.2*	*2.4*	*1.3*	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	5Cr–½Mo	Smls. tube	SA-199	T5	K41545	...	...	5B	1
2	5Cr–½Mo	Smls. tube	SA-213	T5	K41545	...	...	5B	1
3	5Cr–½Mo	Smls. & wld. fittings	SA-234	WP5	K41545	...	...	5B	1
4	5Cr–½Mo	Smls. pipe	SA-335	P5	K41545	...	...	5B	1
5	5Cr–½Mo	Forged pipe	SA-369	FP5	K41545	...	...	5B	1
6	5Cr–½Mo	Plate	SA-387	5	K41545	1	...	5B	1
7	5Cr–½Mo	Wld. pipe	SA-691	5CR	K41545	...	...	5B	1
8	5Cr–½Mo	Forgings	SA-336	F5	K41545	...	...	5B	1
9	5Cr–½Mo	Forgings	SA-182	F5	K41545	...	...	5B	1
10	5Cr–½Mo	Plate	SA-387	5	K41545	2	...	5B	1
11	5Cr–½Mo	Forgings	SA-336	F5A	K42544	...	...	5B	1
12	5Cr–½Mo	Castings	SA-217	C5	J42045	...	...	5B	1
13	5Cr–½Mo	Cast pipe	SA-426	CP5	J42045	...	...	5B	1
14	5Cr–½Mo	Forgings	SA-182	F5a	K42544	...	...	5B	1
15	5Cr–½Mo–Si	Smls. tube	SA-213	T5b	K51545	...	...	5B	1
16	5Cr–½Mo–Si	Smls. pipe	SA-335	P5b	K51545	...	...	5B	1
17	5Cr–½Mo–Ti	Smls. tube	SA-213	T5c	K41245	...	...	5B	1
18	5Cr–½Mo–Ti	Smls. pipe	SA-335	P5c	K41245	...	...	5B	1
19	9Cr–1Mo	Smls. tube	SA-199	T9	K81590	...	...	5B	1
20	9Cr–1Mo	Smls. tube	SA-213	T9	K81590	...	...	5B	1
21	9Cr–1Mo	Fittings	SA-234	WP9	K90941	...	...	5B	1
22	9Cr–1Mo	Smls. pipe	SA-335	P9	K81590	...	...	5B	1
23	9Cr–1Mo	Forged pipe	SA-369	FP9	K90941	...	...	5B	1
24	9Cr–1Mo	Forgings	SA-182	F9	K90941	...	...	5B	1
25	9Cr–1Mo	Forgings	SA-336	F9	K81590	...	...	5B	1
26	9Cr–1Mo	Castings	SA-217	C12	J82090	...	...	5B	1
27	9Cr–1Mo	Cast pipe	SA-426	CP9	J82090	...	...	5B	1
28	9Cr–1Mo–V	Forgings	SA-182	F91	K90901	...	≤ 3	5B	2
29	9Cr–1Mo–V	Forgings	SA-182	F91	K90901	...	> 3	5B	2
30	9Cr–1Mo–V	Smls. tube	SA-213	T91	K90901	...	≤ 3	5B	2
31	9Cr–1Mo–V	Fittings	SA-234	WP91	K90901	...	≤ 3	5B	2
32	9Cr–1Mo–V	Fittings	SA-234	WP91	K90901	...	> 3	5B	2
33	9Cr–1Mo–V	Smls. pipe	SA-335	P91	K90901	...	≤ 3	5B	2
34	9Cr–1Mo–V	Smls. pipe	SA-335	P91	K90901	...	> 3	5B	2
35	9Cr–1Mo–V	Forgings	SA-336	F91	K90901	...	≤ 3	5B	2
36	9Cr–1Mo–V	Forgings	SA-336	F91	K90901	...	> 3	5B	2
37	9Cr–1Mo–V	Forged pipe	SA-369	FP91	K90901	...	≤ 3	5B	2
38	9Cr–1Mo–V	Forged pipe	SA-369	FP91	K90901	...	> 3	5B	2
39	9Cr–1Mo–V	Plate	SA-387	91	K90901	2	≤ 3	5B	2
40	9Cr–1Mo–V	Plate	SA-387	91	K90901	2	> 3	5B	2

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	60	25	NP	NP	1200	CS-1	T4
2	60	30	1200	700	1200	CS-2	T4
3	60	30	1200	700	1200	CS-2	T4
4	60	30	1200	700	1200	CS-2	T4
5	60	30	1200	700	1200	CS-2	G18, T4
6	60	30	1200	700	1200	CS-2	T4
7	60	30	NP	700	NP	...	G26, W10, W12
8	60	36	1200	NP	1200	CS-2	G18, T4
9	70	40	1200	700	1200	CS-2	G18, T3
10	75	45	NP	700	1200	CS-3	T3
11	80	50	1200	NP	1200	CS-3	G18, T3
12	90	60	1200	700	1200	CS-3	G1, G17, G18, T3
13	90	60	NP	700	NP	...	G17
14	90	65	1200	NP	1200	CS-3	G18, T3
15	60	30	1200	NP	1200	CS-2	T4
16	60	30	1200	NP	1200	CS-2	T4
17	60	30	1200	NP	1200	CS-2	T4
18	60	30	1200	NP	1200	CS-2	T4
19	60	25	NP	NP	1200	CS-1	T5
20	60	30	1200	700	1200	CS-2	T5
21	60	30	1200	NP	1200	CS-2	G18, T5
22	60	30	1200	700	1200	CS-2	T5
23	60	30	1200	700	1200	CS-2	T5
24	85	55	1200	NP	1200	CS-3	G18, T4
25	85	55	NP	NP	1200	CS-2	T4
26	90	60	1200	700 (SPT)	1200	CS-3	G1, G18, T4
27	90	60	NP	700	NP	...	G17
28	85	60	1200	700	1200	CS-3	G18, H3, T7
29	85	60	1200	NP	1200	CS-3	G18, H3, T7
30	85	60	1200	700	1200	CS-3	G18, T7
31	85	60	1200	NP	NP	...	G18, T7
32	85	60	1200	NP	NP	...	G18, T7
33	85	60	1200	700	1200	CS-3	G18, T7
34	85	60	1200	NP	1200	CS-3	G18, H3, T7
35	85	60	1200	NP	1200	CS-3	G18, H3, T7
36	85	60	1200	NP	1200	CS-3	G18, H3, T7
37	85	60	1200	NP	NP	...	G18, T7
38	85	60	1200	NP	NP	...	G18, T7
39	85	60	1200	700	1200	CS-3	G18, H3, T7
40	85	60	1200	NP	1200	CS-3	G18, H3, T7

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	16.7	...	15.1	...	14.5	14.3	14.2	14.0	13.8	13.6	13.3	12.8	12.3	*10.9*
2	17.1	...	17.1	...	16.6	16.5	16.4	16.2	15.9	15.6	15.1	14.5	13.8	*10.9*
3	17.1	...	17.1	...	16.6	16.5	16.4	16.2	15.9	15.6	15.1	14.5	13.8	*10.9*
4	17.1	...	17.1	...	16.6	16.5	16.4	16.2	15.9	15.6	15.1	14.5	13.8	*10.9*
5	17.1	...	17.1	...	16.6	16.5	16.4	16.2	15.9	15.6	15.1	14.5	13.8	*10.9*
6	17.1	...	17.1	...	16.6	16.5	16.4	16.2	15.9	15.6	15.1	14.5	13.8	*10.9*
7	17.1	...	17.1	...	16.6	16.5	16.4	16.2	15.9	15.6	...	...	...	...
8	17.1	...	17.1	...	16.6	16.5	16.4	16.2	15.9	15.6	15.1	14.5	13.8	*10.9*
9	20.0	...	20.0	...	19.4	19.2	19.2	18.9	18.6	18.2	17.6	17.0	*14.3*	*10.9*
10	21.4	...	21.4	...	20.8	20.6	20.5	20.2	19.9	19.5	18.9	18.2	*14.3*	*10.9*
11	22.9	...	22.8	...	22.1	22.0	21.9	21.6	21.3	20.8	20.2	19.1	*14.3*	*10.9*
12	25.7	...	25.7	...	24.9	24.7	24.6	24.3	23.9	23.4	22.7	19.1	*14.3*	*10.9*
13	25.7	...	25.7	...	24.9	24.7	24.6	24.3	23.9	23.4	...	...	...	...
14	25.7	...	25.7	...	24.9	24.7	24.6	24.3	23.9	23.4	22.7	19.1	*14.3*	*10.9*
15	17.1	...	17.1	...	16.6	16.5	16.4	16.2	15.9	15.6	15.1	14.5	13.8	*10.9*
16	17.1	...	17.1	...	16.6	16.5	16.4	16.2	15.9	15.6	15.1	14.5	13.8	*10.9*
17	17.1	...	17.1	...	16.6	16.5	16.4	16.2	15.9	15.6	15.1	14.5	13.8	*10.9*
18	17.1	...	17.1	...	16.6	16.5	16.4	16.2	15.9	15.6	15.1	14.5	13.8	*10.9*
19	16.7	...	15.1	...	14.5	14.3	14.2	14.0	13.8	13.6	13.3	12.8	12.3	11.7
20	17.1	...	17.1	...	16.6	16.5	16.4	16.2	15.9	15.6	15.1	14.5	13.8	13.0
21	17.1	...	17.1	...	16.6	16.5	16.4	16.2	15.9	15.6	15.1	14.5	13.8	13.0
22	17.1	...	17.1	...	16.6	16.5	16.4	16.2	15.9	15.6	15.1	14.5	13.8	13.0
23	17.1	...	17.1	...	16.6	16.5	16.4	16.2	15.9	15.6	15.1	14.5	13.8	13.0
24	24.3	...	24.2	...	23.5	23.4	23.3	22.9	22.6	22.1	21.4	20.6	19.6	*16.4*
25	24.3	...	24.2	...	23.5	23.4	23.3	22.9	22.6	22.1	21.4	20.6	19.6	*16.4*
26	25.7	...	25.7	...	24.9	24.7	24.6	24.3	23.9	23.4	22.7	21.8	20.8	*16.4*
27	25.7	...	25.7	...	24.9	24.7	24.6	24.3	23.9	23.4	...	...	...	...
28	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
29	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
30	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
31	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
32	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
33	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
34	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
35	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
36	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
37	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
38	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
39	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
40	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	*8.0*	*5.8*	*4.2*	*2.9*	*2.0*	*1.3*	...	...	...	...	...	...	...	...	...
2	*8.0*	*5.8*	*4.2*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...	...	...	...
3	*8.0*	*5.8*	*4.2*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...	...	...	...
4	*8.0*	*5.8*	*4.2*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...	...	...	...
5	*8.0*	*5.8*	*4.2*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...	...	...	...
6	*8.0*	*5.8*	*4.2*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	*8.0*	*5.8*	*4.2*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...	...	...	...
9	*8.0*	*5.8*	*4.2*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...	...	...	...
10	*8.0*	*5.8*	*4.2*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...	...	...	...
11	*8.0*	*5.8*	*4.2*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...	...	...	...
12	*8.0*	*5.8*	*4.2*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	*8.0*	*5.8*	*4.2*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...	...	...	...
15	*8.0*	*5.8*	*4.2*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...	...	...	...
16	*8.0*	*5.8*	*4.2*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...	...	...	...
17	*8.0*	*5.8*	*4.2*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...	...	...	...
18	*8.0*	*5.8*	*4.2*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...	...	...	...
19	*10.6*	*7.4*	*5.0*	*3.3*	*2.2*	*1.5*	...	...	...	...	...	...	...	...	...
20	*10.6*	*7.4*	*5.0*	*3.3*	*2.2*	*1.5*	...	...	...	...	...	...	...	...	...
21	*10.6*	*7.4*	*5.0*	*3.3*	*2.2*	*1.5*	...	...	...	...	...	...	...	...	...
22	*10.6*	*7.4*	*5.0*	*3.3*	*2.2*	*1.5*	...	...	...	...	...	...	...	...	...
23	*10.6*	*7.4*	*5.0*	*3.3*	*2.2*	*1.5*	...	...	...	...	...	...	...	...	...
24	*11.0*	*7.4*	*5.0*	*3.3*	*2.2*	*1.5*	...	...	...	...	...	...	...	...	...
25	*11.0*	*7.4*	*5.0*	*3.3*	*2.2*	*1.5*	...	...	...	...	...	...	...	...	...
26	*11.0*	*7.4*	*5.0*	*3.3*	*2.2*	*1.5*	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	17.8	16.3	*14.0*	*10.3*	*7.0*	*4.3*	...	...	...	...	...	...	...	...	...
29	17.8	16.3	*12.9*	*9.6*	*7.0*	*4.3*	...	...	...	...	...	...	...	...	...
30	17.8	16.3	*14.0*	*10.3*	*7.0*	*4.3*	...	...	...	...	...	...	...	...	...
31	17.8	16.3	*14.0*	*10.3*	*7.0*	*4.3*	...	...	...	...	...	...	...	...	...
32	17.8	16.3	*12.9*	*9.6*	*7.0*	*4.3*	...	...	...	...	...	...	...	...	...
33	17.8	16.3	*14.0*	*10.3*	*7.0*	*4.3*	...	...	...	...	...	...	...	...	...
34	17.8	16.3	*12.9*	*9.6*	*7.0*	*4.3*	...	...	...	...	...	...	...	...	...
35	17.8	16.3	*14.0*	*10.3*	*7.0*	*4.3*	...	...	...	...	...	...	...	...	...
36	17.8	16.3	*12.9*	*9.6*	*7.0*	*4.3*	...	...	...	...	...	...	...	...	...
37	17.8	16.3	*14.0*	*10.3*	*7.0*	*4.3*	...	...	...	...	...	...	...	...	...
38	17.8	16.3	*12.9*	*9.6*	*7.0*	*4.3*	...	...	...	...	...	...	...	...	...
39	17.8	16.3	*14.0*	*10.3*	*7.0*	*4.3*	...	...	...	...	...	...	...	...	...
40	17.8	16.3	*12.9*	*9.6*	*7.0*	*4.3*	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	11Cr–Ti	Plate	SA-240	TP409	S40900	...	...	7	1
2	11Cr–Ti	Wld. tube	SA-268	TP409	S40900	...	...	7	1
3	11Cr–Ti	Smls. tube	SA-268	TP409	S40900	...	...	7	1
4	12Cr	Bar	SA-479	403	S40300	A	...	6	1
5	12Cr	Bar	SA-479	403	S40300	1	...	6	1
6	12Cr–Al	Plate	SA-240	405	S40500	...	...	7	1
7	12Cr–Al	Plate	SA-240	405	S40500	...	...	7	1
8	12Cr–Al	Bar	SA-479	405	S40500	...	...	7	1
9	12Cr–Al	Smls. & wld. tube	SA-268	TP405	S40500	...	...	7	1
10	12Cr–Al	Wld. tube	SA-268	TP405	S40500	...	...	7	1
11	12Cr–Ti	Wld. tube	SA-268	...	S40800	...	...	7	1
12	12Cr–Ti	Smls. tube	SA-268	...	S40800	...	...	7	1
13	13Cr	Plate	SA-240	410S	S41008	...	...	7	1
14	13Cr	Smls. & wld. tube	SA-268	TP410	S41000	...	...	6	1
15	13Cr	Wld. tube	SA-268	TP410	S41000	...	...	6	1
16	13Cr	Plate	SA-240	410	S41000	...	...	6	1
17	13Cr	Forgings	SA-182	F6a	S41000	1	...	6	1
18	13Cr	Bar	SA-479	410	S41000	...	...	6	1
19	13Cr	Bar	SA-479	410	S41000	A	...	6	1
20	13Cr	Bar	SA-479	410	S41000	1	...	6	1
21	13Cr	Forgings	SA-182	F6a	S41000	2	...	6	3
22	13Cr	Castings	SA-217	CA15	J91150	...	...	6	3
23	13Cr	Cast pipe	SA-426	CPCA15	J91150	...	...	6	3
24	13Cr–4Ni	Castings	SA-487	CA6NM	J91540	A	...	6	4
25	13Cr–4Ni	Forgings	SA-182	F6NM	S41500	...	...	6	4
26	15Cr	Wld. tube	SA-268	TP429	S42900	...	...	6	2
27	15Cr	Smls. & wld. tube	SA-268	TP429	S42900	...	...	6	2
28	15Cr	Plate	SA-240	429	S42900	...	...	6	2
29	17Cr	Wld. tube	SA-268	TP430	S43000	...	...	7	2
30	17Cr	Smls. & wld. tube	SA-268	TP430	S43000	...	...	7	2
31	17Cr	Plate	SA-240	430	S43000	...	...	7	2
32	17Cr	Bar	SA-479	430	S43000	...	...	7	2
33	17Cr–4Ni–3Cu	Castings	SA-747	CB7Cu-1	J92180	...	...	...	...
34	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1150	...	...	...
35	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1150	...	...	...
36	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1150	...	...	...
37	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1100	...	...	...
38	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1100	...	...	...
39	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1100	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	55	30	NP	NP	800	CS-2	...
2	55	30	NP	NP	800	CS-2	G24
3	55	30	NP	NP	800	CS-2	...
4	70	40	NP	700	NP	...	...
5	70	40	NP	700	NP	...	...
6	60	25	700	NP	1000	CS-2	G32, T5
7	60	25	NP	700	NP	CS-1	G32
8	60	25	NP	700	1000	CS-2	G32, T5
9	60	30	700	NP	1000	CS-2	G32, T5, W13
10	60	30	700	NP	1000	CS-2	G3, G24, G32, T5
11	55	30	NP	NP	800	CS-2	G32
12	55	30	NP	NP	800	CS-2	G32
13	60	30	NP	700	1200	CS-2	T4
14	60	30	700	NP	1200	CS-2	T4, W13
15	60	30	700	NP	1200	CS-2	G3, G24, T4
16	65	30	NP	NP	1200	CS-2	T4
17	70	40	NP	700	1000	CS-2	T4
18	70	40	NP	NP	1000	CS-2	G22, T4
19	70	40	NP	700	NP	...	...
20	70	40	700	700	NP	...	G18
21	85	55	NP	700	1200	CS-3	T3
22	90	65	NP	700	1200	...	G1, G17, T3
23	90	65	NP	700	NP	...	G17
24	110	80	NP	700	800	...	G1, G17
25	115	90	NP	700	NP	CS-3	G17
26	60	35	700	NP	700	CS-2	G3, G32
27	60	35	700	NP	1200	CS-2	G32, T4, W13
28	65	30	NP	NP	1200	HA-2	G32, T4
29	60	35	700	NP	1200	CS-2	G3, G24, G32, T4
30	60	35	700	700	1200	CS-2	G32, T4, W12, W13
31	65	30	NP	NP	1200	HA-2	G32, T4
32	70	40	700	700	1000	HA-2	G18, G22, G32, T4
33	150	140	NP	NP	200	HA-2	G1, W1
34	135	105	NP	650	650	HA-7	G8, G31, G32, W1
35	135	105	NP	650	NP	HA-7	G8, W1
36	135	105	NP	650	NP	...	G8, W1
37	140	115	NP	650	650	...	G8, G31, G32, W1
38	140	115	NP	650	NP	...	G8, W1
39	140	115	NP	650	NP	...	G8, W1

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	15.7	...	15.7	...	15.4	14.5	13.9	13.6	13.6	13.5	13.4	12.9	...	...
2	13.4	...	13.4	...	13.1	12.3	11.8	11.6	11.5	11.5	11.4	11.0	...	...
3	15.7	...	15.7	...	15.4	14.5	13.9	13.6	13.6	13.5	13.4	12.9	...	...
4	20.0	...	20.0	...	19.6	19.3	19.0	18.5	18.1	17.7	...	...	...	...
5	20.0	...	20.0	...	19.6	19.3	19.0	18.5	18.1	17.7	...	...	...	...
6	16.7	...	15.3	...	14.8	14.5	14.3	14.0	13.8	13.5	13.1	12.6	12.0	11.3
7	16.7	...	15.3	...	14.8	14.5	14.3	14.0	13.8	13.5	...	...	...	...
8	16.7	...	15.3	...	14.8	14.5	14.3	14.0	13.8	13.5	13.1	12.6	12.0	11.3
9	17.1	...	17.1	...	16.8	16.5	16.3	15.9	15.6	15.2	14.7	14.1	13.4	12.6
10	14.6	...	14.6	...	14.3	14.0	13.8	13.5	13.2	12.9	12.5	12.0	11.4	10.7
11	13.4	...	13.4	...	13.1	12.9	12.7	12.4	12.1	11.8	11.4	11.0	...	...
12	15.7	...	15.7	...	15.4	15.1	14.9	14.5	14.3	13.9	13.5	12.9	...	...
13	17.1	...	17.1	...	16.8	16.5	16.3	15.9	15.6	15.2	14.7	14.1	13.4	*12.3*
14	17.1	...	17.1	...	16.8	16.5	16.3	15.9	15.6	15.2	14.7	14.1	13.4	*12.3*
15	14.6	...	14.6	...	14.3	14.0	13.8	13.5	13.2	12.9	12.5	12.0	11.4	*10.5*
16	18.6	...	18.4	...	17.8	17.4	17.2	16.8	16.6	16.2	15.7	15.1	14.4	*12.3*
17	20.0	...	20.0	...	19.6	19.3	19.0	18.5	18.1	17.7	17.1	16.4	15.6	*12.3*
18	20.0	...	20.0	...	19.6	19.3	19.0	18.5	18.1	17.7	17.1	16.4	15.6	*12.3*
19	20.0	...	20.0	...	19.6	19.3	19.0	18.5	18.1	17.7	...	...	...	...
20	20.0	...	20.0	...	19.6	19.3	19.0	18.5	18.1	17.7	...	...	...	...
21	24.3	...	24.3	...	23.8	23.4	23.0	22.5	22.0	21.5	20.8	19.9	*17.2*	*12.3*
22	25.7	...	25.7	...	25.2	24.8	24.4	23.8	23.3	22.7	22.0	21.1	*15.9*	*11.0*
23	25.7	...	25.7	...	25.2	24.8	24.4	23.8	23.3	22.7	...	...	...	...
24	31.4	...	31.4	31.3	30.8	30.1	29.4	28.8	28.4	27.9	27.4	26.7	...	...
25	32.9	...	32.9	...	32.9	32.5	31.3	30.0	29.4	28.7	...	...	...	...
26	14.6	...	14.6	...	14.3	14.0	13.8	13.5	13.2	12.9	...	...	...	...
27	17.1	...	17.1	...	16.8	16.5	16.3	15.9	15.6	15.2	14.7	14.1	13.4	*12.0*
28	18.6	...	18.4	...	17.8	17.4	17.2	16.8	16.6	16.2	15.7	15.1	14.4	*12.0*
29	14.6	...	14.6	...	14.3	14.0	13.8	13.5	13.2	12.9	12.5	12.0	11.4	*10.2*
30	17.1	...	17.1	...	16.8	16.5	16.3	15.9	15.6	15.2	14.7	14.1	13.4	*12.0*
31	18.6	...	18.4	...	17.8	17.4	17.2	16.8	16.6	16.2	15.7	15.1	14.4	*12.0*
32	20.0	...	20.0	...	19.6	19.3	19.0	18.5	18.1	17.7	17.1	16.4	15.6	*12.0*
33	32.0	...	32.0	...	...	...	...	...	...	...	...	...	...	...
34	38.6	...	38.6	...	38.6	37.5	36.8	36.2	35.9	...	...	...	...	...
35	38.6	...	38.6	...	38.6	37.5	36.8	36.2	35.9	...	...	...	...	...
36	38.6	...	38.6	...	38.6	37.5	36.8	36.2	35.9	...	...	...	...	...
37	40.0	...	40.0	...	40.0	38.9	38.1	37.5	37.2	...	...	...	...	...
38	40.0	...	40.0	...	40.0	38.9	38.1	37.5	37.2	...	...	...	...	...
39	40.0	...	40.0	...	40.0	38.9	38.1	37.5	37.2	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	*8.4*	*4.0*	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	*8.4*	*4.0*	...	...	...	...	...	...	...	...	...	...	...	...	...
9	*8.4*	*4.0*	...	...	...	...	...	...	...	...	...	...	...	...	...
10	*7.1*	*3.4*	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	*8.8*	*6.4*	*4.4*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...	...	...	...
14	*8.8*	*6.4*	*4.4*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...	...	...	...
15	*7.5*	*5.4*	*3.7*	*2.5*	*1.5*	*0.85*	...	...	...	...	...	...	...	...	...
16	*8.8*	*6.4*	*4.4*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...	...	...	...
17	*8.8*	*6.4*	...	...	...	...	...	...	...	...	...	...	...	...	...
18	*8.8*	*6.4*	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	*8.8*	*6.4*	*4.4*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...	...	...	...
22	*7.6*	*5.0*	*3.3*	*2.2*	*1.5*	*1.0*	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	*9.2*	*6.5*	*4.5*	*3.2*	*2.4*	*1.8*	...	...	...	...	...	...	...	...	...
28	*9.2*	*6.5*	*4.5*	*3.2*	*2.4*	*1.8*	...	...	...	...	...	...	...	...	...
29	*7.8*	*5.5*	*3.8*	*2.7*	*2.0*	*1.5*	...	...	...	...	...	...	...	...	...
30	*9.2*	*6.5*	*4.5*	*3.2*	*2.4*	*1.8*	...	...	...	...	...	...	...	...	...
31	*9.2*	*6.5*	*4.5*	*3.2*	*2.4*	*1.8*	...	...	...	...	...	...	...	...	...
32	*9.2*	*6.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1075	...	...	...
2	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1075	...	...	...
3	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1075	...	...	...
4	17Cr–4Ni–6Mn	Plate	SA-240	201-1	S20100	...	...	8	3
5	17Cr–4Ni–6Mn	Plate	SA-666	201-1	S20100	...	...	8	3
6	17Cr–4Ni–6Mn	Plate	SA-240	201-2	S20100	...	...	8	3
7	17Cr–4Ni–6Mn	Plate	SA-666	201-2	S20100	...	...	8	3
8	18Cr–2Mo	Plate	SA-240	...	S44400	...	...	7	2
9	18Cr–2Mo	Wld. tube	SA-268	...	S44400	...	...	7	2
10	18Cr–2Mo	Smls. tube	SA-268	...	S44400	...	...	7	2
11	18Cr–Ti	Wld. tube	SA-268	TP439	S43035	...	...	7	2
12	18Cr–Ti	Smls. tube	SA-268	TP439	S43035	...	...	7	2
13	18Cr–Ti	Wld. tube	SA-803	TP439	S43035	...	...	7	2
14	18Cr–Ti	Wld. pipe	SA-731	TP439	S43035	...	...	7	2
15	18Cr–Ti	Smls. pipe	SA-731	TP439	S43035	...	...	7	2
16	18Cr–Ti	Bar	SA-479	439	S43035	...	...	7	2
17	26Cr–3Ni–3Mo	Plate	SA-240	26-3-3	S44660	...	$\leq 2/10$	10K	1
18	26Cr–3Ni–3Mo	Smls. tube	SA-268	26-3-3	S44660	...	$\leq 2/10$	10K	1
19	26Cr–3Ni–3Mo	Wld. tube	SA-268	26-3-3	S44660	...	$\leq 2/10$	10K	1
20	26Cr–3Ni–3Mo	Wld. tube	SA-268	26-3-3	S44660	...	$\leq 2/10$	10K	1
21	26Cr–3Ni–3Mo	Wld. tube	SA-803	26-3-3	S44660	...	$\leq 2/10$	10K	1
22	26Cr–4Ni–Mo	Plate	SA-240	329	S32900	...	...	10H	1
23	26Cr–4Ni–Mo	Wld. tube	SA-789	...	S32900	...	...	10H	1
24	26Cr–4Ni–Mo	Smls. tube	SA-789	...	S32900	...	...	10H	1
25	26Cr–4Ni–Mo	Wld. pipe	SA-790	...	S32900	...	...	10H	1
26	26Cr–4Ni–Mo	Smls. pipe	SA-790	...	S32900	...	...	10H	1
27	26Cr–4Ni–Mo–N	Plate	SA-240	...	S32950	...	...	10H	1
28	26Cr–4Ni–Mo–N	Wld. tube	SA-789	...	S32950	...	...	10H	1
29	26Cr–4Ni–Mo–N	Smls. tube	SA-789	...	S32950	...	...	10H	1
30	26Cr–4Ni–Mo–N	Wld. pipe	SA-790	...	S32950	...	...	10H	1
31	26Cr–4Ni–Mo–N	Smls. pipe	SA-790	...	S32950	...	...	10H	1
32	27Cr	Smls. tube	SA-268	TP446-1	S44600	...	...	10I	1
33	27Cr–1Mo	Forgings	SA-182	FXM-27Cb	S44627	...	...	10I	1
34	27Cr–1Mo	Plate	SA-240	XM-27	S44627	...	...	10I	1
35	27Cr–1Mo	Wld. tube	SA-268	TPXM-27	S44627	...	...	10I	1
36	27Cr–1Mo	Smls. tube	SA-268	TPXM-27	S44627	...	...	10I	1
37	27Cr–1Mo	Bar	SA-479	XM-27	S44627	...	...	10I	1
38	27Cr–1Mo	Smls. pipe	SA-731	TPXM-27	S44627	...	...	10I	1
39	27Cr–1Mo	Wld. pipe	SA-731	TPXM-27	S44627	...	...	10I	1

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	145	125	NP	650	NP	...	G8, W1
2	145	125	NP	650	NP	...	G8, W1
3	145	125	NP	650	NP	...	G8, W1
4	95	38	NP	NP	300	CS-2	...
5	95	38	NP	NP	300	CS-2	...
6	95	45	NP	NP	300	CS-2	...
7	95	45	NP	NP	300	CS-2	...
8	60	40	NP	NP	650	CS-2	G32
9	60	40	NP	NP	650	CS-2	G24, G32
10	60	40	NP	NP	650	CS-2	G32
11	60	30	800	NP	800	CS-2	G24, G32
12	60	30	800	NP	800	CS-2	G32
13	60	30	NP	NP	600	CS-2	G24, G32
14	60	30	800	NP	NP	CS-2	G24, G32
15	60	30	800	NP	NP	CS-2	G32
16	70	40	NP	NP	1000	CS-2	G22, G32, T4
17	85	65	NP	NP	700	HA-5	G32, H5
18	85	65	NP	700	700	HA-5	G32, H5
19	85	65	NP	700	NP	HA-5	G32, H5, W12
20	85	65	NP	NP	700	HA-5	G24, G32, H5
21	85	65	NP	NP	600	HA-5	G24, G32, H5
22	90	70	NP	NP	500	CS-2	G32
23	90	70	NP	NP	500	CS-2	G24, G32
24	90	70	NP	NP	500	CS-2	G32
25	90	70	NP	NP	500	CS-2	G24, G32
26	90	70	NP	NP	500	CS-2	G32
27	100	70	NP	NP	600	HA-5	G32
28	100	70	NP	NP	600	HA-5	G24, G32
29	100	70	NP	NP	600	HA-5	G32
30	100	70	NP	NP	600	HA-5	G24, G32
31	100	70	NP	NP	600	HA-5	G32
32	70	40	700	NP	650	CS-2	G32
33	60	35	NP	NP	650	HA-2	G32
34	65	40	NP	650	650	HA-2	G32
35	65	40	NP	NP	650	HA-2	G24, G32
36	65	40	NP	650	650	HA-2	G32
37	65	40	NP	700	650	HA-2	G22, G32
38	65	40	NP	NP	650	HA-2	G32
39	65	40	NP	NP	650	HA-2	G24, G32

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	41.4	...	41.4	...	41.4	40.3	39.5	38.9	38.5	...	...	...	...	...
2	41.4	...	41.4	...	41.4	40.3	39.5	38.9	38.5	...	...	...	...	...
3	41.4	...	41.4	...	41.4	40.3	39.5	38.9	38.5	...	...	...	...	...
4	25.3	...	19.3	...	16.6	...	...	...	...	...	...	...	...	...
5	25.3	...	19.3	...	16.6	...	...	...	...	...	...	...	...	...
6	27.1	...	22.8	...	19.7	...	...	...	...	...	...	...	...	...
7	27.1	...	22.8	...	19.7	...	...	...	...	...	...	...	...	...
8	17.1	...	17.1	...	16.6	16.2	15.9	15.4	15.1	...	...	...	...	...
9	14.6	...	14.6	...	14.1	13.8	13.5	13.1	12.8	...	...	...	...	...
10	17.1	...	17.1	...	16.6	16.2	15.9	15.4	15.1	...	...	...	...	...
11	14.6	...	14.6	...	13.3	12.4	11.8	11.6	11.5	11.5	11.4	11.2	...	...
12	17.1	...	17.1	...	15.7	14.6	13.9	13.6	13.6	13.5	13.4	13.2	...	...
13	14.6	...	14.6	...	13.3	12.4	11.8	11.6	...	...	...	...	...	...
14	14.6	...	14.6	...	13.3	12.4	11.8	11.6	11.5	11.5	11.4	11.2	...	...
15	17.1	...	17.1	...	15.7	14.6	13.9	13.6	13.6	13.5	13.4	13.2	...	...
16	20.0	...	20.0	...	19.3	18.8	18.4	17.9	17.7	17.3	16.9	16.4	15.8	*12.2*
17	24.3	...	24.3	...	24.2	23.9	23.8	23.6	23.5	23.4	...	...	...	...
18	24.3	...	24.3	...	24.2	23.9	23.8	23.6	23.5	23.4	...	...	...	...
19	24.3	...	24.3	...	24.2	23.9	23.8	23.6	23.5	23.4	...	...	...	...
20	20.6	...	20.6	...	20.6	20.3	20.2	20.1	20.0	19.9	...	...	...	...
21	20.6	...	20.6	...	20.6	20.3	20.2	20.1	...	...	...	...	...	...
22	25.7	...	25.7	...	24.8	24.3	24.3	...	...	...	...	...	...	...
23	21.9	...	21.9	...	21.0	20.6	20.6	...	...	...	...	...	...	...
24	25.7	...	25.7	...	24.8	24.3	24.3	...	...	...	...	...	...	...
25	21.9	...	21.9	...	21.0	20.6	20.6	...	...	...	...	...	...	...
26	25.7	...	25.7	...	24.8	24.3	24.3	...	...	...	...	...	...	...
27	28.6	...	28.5	...	27.0	26.4	26.4	26.4	...	...	...	...	...	...
28	24.3	...	24.2	...	23.0	22.5	22.5	22.5	...	...	...	...	...	...
29	28.6	...	28.5	...	27.0	26.4	26.4	26.4	...	...	...	...	...	...
30	24.3	...	24.2	...	23.0	22.5	22.5	22.5	...	...	...	...	...	...
31	28.6	...	28.5	...	27.0	26.4	26.4	26.4	...	...	...	...	...	...
32	20.0	...	20.0	...	19.3	18.8	18.4	17.9	17.7	17.3	...	...	...	...
33	17.1	...	17.1	...	16.6	16.1	16.1	16.1	16.1	...	...	...	...	...
34	18.6	...	18.6	...	18.3	18.1	18.1	18.1	18.1	...	...	...	...	...
35	15.8	...	15.8	...	15.5	15.4	15.4	15.4	15.4	...	...	...	...	...
36	18.6	...	18.6	...	18.3	18.1	18.1	18.1	18.1	...	...	...	...	...
37	18.6	...	18.6	...	18.3	18.1	18.1	18.1	18.1	18.1	...	...	...	...
38	18.6	...	18.6	...	18.3	18.1	18.1	18.1	18.1	...	...	...	...	...
39	15.8	...	15.8	...	15.5	15.4	15.4	15.4	15.4	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	*9.2*	*6.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	27Cr–1Mo–Ti	Smls. pipe	SA-731	TPXM-33	S44626	...	...	10I	1
2	27Cr–1Mo–Ti	Wld. pipe	SA-731	TPXM-33	S44626	...	...	10I	1
3	27Cr–1Mo–Ti	Plate	SA-240	XM-33	S44626	...	...	10I	1
4	27Cr–1Mo–Ti	Smls. tube	SA-268	TPXM-33	S44626	...	...	10I	1
5	27Cr–1Mo–Ti	Wld. tube	SA-268	TPXM-33	S44626	...	...	10I	1
6	29Cr–4Mo	Bar	SA-479	...	S44700	...	...	10J	1
7	29Cr–4Mo	Plate	SA-240	...	S44700	...	...	10J	1
8	29Cr–4Mo	Smls. tube	SA-268	29-4	S44700	...	...	10J	1
9	29Cr–4Mo	Wld. tube	SA-268	29-4	S44700	...	...	10J	1
10	29Cr–4Mo–2Ni	Bar	SA-479	...	S44800	...	...	10K	1
11	29Cr–4Mo–2Ni	Plate	SA-240	...	S44800	...	...	10K	1
12	29Cr–4Mo–2Ni	Smls. tube	SA-268	29-4-2	S44800	...	...	10K	1
13	29Cr–4Mo–2Ni	Wld. tube	SA-268	29-4-2	S44800	...	...	10K	1
14	29Cr–4Mo–Ti	Smls. tube	SA-268	...	S44735	...	...	10J	1
15	29Cr–4Mo–Ti	Wld. tube	SA-268	...	S44735	...	...	10J	1
01 16	...	...	...	...	...	...	...	...	...
01 17	Mn–¼Mo	Forgings	SA-372	D	K14508	...	...	...	...
18	Mn–¼Mo–V	Castings	SA-487	2	J13005	A	...	10F	1
19	Mn–¼Mo–V	Castings	SA-487	2	J13005	B	...	10F	1
20	Mn–½Mo	Plate	SA-302	A	K12021	...	...	3	2
21	Mn–½Mo	Wld. pipe	SA-672	H75	K12021	...	...	3	2
22	Mn–½Mo	Plate	SA-302	B	K12022	...	...	3	3
23	Mn–½Mo	Plate	SA-533	A	K12521	1	...	3	3
24	Mn–½Mo	Plate	SA-533	A	K12521	2	...	3	3
25	Mn–½Mo	Plate	SA-533	A	K12521	3	...	11A	4
26	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	1	...	3	3
27	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	2	...	3	3
28	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	3	...	11A	4
29	Mn–½Mo–½Ni	Plate	SA-302	C	K12039	...	...	3	3
30	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	1	...	3	3
31	Mn–½Mo–½Ni	Wld. pipe	SA-672	H80	K12039	...	...	3	3
32	Mn–½Mo–½Ni	Wld. pipe	SA-672	J80	K12539	...	...	3	3
33	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	2	...	3	3
34	Mn–½Mo–½Ni	Wld. pipe	SA-672	J90	K12539	...	...	3	3
35	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	3	...	11A	4
36	Mn–½Mo–½Ni	Wld. pipe	SA-672	J100	K12539	...	...	11A	4

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	65	40	NP	NP	650	CS-2	G32	
2	65	40	NP	NP	650	CS-2	G24, G32	
3	68	45	NP	NP	650	HA-2	G32	
4	68	45	NP	NP	650	HA-2	G32	
5	68	45	NP	NP	650	CS-2	G24, G32	
6	70	55	NP	NP	600	CS-2	G22, G32	
7	80	60	NP	NP	600	CS-2	G32	
8	80	60	NP	NP	600	CS-2	G32	
9	80	60	NP	NP	600	CS-2	G24, G32	
10	70	55	NP	NP	600	CS-2	G22, G32	
11	80	60	NP	NP	600	CS-2	G32	
12	80	60	NP	NP	600	CS-2	G32	
13	80	60	NP	NP	600	CS-2	G24, G32	
14	75	60	NP	NP	600	CS-2	G32	
15	75	60	NP	NP	600	CS-2	G24, G32	
16	...	...	...	...	...	...	...	**01**
17	105	65	NP	650	650	CS-2	G25, W2, W11, W15	**01**
18	85	53	NP	700 (SPT)	650	CS-2	G1	
19	90	65	NP	NP	650	CS-2	G1	
20	75	45	1000	700	1000	CS-3	G11, S2, T3	
21	75	45	NP	700	NP	...	S6, W10, W12	
22	80	50	1000	700	1000	CS-3	G11, S2, T3	
23	80	50	NP	700	1000	CS-5	G23, T4	
24	90	70	NP	700	800	CS-5	...	
25	100	83	NP	700	NP	...	...	
26	80	50	NP	700	NP	CS-5	...	
27	90	70	NP	700	800	CS-5	...	
28	100	83	NP	700	750	CS-3	...	
29	80	50	1000	700	1000	CS-3	G11, S2, T3	
30	80	50	NP	700	800	CS-5	G23	
31	80	50	NP	700	NP	CS-3	G26, W10, W12	
32	80	50	NP	700	NP	CS-3	G26, W10, W12	
33	90	70	NP	700	800	CS-5	...	
34	90	70	NP	700	NP	...	G26, W10, W12	
35	100	83	NP	700	750	CS-3	...	
36	100	83	NP	700	NP	...	G26, W10, W12	

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	18.6	...	18.6	...	18.4	18.2	18.0	17.6	17.3	...	...	...	...	...
2	15.8	...	15.8	...	15.7	15.4	15.3	15.0	14.7	...	...	...	...	...
3	19.4	...	19.4	...	19.3	19.0	18.8	18.4	18.1	...	...	...	...	...
4	19.4	...	19.4	...	19.3	19.0	18.8	18.4	18.1	...	...	...	...	...
5	16.5	...	16.5	...	16.4	16.2	16.0	15.7	15.4	...	...	...	...	...
6	20.0	...	20.0	...	19.3	19.2	19.2	19.2	...	...	...	...	...	...
7	22.9	...	22.8	...	22.1	21.9	21.9	21.9	...	...	...	...	...	...
8	22.9	...	22.8	...	22.1	21.9	21.9	21.9	...	...	...	...	...	...
9	19.4	...	19.4	...	18.8	18.6	18.6	18.6	...	...	...	...	...	...
10	20.0	...	19.6	...	19.3	19.2	18.9	18.6	...	...	...	...	...	...
11	22.9	...	22.4	...	22.1	21.9	21.6	21.3	...	...	...	...	...	...
12	22.9	...	22.4	...	22.1	21.9	21.6	21.3	...	...	...	...	...	...
13	19.4	...	19.1	...	18.8	18.6	18.4	18.1	...	...	...	...	...	...
14	21.4	...	21.0	...	20.7	20.5	20.3	20.0	...	...	...	...	...	...
15	18.2	...	17.9	...	17.6	17.5	17.2	17.0	...	...	...	...	...	...
01 16	...	...	...	...	...	...	...	...	...	...	...	...	...	...
01 17	30.0	...	30.0	30.0	30.0	30.0	30.0	30.0	30.0	...	...	...	...	...
18	24.3	...	24.3	...	24.3	24.2	24.2	24.2	24.1	24.1	...	...	...	...
19	25.7	...	25.7	...	25.7	25.6	25.6	25.6	25.6	...	...	...	...	...
20	21.4	...	21.4	...	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	*20.0*	*13.7*
21	21.4	...	21.4	...	21.4	21.4	21.4	21.4	21.4	21.4	...	...	...	...
22	22.9	...	22.9	...	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	*20.0*	*13.7*
23	22.9	22.9	22.9	...	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.1	*13.3*
24	25.7	...	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	...	...
25	28.6	...	28.6	...	28.6	28.6	28.6	28.6	28.6	28.6	...	...	...	...
26	22.9	...	22.9	...	22.9	22.9	22.9	22.9	22.9	22.9	...	...	...	...
27	25.7	...	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	...	...
28	28.6	...	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	...	...	...
29	22.9	...	22.9	...	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	*20.0*	*13.7*
30	22.9	22.9	22.9	...	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	...	...
31	22.9	...	22.9	...	22.9	22.9	22.9	22.9	22.9	22.9	...	...	...	...
32	22.9	...	22.9	...	22.9	22.9	22.9	22.9	22.9	22.9	...	...	...	...
33	25.7	...	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	...	...
34	25.7	...	25.7	...	25.7	25.7	25.7	25.7	25.7	25.7	...	...	...	...
35	28.6	...	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	...	...	...
36	28.6	...	28.6	...	28.6	28.6	28.6	28.6	28.6	28.6	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	*10.0*	*6.3*	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
	1	Mn–½Mo–¾Ni	Plate	SA-302	D	K12054	...	...	3	3
	2	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	1	...	3	3
	3	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	2	...	3	3
	4	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	3	...	11A	4
	5	Mn–½Ni–V	Plate	SA-225	C	K12524	...	...	10A	1
	6	Mn–V	Castings	SA-487	1	J13002	A	...	10A	1
	7	Mn–V	Castings	SA-487	1	J13002	A	...	10A	1
	8	Mn–V	Castings	SA-487	1	J13002	B	...	10A	1
	9	1½Si–½Mo	Smls. pipe	SA-335	P15	K11578	...	...	3	1
	10	½Ni–½Cr–¼Mo–V	Castings	SA-487	4	J13047	A	...	10F	1
	11	½Ni–½Cr–¼Mo–V	Castings	SA-487	4	J13047	B	...	11A	3
	12	½Ni–½Cr–¼Mo–V	Castings	SA-487	4	J13047	E	...	11A	3
	13	½Ni–½Mo–V	Forgings	SA-541	3	K12045	1	...	3	3
01	14	½Ni–½Mo–V	Forgings	SA-541	3	K12045	2	...	3	3
	15	¾Ni–½Cr–½Mo–V	Forgings	SA-592	F	K11576	...	$2\frac{1}{2} < t \le 4$	11B	3
	16	¾Ni–½Cr–½Mo–V	Plate	SA-517	F	K11576	...	$\le 2\frac{1}{2}$	11B	3
	17	¾Ni–½Cr–½Mo–V	Forgings	SA-592	F	K11576	...	$\le 2\frac{1}{2}$	11B	3
	18	¾Ni–½Cu–Mo	Smls. & wld. tube	SA-423	2	K11540	...	...	4	2
	19	¾Ni–½Cu–Mo	Wld. tube	SA-423	2	K11540	...	...	4	2
	20	¾Ni–½Mo–⅓Cr–V	Forgings	SA-508	2	K12766	1	...	3	3
	21	¾Ni–½Mo–⅓Cr–V	Forgings	SA-541	2	K12765	1	...	3	3
01	22	¾Ni–½Mo–⅓Cr–V	Forgings	SA-508	2	K12766	2	...	3	3
01	23	¾Ni–½Mo–⅓Cr–V	Forgings	SA-541	2	K12765	2	...	3	3
	24	¾Ni–½Mo–Cr–V	Forgings	SA-508	3	K12042	1	...	3	3
01	25	¾Ni–½Mo–Cr–V	Forgings	SA-508	3	K12042	2	...	3	3
	26	¾Ni–1Mo–¾Cr	Castings	SA-217	WC5	J22000	...	...	4	1
	27	1Ni–½Cr–½Mo	Castings	SA-217	WC4	J12082	...	...	4	1
	28	1¼Ni–1Cr–½Mo	Plate	SA-517	P	K21650	...	$2\frac{1}{2} < t \le 4$	11B	8
	29	1¼Ni–1Cr–½Mo	Plate	SA-517	P	K21650	...	$\le 2\frac{1}{2}$	11B	8
	30	1½Ni	Forgings	SA-350	LF5	K13050	1	...	9A	1
	31	1½Ni	Forgings	SA-350	LF5	K13050	2	...	9A	1
	32	1¾Ni–¾Cr–Mo	Forgings	SA-372	L	K24055	...	...	...	...
	33	2Ni–1Cu	Forgings	SA-182	FR	K22035	...	...	9A	1
	34	2Ni–1Cu	Fittings	SA-234	WPR	K22035	...	...	9A	1
	35	2Ni–1Cu	Pipe	SA-333	9	K22035	...	...	9A	1
	36	2Ni–1Cu	Smls. pipe	SA-333	9	K22035	...	...	9A	1
	37	2Ni–1Cu	Wld. pipe	SA-333	9	K22035	...	...	9A	1

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	80	50	1000	700	1000	CS-3	G11, S2, T3	
2	80	50	NP	700	800	CS-5	G23	
3	90	70	NP	700	800	CS-5	...	
4	100	83	NP	700	NP	...	...	
5	105	70	NP	NP	700	CS-3	...	
6	85	55	NP	700 (SPT)	NP	...	...	
7	85	55	NP	NP	650	CS-3	G1	
8	90	65	NP	NP	650	CS-2	G1	
9	60	30	NP	NP	1000	CS-2	T3	
10	90	60	NP	650	650	CS-3	G1	
11	105	85	NP	NP	700	...	G1	
12	115	95	NP	NP	700	...	G1	
13	80	50	NP	700	800	CS-5	G23	
14	90	65	NP	700	700	CS-5	...	**01**
15	105	90	NP	650 (SPT)	650	CS-3	S7	
16	115	100	NP	650 (SPT)	650	HT-1	...	
17	115	100	NP	NP	650	HT-1	...	
18	60	37	650	NP	650	CS-2	W13	
19	60	37	650	NP	650	CS-2	G3, G24	
20	80	50	NP	700	800	CS-5	G23	
21	80	50	NP	700	800	CS-5	G23	
22	90	65	NP	700	700	CS-5	...	**01**
23	90	65	NP	700	700	CS-5	...	**01**
24	80	50	NP	700	800	CS-5	G23	
25	90	65	NP	700	700	CS-5	...	**01**
26	70	40	1100	700	1100	CS-3	G1, G17, G18, T4	
27	70	40	1000	700	1000	CS-3	G1, G17, G18, T4	
28	105	90	NP	700 (SPT)	650	CS-3	...	
29	115	100	NP	650 (SPT)	650	HT-1	...	
30	60	30	NP	NP	500	CS-2	...	
31	70	37.5	NP	NP	500	CS-2	...	
32	155	135	NP	NP	650	...	W2, W11	
33	63	46	NP	NP	100	CS-3	...	
34	63	46	NP	NP	100	CS-3	...	
35	63	46	NP	NP	100	CS-3	...	
36	63	46	NP	100	NP	CS-3	...	
37	63	46	NP	NP	100	CS-3	G24	

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	22.9	...	22.9	...	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	*20.0*	*13.7*
2	22.9	22.9	22.9	...	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	...	...
3	25.7	...	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	...	...
4	28.6	...	28.6	...	28.6	28.6	28.6	28.6	28.6	28.6	...	...	...	...
5	30.0	30.0	30.0	...	30.0	30.0	30.0	30.0	30.0	30.0	...	...	...	...
6	24.3	...	23.0	...	22.4	22.4	22.4	21.9	21.5	20.9	...	...	...	...
7	24.3	...	23.1	...	22.5	22.5	22.5	21.9	21.5	...	...	...	...	...
8	25.7	...	24.6	...	24.2	24.1	24.1	23.9	23.4	...	...	...	...	...
9	17.1	17.1	17.1	...	17.1	17.1	17.1	16.8	16.6	16.3	15.9	15.4	*13.8*	*12.5*
10	25.7	...	25.7	25.7	25.7	25.7	25.7	25.7	25.7	...	...	...	...	...
11	30.0	...	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	...	...	...	...
12	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	...	...	...	...
13	22.9	22.9	22.9	...	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	...	...
01 14	25.7	...	25.7	...	25.7	25.7	25.7	25.7	25.7	25.7	...	...	...	...
15	30.0	...	30.0	...	30.0	30.0	30.0	30.0	30.0	...	...	...	...	...
16	32.9	...	32.9	...	32.9	32.9	32.9	32.9	32.8	...	...	...	...	...
17	32.9	...	32.9	...	32.9	32.9	32.9	32.9	32.8	...	...	...	...	...
18	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	...	...	...	...	...
19	14.6	...	14.6	...	14.6	14.6	14.6	14.6	14.6	...	...	...	...	...
20	22.9	22.9	22.9	...	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	...	...
21	22.9	22.9	22.9	...	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	...	...
01 22	25.7	...	25.7	...	25.7	25.7	25.7	25.7	25.7	25.7	...	...	...	...
01 23	25.7	...	25.7	...	25.7	25.7	25.7	25.7	25.7	25.7	...	...	...	...
24	22.9	22.9	22.9	...	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	...	...
01 25	25.7	...	25.7	...	25.7	25.7	25.7	25.7	25.7	25.7	...	...	...	...
26	20.0	20.0	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.3	*16.3*
27	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.3	*15.0*
28	30.0	...	30.0	30.0	30.0	30.0	30.0	30.0	30.0	29.4	...	...	...	...
29	32.9	...	32.9	32.9	32.9	32.9	32.9	32.9	32.8	...	...	...	...	...
30	17.1	...	16.5	...	15.7	15.3	15.3	...	...	...	...	...	...	...
31	20.0	...	19.2	...	18.3	17.8	17.8	...	...	...	...	...	...	...
32	44.3	...	44.3	...	44.3	44.3	44.3	44.1	42.9	...	...	...	...	...
33	18.1	...	...	...	...	...	...	...	...	...	...	...	...	...
34	18.1	...	...	...	...	...	...	...	...	...	...	...	...	...
35	18.1	...	...	...	...	...	...	...	...	...	...	...	...	...
36	17.9	...	...	...	...	...	...	...	...	...	...	...	...	...
37	15.3	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	*10.0*	*6.3*	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
26	*11.0*	*6.9*	*4.6*	*2.8*	...	...	...	...	...	...	...	...	...	...	...	
27	*9.2*	*5.9*	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	2Ni–1Cu	Tube	SA-334	9	K22035	...	...	9A	1
2	2Ni–1Cu	Forgings	SA-350	LF9	K22036	...	...	9A	1
3	2Ni–1Cu	Smls. & wld. fittings	SA-420	WPL9	K22035	...	...	9A	1
4	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	1	...	...	...
5	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	2	...	...	...
6	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	3	...	...	...
7	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	4	...	...	...
8	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	5	...	...	...
9	2½Ni	Pipe	SA-333	7	K21903	...	...	9A	1
10	2½Ni	Wld. pipe	SA-333	7	K21903	...	...	9A	1
11	2½Ni	Tube	SA-334	7	K21903	...	...	9A	1
12	2½Ni	Tube	SA-334	7	K21903	...	...	9A	1
13	2½Ni	Plate	SA-203	A	K21703	...	...	9A	1
14	2½Ni	Plate	SA-203	B	K22103	...	...	9A	1
15	2½Ni	Castings	SA-352	LC2	J22500	...	...	9A	1
16	2¾Ni–1½Cr–½Mo	Plate	SA-543	C	...	3	...	11A	5
17	2¾Ni–1½Cr–½Mo	Plate	SA-543	C	...	1	...	11A	5
18	2¾Ni–1½Cr–½Mo	Plate	SA-543	C	...	2	...	11A	5
19	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	1	...	...	...
20	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	2	...	...	...
21	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	3	...	...	...
22	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	4	...	...	...
23	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	5	...	...	...
24	3Ni–1¾Cr–½Mo	Plate	SA-543	B	K42339	3	...	11A	5
25	3Ni–1¾Cr–½Mo	Plate	SA-543	B	K42339	1	...	11A	5
26	3Ni–1¾Cr–½Mo	Forgings	SA-372	M	...	A	...	...	...
27	3Ni–1¾Cr–½Mo	Plate	SA-543	B	K42339	2	...	11A	5
28	3Ni–1¾Cr–½Mo	Forgings	SA-372	M	...	B	...	...	...
29	3½Ni	Pipe	SA-333	3	K31918	...	...	9B	1
30	3½Ni	Wld. pipe	SA-333	3	K31918	...	...	9B	1
31	3½Ni	Tube	SA-334	3	K31918	...	...	9B	1
32	3½Ni	Wld. tube	SA-334	3	K31918	...	...	9B	1
33	3½Ni	Fittings	SA-420	WPL3	...	...	...	9B	1
34	3½Ni	Plate	SA-203	D	K31718	...	...	9B	1
35	3½Ni	Forgings	SA-350	LF3	K32025	...	...	9B	1
36	3½Ni	Forgings	SA-765	III	K32026	...	...	9B	1

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	63	46	NP	NP	100	CS-3	...
2	63	46	NP	NP	100	CS-3	...
3	63	46	NP	100	100	CS-3	...
4	115	100	NP	700 (SPT)	NP	...	W1
5	135	120	NP	700 (SPT)	NP	...	W1
6	155	140	NP	700 (SPT)	NP	...	W1
7	175	160	NP	700 (SPT)	NP	...	W1
8	190	180	NP	700 (SPT)	NP	...	W1
9	65	35	NP	NP	650	CS-2	...
10	65	35	NP	NP	650	CS-2	G24
11	65	35	NP	NP	650	CS-2	...
12	65	35	NP	NP	650	CS-2	G24
13	65	37	NP	700	1000	CS-2	T2
14	70	40	NP	650	1000	CS-3	S1, T2
15	70	40	NP	100	650	CS-3	G1
16	90	70	NP	NP	650	CS-2	...
17	105	85	NP	NP	650	CS-2	...
18	115	100	NP	NP	650	HT-2	...
19	115	100	NP	700 (SPT)	NP	...	W1
20	135	120	NP	700 (SPT)	NP	...	W1
21	155	140	NP	700 (SPT)	NP	...	W1
22	175	160	NP	700 (SPT)	NP	...	W1
23	190	180	NP	700 (SPT)	NP	...	W1
24	90	70	NP	NP	650	CS-2	...
25	105	85	NP	NP	650	CS-2	...
26	105	85	NP	NP	650	...	W2, W11
27	115	100	NP	NP	650	CS-2	...
28	120	100	NP	NP	650	...	W2, W11
29	65	35	NP	NP	650	CS-2	...
30	65	35	NP	NP	650	CS-2	G24
31	65	35	NP	NP	650	CS-2	...
32	65	35	NP	NP	650	CS-2	G24
33	65	35	NP	NP	650	CS-3	...
34	65	37	NP	700	1000	CS-2	T2
35	70	37.5	NP	650	650	CS-3	...
36	70	37.5	NP	NP	650	CS-3	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	18.1	...	...	...	...	...	...	...	...	...	...	...	...	...
2	18.1	...	...	...	...	...	...	...	...	...	...	...	...	...
3	18.1	...	...	...	...	...	...	...	...	...	...	...	...	...
4	32.9	...	32.9	...	32.9	32.9	32.9	32.9	32.4	31.6	...	...	...	...
5	38.6	...	38.6	...	38.6	38.6	38.6	38.6	38.0	37.1	...	...	...	...
6	44.3	...	44.3	...	44.3	44.3	44.3	44.3	43.6	42.6	...	...	...	...
7	50.0	...	50.0	...	50.0	50.0	50.0	50.0	49.2	48.0	...	...	...	...
8	54.3	...	54.3	...	54.3	54.3	54.3	54.3	53.5	52.2	...	...	...	...
9	18.6	18.6	18.6	...	18.6	18.6	18.6	17.5	16.7	...	...	...	...	...
10	15.8	...	15.8	...	15.8	15.8	15.8	14.9	14.2	...	...	...	...	...
11	18.6	18.6	18.6	...	18.6	18.6	18.6	17.5	16.7	...	...	...	...	...
12	15.8	15.8	15.8	...	15.8	15.8	15.8	14.9	14.2	...	...	...	...	...
13	18.6	18.6	18.6	...	18.6	18.6	18.6	18.5	17.6	16.6	*13.9*	*11.4*	*9.0*	*6.5*
14	20.0	20.0	20.0	...	20.0	20.0	20.0	20.0	19.0	18.0	*14.8*	*12.0*	*9.3*	*6.5*
15	20.0	20.0	20.0	...	20.0	20.0	20.0	20.0	19.0	...	...	...	...	...
16	25.7	...	25.7	25.7	25.7	25.5	25.3	25.0	24.6	...	...	...	...	...
17	30.0	...	30.0	30.0	30.0	29.7	29.5	29.1	28.7	...	...	...	...	...
18	32.9	...	32.9	32.9	32.9	32.5	32.3	31.9	31.5	...	...	...	...	...
19	32.9	...	32.9	...	32.9	32.9	32.9	32.9	32.4	31.6	...	...	...	...
20	38.6	...	38.6	...	38.6	38.6	38.6	38.6	38.0	37.1	...	...	...	...
21	44.3	...	44.3	...	44.3	44.3	44.3	44.3	43.6	42.6	...	...	...	...
22	50.0	...	50.0	...	50.0	50.0	50.0	50.0	49.2	48.0	...	...	...	...
23	54.3	...	54.3	...	54.3	54.3	54.3	54.3	53.5	52.2	...	...	...	...
24	25.7	...	25.7	25.7	25.7	25.5	25.3	25.0	24.6	...	...	...	...	...
25	30.0	...	30.0	30.0	30.0	29.7	29.5	29.1	28.7	...	...	...	...	...
26	30.0	...	30.0	30.0	30.0	29.7	29.5	29.1	28.7	...	...	...	...	...
27	32.9	...	32.9	32.9	32.9	32.5	32.3	31.9	31.5	...	...	...	...	...
28	34.3	...	34.3	34.3	34.3	33.9	33.7	33.3	32.9	...	...	...	...	...
29	18.6	18.6	18.6	...	18.6	18.6	18.6	17.5	16.7	...	...	...	...	...
30	15.8	...	15.8	...	15.8	15.8	15.8	14.9	14.2	...	...	...	...	...
31	18.6	18.6	18.6	...	18.6	18.6	18.6	17.5	16.7	...	...	...	...	...
32	15.8	15.8	15.8	...	15.8	15.8	15.8	14.9	14.2	...	...	...	...	...
33	18.6	18.6	18.6	...	18.6	18.6	18.6	17.5	16.7	...	...	...	...	...
34	18.6	18.6	18.6	...	18.6	18.6	18.6	18.5	17.6	16.6	*13.9*	*11.4*	*9.0*	*6.5*
35	20.0	...	20.0	...	20.0	20.0	20.0	18.8	17.9	...	...	...	...	...
36	20.0	20.0	20.0	...	20.0	20.0	20.0	18.8	17.9	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	*4.5*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
14	*4.5*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	*4.5*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
	1	3½Ni	Plate	SA-203	E	K32018	...	...	9B	1
	2	3½Ni	Plate	SA-203	E	K32018	...	...	9B	1
	3	3½Ni	Castings	SA-352	LC3	J31550	...	...	9B	1
	4	3½Ni	Plate	SA-203	F	...	...	> 2	9B	1
	5	3½Ni	Plate	SA-203	F	...	...	≤ 2	9B	1
	6	3½Ni–1¾Cr–½Mo–V	Forgings	SA-508	4N	K22375	3	...	3	3
	7	3½Ni–1¾Cr–½Mo–V	Forgings	SA-508	4N	K22375	1	...	11A	5
	8	3½Ni–1¾Cr–½Mo–V	Forgings	SA-508	4N	K22375	2	...	11A	5
	9	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	1	...	...	...
	10	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	2	...	...	...
	11	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	3	...	...	...
	12	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	4	...	...	...
	13	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	5	...	...	...
	14	5Ni–¼Mo	Plate	SA-645	...	K41583	...	...	11A	2
01	15	8Ni	Forgings	SA-522	II	K71340	...	...	11A	1
01	16	8Ni	Plate	SA-553	II	K71340	...	...	11A	1
01	17	8Ni	Plate	SA-553	II	K71340	...	...	11A	1
01	18	9Ni	Smls. & wld. pipe	SA-333	8	K81340	...	...	11A	1
01	19	9Ni	Smls. & wld. pipe	SA-333	8	K81340	...	...	11A	1
01	20	9Ni	Smls. pipe	SA-333	8	K81340	...	...	11A	1
01	21	9Ni	Smls. pipe	SA-333	8	K81340	...	...	11A	1
01	22	9Ni	Wld. pipe	SA-333	8	K81340	...	...	11A	1
01	23	9Ni	Wld. tube	SA-334	8	K81340	...	...	11A	1
01	24	9Ni	Smls. & wld. tube	SA-334	8	K81340	...	...	11A	1
01	25	9Ni	Smls. tube	SA-334	8	K81340	...	...	11A	1
01	26	9Ni	Smls. tube	SA-334	8	K81340	...	...	11A	1
01	27	9Ni	Wld. tube	SA-334	8	K81340	...	...	11A	1
01	28	9Ni	Plate	SA-353	...	K81340	...	...	11A	1
01	29	9Ni	Plate	SA-353	...	K81340	...	...	11A	1
01	30	9Ni	Plate	SA-353	...	K81340	...	...	11A	1
01	31	9Ni	Smls. & wld. fittings	SA-420	WPL8	K81340	...	...	11A	1
01	32	9Ni	Smls. & wld. fittings	SA-420	WPL8	K81340	...	...	11A	1
01	33	9Ni	Forgings	SA-522	I	K81340	...	...	11A	1
01	34	9Ni	Forgings	SA-522	I	K81340	...	...	11A	1
01	35	9Ni	Plate	SA-553	I	K81340	...	...	11A	1
01	36	9Ni	Plate	SA-553	I	K81340	...	...	11A	1
	37	25Ni–15Cr–2Ti	Bar	SA-638	660	S66286	...	...	...	...
01	38	29Ni–20Cr–3Cu–2Mo	Castings	SA-351	CN7M	J95150	...	...	45	...
01	39	29Ni–20Cr–3Cu–2Mo	Castings	SA-351	CN7M	J95150	...	...	45	...

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	70	40	NP	300 (SPT)	NP	CS-3	S1	
2	70	40	NP	650	1000	CS-3	T2	
3	70	40	NP	100	650	CS-3	G1	
4	75	50	NP	NP	650	CS-3	...	
5	80	55	NP	NP	650	CS-3	...	
6	90	70	NP	NP	650	CS-2	...	
7	105	85	NP	600 (SPT)	650	CS-2	...	
8	115	100	NP	NP	650	HT-2	...	
9	115	100	NP	700 (SPT)	NP	...	W1	
10	135	120	NP	700 (SPT)	NP	...	W1	
11	155	140	NP	700 (SPT)	NP	...	W1	
12	175	160	NP	700 (SPT)	NP	...	W1	
13	190	180	NP	700 (SPT)	NP	...	W1	
14	95	65	NP	NP	250	CS-3	...	
15	100	75	NP	200 (Cl. 3 only)	NP	...	G41, W5	**01**
16	100	85	NP	200 (Cl. 3 only)	250	CS-3	G41, W5	**01**
17	100	85	NP	200 (Cl. 3 only)	250	CS-3	G41, W4	**01**
18	100	75	NP	200 (Cl. 3 only)	NP	...	G41, W12	**01**
19	100	75	NP	200 (Cl. 3 only)	NP	...	G41, W5, W12	**01**
20	100	75	NP	NP	250	CS-3	G41, W4	**01**
21	100	75	NP	NP	250	CS-3	G41, W5	**01**
22	100	75	NP	NP	250	CS-3	G24, G41, W3	**01**
23	100	75	NP	200 (Cl. 3 only)	NP	...	G41, W12	**01**
24	100	75	NP	200 (Cl. 3 only)	NP	...	G41, W5, W12	**01**
25	100	75	NP	NP	250	CS-3	G41, W4	**01**
26	100	75	NP	NP	250	CS-3	G41, W5	**01**
27	100	75	NP	NP	250	CS-3	G24, G41, W3	**01**
28	100	75	NP	200 (Cl. 3 only)	250	CS-3	G41, W4	**01**
29	100	75	NP	NP	250	CS-3	G41, W5	**01**
30	100	75	NP	200 (Cl. 3 only)	NP	...	G41, W5	**01**
31	100	75	NP	NP	250	CS-3	G41, W4	**01**
32	100	75	NP	NP	250	CS-3	G41, W3	**01**
33	100	75	NP	200 (Cl. 3 only)	250	HT-2	G41, S8, W4	**01**
34	100	75	NP	NP	250	HT-2	G41, S8, W5	**01**
35	100	85	NP	200 (Cl. 3 only)	250	CS-3	G41, W4	**01**
36	100	85	NP	200 (Cl. 3 only)	250	CS-3	G41, W5	**01**
37	130	85	NP	700	NP	...	G9, G28, W1	
38	62	25	600	600 (Cl. 3 only)	600	...	G1, G5	**01**
39	62	25	600	NP	600	...	G1	**01**

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
		–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
	1	20.0	...	20.0	...	20.0	...	...	...	...	...	...	...	...	...
	2	20.0	...	20.0	...	20.0	20.0	20.0	20.0	19.0	18.0	*14.8*	*12.0*	*9.3*	*6.5*
	3	20.0	20.0	20.0	...	20.0	20.0	20.0	20.0	19.0	...	...	...	...	...
	4	21.4	21.4	21.4	...	21.4	21.4	21.4	21.4	20.5	...	...	...	...	...
	5	22.9	22.9	22.9	...	22.9	22.9	22.9	22.9	20.5	...	...	...	...	...
	6	25.7	...	25.7	25.7	25.7	25.5	25.3	25.0	24.6	...	...	...	...	...
	7	30.0	...	30.0	30.0	30.0	29.7	29.5	29.1	28.7	...	...	...	...	...
	8	32.9	...	32.9	32.9	32.9	32.5	32.3	31.9	31.5	...	...	...	...	...
	9	32.9	...	32.9	...	32.9	32.9	32.9	32.9	32.4	31.6	...	...	...	...
	10	38.6	...	38.6	...	38.6	38.6	38.6	38.6	38.0	37.1	...	...	...	...
	11	44.3	...	44.3	...	44.3	44.3	44.3	44.3	43.6	42.6	...	...	...	...
	12	50.0	...	50.0	...	50.0	50.0	50.0	50.0	49.2	48.0	...	...	...	...
	13	54.3	...	54.3	...	54.3	54.3	54.3	54.3	53.5	52.2	...	...	...	...
	14	27.1	...	27.1	26.6	...	...	...	...	...	...	...	...	...	...
01	15	27.1	27.1	25.4	...	...	...	...	...	...	...	...	...	...	...
01	16	27.1	27.1	25.4	24.6	...	...	...	...	...	...	...	...	...	...
01	17	28.6	28.6	26.7	25.9	...	...	...	...	...	...	...	...	...	...
01	18	28.6	28.6	26.7	...	...	...	...	...	...	...	...	...	...	...
01	19	27.1	27.1	25.4	...	...	...	...	...	...	...	...	...	...	...
01	20	28.6	28.6	26.7	25.9	...	...	...	...	...	...	...	...	...	...
01	21	27.1	27.1	25.4	24.6	...	...	...	...	...	...	...	...	...	...
01	22	24.3	24.3	22.7	22.1	...	...	...	...	...	...	...	...	...	...
01	23	28.6	28.6	26.7	...	...	...	...	...	...	...	...	...	...	...
01	24	27.1	27.1	25.4	...	...	...	...	...	...	...	...	...	...	...
01	25	28.6	28.6	26.7	25.9	...	...	...	...	...	...	...	...	...	...
01	26	27.1	27.1	25.4	24.6	...	...	...	...	...	...	...	...	...	...
01	27	24.3	24.3	22.7	22.1	...	...	...	...	...	...	...	...	...	...
01	28	28.6	28.6	26.7	25.9	...	...	...	...	...	...	...	...	...	...
01	29	27.1	27.1	25.4	24.6	...	...	...	...	...	...	...	...	...	...
01	30	27.1	27.1	25.4	...	...	...	...	...	...	...	...	...	...	...
01	31	28.6	28.6	26.7	25.9	...	...	...	...	...	...	...	...	...	...
01	32	27.1	27.1	25.4	24.6	...	...	...	...	...	...	...	...	...	...
01	33	28.6	28.6	26.7	25.9	...	...	...	...	...	...	...	...	...	...
01	34	27.1	27.1	25.4	24.6	...	...	...	...	...	...	...	...	...	...
01	35	28.6	28.6	26.7	25.9	...	...	...	...	...	...	...	...	...	...
01	36	27.1	27.1	25.4	24.6	...	...	...	...	...	...	...	...	...	...
	37	37.1	...	37.1	...	37.1	37.1	36.5	35.8	35.4	35.0	...	...	...	...
01	38	16.7	...	16.0	...	13.6	12.8	12.1	11.6	...	...	...	...	...	...
01	39	16.7	...	14.4	...	12.9	11.8	10.8	10.0	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	*4.5*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
	1	16Cr–9Mn–2Ni–N	Plate	SA-240	204	S20400	...	...	8	3
	2	16Cr–9Mn–2Ni–N	Plate	SA-240	204	S20400	...	...	8	3
01	3	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...	> 5	8	1
01	4	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...	> 5	8	1
01	5	16Cr–12Ni–2Mo	Forgings	SA-336	F316L	S31603	...	...	8	1
01	6	16Cr–12Ni–2Mo	Forgings	SA-336	F316L	S31603	...	...	8	1
01	7	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...	≤ 5	8	1
01	8	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...	≤ 5	8	1
01	9	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316L	S31603	...	...	8	1
01	10	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316L	S31603	...	...	8	1
01	11	16Cr–12Ni–2Mo	Plate	SA-240	316L	S31603	...	...	8	1
01	12	16Cr–12Ni–2Mo	Plate	SA-240	316L	S31603	...	...	8	1
	13	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316L	S31603	...	...	8	1
01	14	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316L	S31603	...	...	8	1
01	15	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316L	S31603	...	...	8	1
01	16	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316L	S31603	...	...	8	1
01	17	16Cr–12Ni–2Mo	Smls. pipe	SA-312	TP316L	S31603	...	...	8	1
01	18	16Cr–12Ni–2Mo	Wld. pipe	SA-312	TP316L	S31603	...	...	8	1
01	19	16Cr–12Ni–2Mo	Wld. pipe	SA-312	TP316L	S31603	...	...	8	1
	20	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316L	S31603	1	...	8	1
	21	16Cr–12Ni–2Mo	Smls. & wld. fittings	SA-403	316L	S31603	...	...	8	1
	22	16Cr–12Ni–2Mo	Wld. pipe	SA-409	TP316L	S31603	...	...	8	1
01	23	16Cr–12Ni–2Mo	Bar	SA-479	316L	S31603	...	...	8	1
01	24	16Cr–12Ni–2Mo	Bar	SA-479	316L	S31603	...	...	8	1
	25	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316L	S31603	...	...	8	1
	26	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316L	S31603	...	...	8	1
	27	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316L	S31603	...	...	8	1
	28	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316L	S31603	...	...	8	1
	29	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316L	S31603	...	...	8	1
	30	16Cr–12Ni–2Mo	Castings	SA-351	CF3M	J92800	...	...	8	1
	31	16Cr–12Ni–2Mo	Castings	SA-351	CF3M	J92800	...	...	8	1
	32	16Cr–12Ni–2Mo	Cast pipe	SA-451	CPF3M	J92800	...	...	8	1
	33	16Cr–12Ni–2Mo	Castings	SA-351	CF8M	J92900	...	...	8	1
	34	16Cr–12Ni–2Mo	Castings	SA-351	CF8M	J92900	...	...	8	1
	35	16Cr–12Ni–2Mo	Cast pipe	SA-451	CPF8M	J92900	...	...	8	1
	36	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...	> 5	8	1
	37	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...	> 5	8	1
	38	16Cr–12Ni–2Mo	Forgings	SA-336	F316	S31600	...	...	8	1
	39	16Cr–12Ni–2Mo	Forgings	SA-336	F316	S31600	...	...	8	1
	40	16Cr–12Ni–2Mo	Forged pipe	SA-430	FP316	S31600	...	...	8	1
	41	16Cr–12Ni–2Mo	Forged pipe	SA-430	FP316	S31600	...	...	8	1

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	95	48	NP	NP	900	HA-1	G5	
2	95	48	NP	NP	900	HA-1	...	
3	65	25	850	800	850	HA-4	G5, G42	**01**
4	65	25	850	NP	850	HA-4	G42	**01**
5	65	25	850	800	850	HA-4	G5, G42	**01**
6	65	25	850	NP	850	HA-4	G42	**01**
7	70	25	850	800	850	HA-4	G5, G42	**01**
8	70	25	850	NP	850	HA-4	G42	**01**
9	70	25	850	800	850	HA-4	G5, G42	**01**
10	70	25	850	NP	850	HA-4	G42	**01**
11	70	25	850	800	850	HA-4	G5, G42	**01**
12	70	25	850	NP	850	HA-4	G42	**01**
13	70	25	NP	800	NP	HA-4	G5, W12	
14	70	25	850	NP	850	HA-4	G5, G24, G42	**01**
15	70	25	850	NP	850	HA-4	G24, G42	**01**
16	70	25	850	800	850	HA-4	G5, G42, W12	**01**
17	70	25	850	NP	850	HA-4	G42	**01**
18	70	25	850	NP	850	HA-4	G5, G24, G42	**01**
19	70	25	850	NP	850	HA-4	G24, G42	**01**
20	70	25	NP	800	NP	...	G5	
21	70	25	NP	800	850	HA-4	G5, W12, W14	
22	70	25	NP	800	NP	HA-4	G5	
23	70	25	850	800	850	HA-4	G5, G22, G42	**01**
24	70	25	850	NP	850	HA-4	G22, G42	**01**
25	70	25	NP	800	NP	...	G5, W12	
26	70	25	NP	NP	850	HA-4	G5, G24	
27	70	25	NP	NP	850	HA-4	G24	
28	70	25	NP	800	NP	HA-4	G5, W12	
29	70	25	NP	800	NP	HA-4	G5, W12	
30	70	30	NP	800	850	HA-4	G1, G5, G16, G17, G32	
31	70	30	NP	NP	850	HA-4	G1, G32	
32	70	30	NP	800	NP	...	G5, G16, G17, G32	
33	70	30	1500	800	1500	HA-2	G1, G5, G12, G16, G17, G18, G32, H1, T6	
34	70	30	1500	NP	1500	HA-2	G1, G12, G18, G32, H1, T8	
35	70	30	NP	800	NP	...	G5, G16, G17, G32	
36	70	30	1500	800	1500	HA-2	G5, G12, G18, T8	
37	70	30	1500	NP	1500	HA-2	G12, G18, T9	
38	70	30	1500	800	1500	HA-2	G5, G12, G18, T8	
39	70	30	1500	NP	1500	HA-2	G12, G18, T9	
40	70	30	1500	800	1500	HA-2	G5, G12, G18, H1, T8	
41	70	30	1500	NP	1500	HA-2	G12, G18, H1, T9	

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
		–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
	1	27.1	...	23.6	...	20.6	18.9	18.1	17.9	17.9	17.9	17.8	17.7	17.4	16.9
	2	27.1	...	23.6	...	20.3	17.9	16.5	15.8	15.6	15.5	15.3	15.1	14.8	14.3
01	3	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	12.7	...
01	4	16.7	...	14.2	...	12.7	11.7	10.9	10.4	10.2	10.0	9.8	9.6	9.4	...
01	5	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	12.7	...
01	6	16.7	...	14.2	...	12.7	11.7	10.9	10.4	10.2	10.0	9.8	9.6	9.4	...
01	7	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	12.7	...
01	8	16.7	...	14.2	...	12.7	11.7	10.9	10.4	10.2	10.0	9.8	9.6	9.4	...
01	9	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	12.7	...
01	10	16.7	...	14.2	...	12.7	11.7	10.9	10.4	10.2	10.0	9.8	9.6	9.4	...
01	11	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	12.7	...
01	12	16.7	...	14.2	...	12.7	11.7	10.9	10.4	10.2	10.0	9.8	9.6	9.4	...
	13	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
01	14	14.2	...	14.2	...	14.2	13.4	12.5	11.9	11.7	11.4	11.2	11.0	10.8	...
01	15	14.2	...	12.1	...	10.8	9.9	9.3	8.8	8.7	8.5	8.3	8.1	8.0	...
01	16	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	12.7	...
01	17	16.7	...	14.2	...	12.7	11.7	10.9	10.4	10.2	10.0	9.8	9.6	9.4	...
01	18	14.2	...	14.2	...	14.2	13.4	12.5	11.9	11.7	11.4	11.2	11.0	10.8	...
01	19	14.2	...	12.1	...	10.8	9.9	9.3	8.8	8.7	8.5	8.3	8.1	8.0	...
	20	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
	21	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	12.7	...
	22	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
01	23	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	12.7	...
01	24	16.7	...	14.2	...	12.7	11.7	10.9	10.4	10.2	10.0	9.8	9.6	9.4	...
	25	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
	26	14.2	...	14.2	...	14.2	13.4	12.5	11.9	11.7	11.4	11.2	11.0	10.8	...
	27	14.2	...	12.1	...	10.8	9.9	9.3	8.8	8.7	8.5	8.3	8.1	8.0	...
	28	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
	29	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
	30	20.0	...	20.0	...	19.4	19.2	17.9	17.0	16.6	16.3	16.0	15.8	15.7	...
	31	20.0	...	17.2	...	15.5	14.2	13.3	12.6	12.3	12.1	11.9	11.7	11.6	...
	32	20.0	...	20.0	...	19.4	19.2	17.9	17.0	16.6	16.3	16.1	15.8	...	...
	33	20.0	...	20.0	...	19.4	19.2	17.9	17.0	16.6	16.3	16.0	15.8	15.7	15.5
	34	20.0	...	17.2	...	15.5	14.2	13.3	12.6	12.3	12.1	11.9	11.7	11.6	11.5
	35	20.0	...	20.0	...	19.4	19.2	17.9	17.0	16.6	16.3	16.0	15.8	...	...
	36	20.0	...	20.0	...	19.4	19.2	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	37	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
	38	20.0	...	20.0	...	19.4	19.2	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	39	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
	40	20.0	...	20.0	...	19.4	19.2	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	41	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	15.4	*14.9*	*11.5*	*8.9*	*6.9*	*5.4*	*4.3*	*3.4*	*2.8*	*2.3*	*1.9*	*1.6*	...	...	...	
34	11.4	11.3	11.2	*8.9*	*6.9*	*5.4*	*4.3*	*3.4*	*2.8*	*2.3*	*1.9*	*1.6*	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
37	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
38	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
39	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
40	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
41	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
	1	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...	> 5	8	1
	2	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...	> 5	8	1
	3	16Cr–12Ni–2Mo	Forgings	SA-336	F316H	S31609	...	...	8	1
	4	16Cr–12Ni–2Mo	Forgings	SA-336	F316H	S31609	...	...	8	1
	5	16Cr–12Ni–2Mo	Forged pipe	SA-430	FP316H	S31609	...	...	8	1
	6	16Cr–12Ni–2Mo	Forged pipe	SA-430	FP316H	S31609	...	...	8	1
	7	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...	≤ 5	8	1
	8	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...	≤ 5	8	1
	9	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316	S31600	...	...	8	1
	10	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316	S31600	...	...	8	1
	11	16Cr–12Ni–2Mo	Plate	SA-240	316	S31600	...	...	8	1
	12	16Cr–12Ni–2Mo	Plate	SA-240	316	S31600	...	...	8	1
	13	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316	S31600	...	...	8	1
	14	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316	S31600	...	...	8	1
	15	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316	S31600	...	...	8	1
	16	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316	S31600	...	...	8	1
	17	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316	S31600	...	...	8	1
	18	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316	S31600	...	...	8	1
	19	16Cr–12Ni–2Mo	Wld. pipe	SA-312	TP316	S31600	...	...	8	1
	20	16Cr–12Ni–2Mo	Wld. pipe	SA-312	TP316	S31600	...	...	8	1
	21	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316	S31600	1	...	8	1
	22	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316	S31600	...	...	8	1
	23	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316	S31600	...	...	8	1
	24	16Cr–12Ni–2Mo	Smls. & wld. fittings	SA-403	316	S31600	...	...	8	1
	25	16Cr–12Ni–2Mo	Wld. pipe	SA-409	TP316	S31600	...	...	8	1
	26	16Cr–12Ni–2Mo	Bar	SA-479	316	S31600	...	...	8	1
	27	16Cr–12Ni–2Mo	Bar	SA-479	316	S31600	...	...	8	1
	28	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316	S31600	...	...	8	1
	29	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316	S31600	...	...	8	1
	30	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316	S31600	...	...	8	1
	31	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316	S31600	...	...	8	1
	32	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316	S31600	...	...	8	1
	33	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...	≤ 5	8	1
	34	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...	≤ 5	8	1
	35	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316H	S31609	...	...	8	1
	36	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316H	S31609	...	...	8	1
01	37	16Cr–12Ni–2Mo	Plate	SA-240	316H	S31609	...	...	8	1
01	38	16Cr–12Ni–2Mo	Plate	SA-240	316H	S31609	...	...	8	1

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	70	30	1500	800	1500	HA-2	G5, G12, G18, T8	
2	70	30	1500	NP	1500	HA-2	G18, T9	
3	70	30	NP	800	1500	HA-2	G5, T8	
4	70	30	NP	NP	1500	HA-2	T9	
5	70	30	1500	800	1500	HA-2	G5, G18, H1, T8	
6	70	30	1500	NP	1500	HA-2	G18, H1, T9	
7	75	30	1500	800	1500	HA-2	G5, G12, G18, T8	
8	75	30	1500	NP	1500	HA-2	G12, G18, T9	
9	75	30	1500	800	1500	HA-2	G5, G12, G18, T8	
10	75	30	1500	NP	1500	HA-2	G12, G18, T9	
11	75	30	1500	800	1500	HA-2	G5, G12, G18, T8	
12	75	30	1500	NP	1500	HA-2	G12, G18, T9	
13	75	30	1500	NP	NP	...	G12, G18, T9, W13	
14	75	30	1500	800	NP	HA-2	G5, G12, G18, T8, W12, W13	
15	75	30	1500	NP	1500	HA-2	G3, G5, G12, G18, G24, T7	
16	75	30	1500	NP	1500	HA-2	G3, G12, G18, G24, T9	
17	75	30	1500	800	1500	HA-2	G5, G12, G18, T8, W12, W13	
18	75	30	1500	NP	1500	HA-2	G12, G18, T9, W13	
19	75	30	1500	NP	1500	HA-2	G3, G5, G12, G18, G24, T7	
20	75	30	1500	NP	1500	HA-2	G3, G12, G18, G24, T9	
21	75	30	NP	800	NP	HA-2	G5, W12	
22	75	30	1500	800	1500	HA-2	G5, G12, G18, H1, T8, W12	
23	75	30	1500	NP	1500	HA-2	G12, G18, H1, T9	
24	75	30	NP	800	1500	HA-2	G5, G12, T8, W12, W14	
25	75	30	NP	800	NP	HA-2	G5, W12	
26	75	30	1500	800	1500	HA-2	G5, G12, G18, G22, H1, T8	
27	75	30	1500	NP	1500	HA-2	G12, G18, G22, H1, T9	
28	75	30	NP	800	NP	...	G5, W12	
29	75	30	NP	NP	1500	HA-2	G5, G12, G24, T7	
30	75	30	NP	NP	1500	HA-2	G12, G24, T9	
31	75	30	NP	800	NP	HA-2	G5, W12	
32	75	30	NP	800	NP	HA-2	G5, W12	
33	75	30	1500	800	1500	HA-2	G5, G18, T8	
34	75	30	1500	NP	1500	HA-2	G18, T9	
35	75	30	1500	800	1500	HA-2	G5, G18, T8	
36	75	30	1500	NP	1500	HA-2	G18, T9	
37	75	30	1500	800	1500	HA-2	G5, G18, T8	**01**
38	75	30	1500	NP	1500	HA-2	G18, T9	**01**

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	19.4	19.2	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
2	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
3	20.0	...	20.0	...	19.4	19.2	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
4	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
5	20.0	...	20.0	...	19.4	19.2	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
6	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
7	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
8	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
9	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
10	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
11	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
12	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
13	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
14	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
15	17.0	...	17.0	...	17.0	16.4	15.3	14.5	14.1	13.9	13.7	13.5	13.4	13.2
16	17.0	...	14.7	...	13.2	12.1	11.3	10.7	10.5	10.3	10.1	10.0	9.9	9.8
17	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
18	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
19	17.0	...	17.0	...	17.0	16.4	15.3	14.5	14.1	13.9	13.7	13.5	13.4	13.2
20	17.0	...	14.7	...	13.2	12.1	11.3	10.7	10.5	10.3	10.1	10.0	9.9	9.8
21	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
22	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
23	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
24	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
25	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
26	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
27	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
28	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
29	17.0	...	17.0	...	17.0	16.4	15.3	14.5	14.1	13.9	13.7	13.5	13.4	13.2
30	17.0	...	14.7	...	13.2	12.1	11.3	10.7	10.5	10.3	10.1	10.0	9.9	9.8
31	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
32	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
33	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
34	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
35	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
36	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
01 37	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
01 38	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
2	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
3	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
4	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
5	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
6	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
7	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
8	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
9	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
10	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
11	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
12	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
13	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
14	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
15	13.1	13.0	*12.9*	*10.5*	*8.3*	*6.3*	*4.7*	*3.5*	*2.6*	*1.9*	*1.4*	*1.1*	...	...	...	
16	9.7	9.6	9.5	9.4	*8.3*	*6.3*	*4.7*	*3.5*	*2.6*	*1.9*	*1.4*	*1.1*	...	...	...	
17	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
18	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
19	13.1	13.0	*12.9*	*10.5*	*8.3*	*6.3*	*4.7*	*3.5*	*2.6*	*1.9*	*1.4*	*1.1*	...	...	...	
20	9.7	9.6	9.5	9.4	*8.3*	*6.3*	*4.7*	*3.5*	*2.6*	*1.9*	*1.4*	*1.1*	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
23	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
24	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
27	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	13.1	13.0	*12.9*	*10.5*	*8.3*	*6.3*	*4.7*	*3.5*	*2.6*	*1.9*	*1.4*	*1.1*	...	...	...	
30	9.7	9.6	9.5	9.4	*8.3*	*6.3*	*4.7*	*3.5*	*2.6*	*1.9*	*1.4*	*1.1*	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
34	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
35	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
36	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
37	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	**01**
38	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	**01**

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316H	S31609	...	...	8	1
2	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316H	S31609	...	...	8	1
3	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316H	S31609	...	...	8	1
4	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316H	S31609	...	...	8	1
5	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316H	S31609	...	...	8	1
6	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316H	S31609	...	...	8	1
7	16Cr–12Ni–2Mo	Wld. pipe	SA-312	TP316H	S31609	...	...	8	1
8	16Cr–12Ni–2Mo	Wld. pipe	SA-312	TP316H	S31609	...	...	8	1
9	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316H	S31609	1	...	8	1
10	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316H	S31609	...	...	8	1
11	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316H	S31609	...	...	8	1
12	16Cr–12Ni–2Mo	Smls. & wld. fittings	SA-403	316H	S31609	...	...	8	1
13	16Cr–12Ni–2Mo	Cast pipe	SA-452	TP316H	S31609	...	...	8	1
14	16Cr–12Ni–2Mo	Cast pipe	SA-452	TP316H	S31609	...	...	8	1
15	16Cr–12Ni–2Mo	Bar	SA-479	316H	S31609	...	...	8	1
16	16Cr–12Ni–2Mo	Bar	SA-479	316H	S31609	...	...	8	1
17	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316H	S31609	...	...	8	1
18	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316H	S31609	...	...	8	1
19	16Cr–12Ni–2Mo–Cb	Plate	SA-240	316Cb	S31640	...	...	8	1
20	16Cr–12Ni–2Mo–Cb	Plate	SA-240	316Cb	S31640	...	...	8	1
21	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316LN	S31653	...	> 5	8	1
22	16Cr–12Ni–2Mo–N	Forgings	SA-336	F316LN	S31653	...	...	8	1
23	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316LN	S31653	...	≤ 5	8	1
24	16Cr–12Ni–2Mo–N	Smls. tube	SA-213	TP316LN	S31653	...	...	8	1
25	16Cr–12Ni–2Mo–N	Plate	SA-240	316LN	S31653	...	...	8	1
26	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316LN	S31653	...	...	8	1
27	16Cr–12Ni–2Mo–N	Smls. & wld. pipe	SA-312	TP316LN	S31653	...	...	8	1
28	16Cr–12Ni–2Mo–N	Wld. pipe	SA-358	316LN	S31653	1	...	8	1
29	16Cr–12Ni–2Mo–N	Smls. pipe	SA-376	TP316LN	S31653	...	...	8	1
30	16Cr–12Ni–2Mo–N	Fittings	SA-403	316LN	S31653	...	...	8	1
31	16Cr–12Ni–2Mo–N	Bar	SA-479	316LN	S31653	...	...	8	1
32	16Cr–12Ni–2Mo–N	Wld. tube	SA-688	TP316LN	S31653	...	...	8	1
33	16Cr–12Ni–2Mo–N	Forged pipe	SA-430	FP316N	S31651	...	...	8	1
34	16Cr–12Ni–2Mo–N	Forged pipe	SA-430	FP316N	S31651	...	...	8	1
35	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316N	S31651	...	...	8	1
36	16Cr–12Ni–2Mo–N	Smls. tube	SA-213	TP316N	S31651	...	...	8	1
37	16Cr–12Ni–2Mo–N	Smls. tube	SA-213	TP316N	S31651	...	...	8	1
38	16Cr–12Ni–2Mo–N	Plate	SA-240	316N	S31651	...	...	8	1
39	16Cr–12Ni–2Mo–N	Plate	SA-240	316N	S31651	...	...	8	1

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	75	30	1500	NP	1500	HA-2	G3, G5, G18, G24, T7
2	75	30	1500	NP	1500	HA-2	G3, G18, G24, T9
3	75	30	1500	NP	NP	...	G18, T9, W13
4	75	30	1500	800	NP	HA-2	G5, G18, T8, W12, W13
5	75	30	1500	800	1500	HA-2	G5, G18, T8, W12, W13
6	75	30	1500	NP	1500	HA-2	G18, T9, W13
7	75	30	1500	NP	1500	HA-2	G3, G5, G18, G24, T7
8	75	30	1500	NP	1500	HA-2	G3, G18, G24, T9
9	75	30	NP	800	NP	...	G5, W12
10	75	30	1500	800	1500	HA-2	G5, G18, H1, T8
11	75	30	1500	NP	1500	HA-2	G18, H1, T9
12	75	30	NP	800	1500	HA-2	G5, G12, T8, W12, W14
13	75	30	NP	800	1500	HA-2	G5, G16, G17, G32, T8
14	75	30	NP	NP	1500	HA-2	G32, T9
15	75	30	1500	800	NP	...	G5, G18, H1, T8
16	75	30	1500	NP	NP	...	G18, H1, T9
17	75	30	NP	800	NP	HA-2	G5, W12
18	75	30	NP	800	NP	HA-2	G5, W12
19	75	30	NP	NP	1500	HA-2	G5, G12, T8
20	75	30	NP	NP	1500	HA-2	G12, T9
21	70	30	NP	800	NP	HA-2	G5
22	70	30	NP	800	NP	HA-2	G5
23	75	30	NP	800	NP	HA-2	G5
24	75	30	NP	800	NP	HA-2	G5
25	75	30	NP	800	NP	HA-2	G5
26	75	30	NP	800	NP	HA-2	G5, W12
27	75	30	NP	800	NP	HA-2	G5, W12
28	75	30	NP	800	NP	HA-2	G5, W12
29	75	30	NP	800	NP	HA-2	G5
30	75	30	NP	800	NP	HA-2	G5, W12
31	75	30	NP	800	NP	...	G5
32	75	30	NP	800	NP	HA-2	G5, W12
33	75	35	1200	800	1200	HA-2	G5, G12, G18, H1, T7
34	75	35	1200	NP	1200	HA-2	G12, G18, H1, T8
35	80	35	NP	800	NP	HA-2	G5
36	80	35	1200	800	1200	HA-2	G5, G12, G18, T7
37	80	35	1200	NP	1200	...	G12, G18, T8
38	80	35	NP	800	1200	HA-2	G5, G12, T7
39	80	35	NP	NP	1200	HA-2	G12, T8

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	17.0	...	17.0	...	17.0	16.4	15.3	14.5	14.1	13.9	13.7	13.5	13.4	13.2
2	17.0	...	14.7	...	13.2	12.1	11.3	10.7	10.5	10.3	10.1	10.0	9.9	9.8
3	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
4	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
5	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
6	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
7	17.0	...	17.0	...	17.0	16.4	15.3	14.5	14.1	13.9	13.7	13.5	13.4	13.2
8	17.0	...	14.7	...	13.2	12.1	11.3	10.7	10.5	10.3	10.1	10.0	9.9	9.8
9	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
10	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
11	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
12	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
13	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
14	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
15	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
16	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
17	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
18	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
19	20.0	...	20.0	...	20.0	19.4	17.8	16.8	16.5	16.2	16.0	15.9	15.8	15.7
20	20.0	...	17.7	...	15.8	14.3	13.2	12.4	12.2	12.0	11.9	11.8	11.7	11.6
21	20.0	...	20.0	...	18.9	17.9	17.2	16.5	16.0	15.6	15.2	14.8	...	...
22	20.0	...	20.0	...	18.9	17.9	17.2	16.5	16.0	15.6	15.2	14.8	...	...
23	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.8	...	...
24	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.8	...	...
25	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.8	...	...
26	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.8	...	...
27	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.8	...	...
28	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.8	...	...
29	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.8	...	...
30	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.8	...	...
31	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.8	...	...
32	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.8	...	...
33	21.4	...	21.4	...	20.6	20.1	19.9	19.9	19.9	19.9	19.6	19.2	18.8	18.5
34	21.4	...	20.7	...	19.0	17.6	16.5	15.6	15.2	14.9	14.5	14.2	13.9	13.7
35	22.9	...	22.9	...	22.0	21.5	21.2	21.0	20.5	20.0	19.6	19.2	...	...
36	22.9	...	22.9	...	22.0	21.5	21.2	21.0	20.5	20.0	19.6	19.2	18.8	18.5
37	22.9	...	20.7	...	19.0	17.6	16.5	15.6	15.2	14.9	14.5	14.2	13.9	13.7
38	22.9	...	22.9	...	22.0	21.5	21.2	21.0	20.5	20.0	19.6	19.2	18.8	18.5
39	22.9	...	20.7	...	19.0	17.6	16.5	15.6	15.2	14.9	14.5	14.2	13.9	13.7

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	13.1	13.0	*12.9*	*10.5*	*8.3*	*6.3*	*4.7*	*3.5*	*2.6*	*1.9*	*1.4*	*1.1*	...	...	...
2	9.7	9.6	9.5	9.4	*8.3*	*6.3*	*4.7*	*3.5*	*2.6*	*1.9*	*1.4*	*1.1*	...	...	...
3	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...
4	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...
5	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...
6	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...
7	13.1	13.0	*12.9*	*10.5*	*8.3*	*6.3*	*4.7*	*3.5*	*2.6*	*1.9*	*1.4*	*1.1*	...	...	...
8	9.7	9.6	9.5	9.4	*8.3*	*6.3*	*4.7*	*3.5*	*2.6*	*1.9*	*1.4*	*1.1*	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...
11	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...
12	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...
13	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...
14	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...
15	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...
16	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	15.5	15.3	15.1	*12.3*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...
20	11.5	11.4	11.2	11.0	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	18.1	17.8	*15.8*	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...
34	13.4	13.2	12.9	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	18.1	17.8	*15.8*	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...
37	13.4	13.2	12.9	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...
38	18.1	17.8	*15.8*	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...
39	13.4	13.2	12.9	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
	1	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316N	S31651	...	...	8	1
	2	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316N	S31651	...	...	8	1
	3	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316N	S31651	...	...	8	1
	4	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316N	S31651	...	...	8	1
	5	16Cr–12Ni–2Mo–N	Smls. & wld. pipe	SA-312	TP316N	S31651	...	...	8	1
	6	16Cr–12Ni–2Mo–N	Smls. & wld. pipe	SA-312	TP316N	S31651	...	...	8	1
	7	16Cr–12Ni–2Mo–N	Wld. pipe	SA-312	TP316N	S31651	...	...	8	1
	8	16Cr–12Ni–2Mo–N	Wld. pipe	SA-312	TP316N	S31651	...	...	8	1
	9	16Cr–12Ni–2Mo–N	Forgings	SA-336	F316N	S31651	...	...	8	1
	10	16Cr–12Ni–2Mo–N	Forgings	SA-336	F316N	S31651	...	...	8	1
	11	16Cr–12Ni–2Mo–N	Wld. pipe	SA-358	316N	S31651	1	...	8	1
	12	16Cr–12Ni–2Mo–N	Smls. pipe	SA-376	TP316N	S31651	...	...	8	1
	13	16Cr–12Ni–2Mo–N	Smls. pipe	SA-376	TP316N	S31651	...	...	8	1
	14	16Cr–12Ni–2Mo–N	Smls. & wld. fittings	SA-403	316N	S31651	...	...	8	1
	15	16Cr–12Ni–2Mo–N	Bar	SA-479	316N	S31651	...	...	8	1
	16	16Cr–12Ni–2Mo–N	Bar	SA-479	316N	S31651	...	...	8	1
	17	16Cr–12Ni–2Mo–N	Wld. tube	SA-688	TP316N	S31651	...	...	8	1
	18	16Cr–12Ni–2Mo–N	Wld. pipe	SA-813	TP316N	S31651	...	...	8	1
	19	16Cr–12Ni–2Mo–N	Wld. pipe	SA-814	TP316N	S31651	...	...	8	1
	20	16Cr–12Ni–2Mo–Ti	Plate	SA-240	316Ti	S31635	...	...	8	1
	21	16Cr–12Ni–2Mo–Ti	Plate	SA-240	316Ti	S31635	...	...	8	1
	22	18Cr–3Ni–12Mn	Plate	SA-240	XM-29	S24000	...	...	8	3
	23	18Cr–3Ni–12Mn	Plate	SA-240	XM-29	S24000	...	...	8	3
	24	18Cr–3Ni–12Mn	Wld. tube	SA-249	XM-29	S24000	...	...	8	3
	25	18Cr–3Ni–12Mn	Wld. tube	SA-249	XM-29	S24000	...	...	8	3
	26	18Cr–3Ni–12Mn	Wld. pipe	SA-312	XM-29	S24000	...	...	8	3
	27	18Cr–3Ni–12Mn	Wld. pipe	SA-312	XM-29	S24000	...	...	8	3
	28	18Cr–3Ni–12Mn	Bar	SA-479	XM-29	S24000	...	...	8	3
	29	18Cr–3Ni–12Mn	Bar	SA-479	XM-29	S24000	...	...	8	3
	30	18Cr–3Ni–12Mn	Wld. tube	SA-688	TPXM-29	S24000	...	...	8	3
	31	18Cr–3Ni–12Mn	Wld. tube	SA-688	TPXM-29	S24000	...	...	8	3
	32	18Cr–5Ni–3Mo	Smls. tube	SA-789	...	S31500	...	...	10H	1
	33	18Cr–5Ni–3Mo	Wld. tube	SA-789	...	S31500	...	...	10H	1
	34	18Cr–5Ni–3Mo	Smls. pipe	SA-790	...	S31500	...	...	10H	1
	35	18Cr–5Ni–3Mo	Wld. pipe	SA-790	...	S31500	...	...	10H	1
01	36	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...	> 5	8	1
01	37	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...	> 5	8	1
01	38	18Cr–8Ni	Forgings	SA-336	F304L	S30403	...	...	8	1

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	80	35	1200	NP	NP	...	G5, G12, G18, T7, W13	
2	80	35	1200	NP	NP	...	G12, G18, T8, W13	
3	80	35	1200	NP	1200	HA-2	G3, G12, G18, G24, T8	
4	80	35	1200	NP	1200	HA-2	G3, G5, G12, G18, G24, T7	
5	80	35	1200	800	1200	HA-2	G5, G12, G18, T7, W12, W13	
6	80	35	1200	NP	1200	HA-2	G12, G18, T8, W13	
7	80	35	1200	NP	1200	HA-2	G3, G12, G18, G24, T8	
8	80	35	1200	NP	1200	HA-2	G3, G5, G12, G18, G24, T7	
9	80	35	NP	800	1200	HA-2	G5, G12, T7	
10	80	35	NP	NP	1200	HA-2	G12, T8	
11	80	35	NP	800	NP	...	G5, W12	
12	80	35	1200	800	1200	...	G5, G12, G18, H1, T7	
13	80	35	1200	NP	1200	HA-2	G12, G18, H1, T8	
14	80	35	NP	800	1200	HA-2	G5, G12, T7, W12, W14	
15	80	35	1200	800	NP	...	G5, G12, G18, H1, T7	
16	80	35	1200	NP	NP	...	G12, G18, H1, T8	
17	80	35	NP	800	NP	...	G5, W12	
18	80	35	NP	800	NP	HA-2	G5, W12	
19	80	35	NP	800	NP	HA-2	G5, W12	
20	75	30	NP	NP	1500	HA-2	G5, G12, T8	
21	75	30	NP	NP	1500	HA-2	G12, T9	
22	100	55	NP	NP	800	CS-2	G5	
23	100	55	NP	NP	800	CS-2	...	
24	100	55	NP	NP	800	CS-2	G5, G24	
25	100	55	NP	NP	800	CS-2	G24	
26	100	55	NP	NP	800	CS-2	G5, G24	
27	100	55	NP	NP	800	CS-2	G24	
28	100	55	NP	NP	800	CS-2	G5, G22	
29	100	55	NP	NP	800	CS-2	G22	
30	100	55	NP	NP	800	CS-2	G5, G24	
31	100	55	NP	NP	800	CS-2	G24	
32	92	64	NP	NP	750	HA-5	G32	
33	92	64	NP	NP	750	HA-5	G24, G32	
34	92	64	NP	NP	750	HA-5	G32	
35	92	64	NP	NP	750	HA-5	G24, G32	
36	65	25	800	800	800	HA-3	G5, G42	**01**
37	65	25	800	NP	800	HA-3	G42	**01**
38	65	25	800	NP	800	HA-3	G42	**01**

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
		–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
	1	22.9	...	22.9	...	22.0	21.5	21.2	21.0	20.5	20.0	19.6	19.2	18.8	18.5
	2	22.9	...	20.7	...	19.0	17.6	16.5	15.6	15.2	14.9	14.5	14.2	13.9	13.7
	3	19.4	...	17.6	...	16.1	15.0	14.0	13.3	12.9	12.6	12.3	12.1	11.9	11.6
	4	19.4	...	19.4	...	18.7	18.2	18.1	17.9	17.4	17.0	16.7	16.3	16.0	15.7
	5	22.9	...	22.9	...	22.0	21.5	21.2	21.0	20.5	20.0	19.6	19.2	18.8	18.5
	6	22.9	...	20.7	...	19.0	17.6	16.5	15.6	15.2	14.9	14.5	14.2	13.9	13.7
	7	19.4	...	17.6	...	16.1	15.0	14.0	13.3	12.9	12.6	12.3	12.1	11.9	11.6
	8	19.4	...	19.4	...	18.7	18.2	18.1	17.9	17.4	17.0	16.7	16.3	16.0	15.7
	9	22.9	...	22.9	...	22.0	21.5	21.2	21.0	20.5	20.0	19.6	19.2	18.8	18.5
	10	22.9	...	20.7	...	19.0	17.6	16.5	15.6	15.2	14.9	14.5	14.2	13.9	13.7
	11	22.9	...	22.9	...	22.0	21.5	21.2	21.0	20.5	20.0	19.6	19.2	...	...
	12	22.9	...	22.9	...	22.0	21.5	21.2	21.0	20.5	20.0	19.6	19.2	18.8	18.5
	13	22.9	...	20.7	...	19.0	17.6	16.5	15.6	15.2	14.9	14.5	14.2	13.9	13.7
	14	22.9	...	22.9	...	22.0	21.5	21.2	21.0	20.5	20.0	19.6	19.2	18.8	18.5
	15	22.9	...	22.9	...	22.0	21.5	21.2	21.0	20.5	20.0	19.6	19.2	18.8	18.5
	16	22.9	...	20.7	...	19.0	17.6	16.5	15.6	15.2	14.9	14.5	14.2	13.9	13.7
	17	22.9	...	22.9	...	22.0	21.5	21.2	21.0	20.5	20.0	19.6	19.2	...	...
	18	22.9	...	22.9	...	22.0	21.5	21.2	21.0	20.5	20.0	19.6	19.2	...	...
	19	22.9	...	22.9	...	22.0	21.5	21.2	21.0	20.5	20.0	19.6	19.2	...	...
	20	20.0	...	20.0	...	20.0	19.4	17.8	16.8	16.5	16.2	16.0	15.9	15.8	15.7
	21	20.0	...	17.7	...	15.8	14.3	13.2	12.4	12.2	12.0	11.9	11.8	11.7	11.6
	22	28.6	...	27.9	...	26.0	24.9	24.3	23.8	23.4	23.0	22.4	21.8	...	...
	23	28.6	...	27.9	...	25.0	21.9	20.1	19.2	18.8	18.5	18.2	17.8	...	...
	24	24.3	...	23.7	...	22.1	21.2	20.7	20.2	19.9	19.5	19.1	18.5	...	...
	25	24.3	...	23.7	...	21.3	18.7	17.1	16.3	16.0	15.7	15.4	15.1	...	...
	26	24.3	...	23.7	...	22.1	21.2	20.7	20.2	19.9	19.5	19.1	18.5	...	...
	27	24.3	...	23.7	...	21.3	18.7	17.1	16.3	16.0	15.7	15.4	15.1	...	...
	28	28.6	...	27.9	...	26.0	24.9	24.3	23.8	23.4	23.0	22.4	21.8	...	...
	29	28.6	...	27.9	...	25.0	21.9	20.1	19.2	18.8	18.5	18.2	17.8	...	...
	30	24.3	...	23.7	...	22.1	21.2	20.7	20.2	19.9	19.5	19.1	18.5	...	...
	31	24.3	...	23.7	...	21.3	18.7	17.1	16.3	16.0	15.7	15.4	15.1	...	...
	32	26.3	...	25.4	...	24.4	24.2	24.2	24.2	24.2	24.2	24.2	...	...	...
	33	22.3	...	21.6	...	20.7	20.6	20.6	20.6	20.6	20.6	20.6	...	...	...
	34	26.3	...	25.4	...	24.4	24.2	24.2	24.2	24.2	24.2	24.2	...	...	...
	35	22.3	...	21.6	...	20.7	20.6	20.6	20.6	20.6	20.6	20.6	...	...	...
01	36	16.7	...	16.7	...	16.2	15.6	14.7	14.0	13.7	13.5	13.3	13.0	...	...
01	37	16.7	...	14.3	...	12.8	11.7	10.9	10.4	10.2	10.0	9.8	9.7	...	...
01	38	16.7	...	14.3	...	12.8	11.7	10.9	10.4	10.2	10.0	9.8	9.7	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	18.1	17.8	*15.8*	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
2	13.4	13.2	12.9	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
3	11.4	11.2	11.0	*10.5*	*8.3*	*6.3*	...	...	...	...	...	...	...	...	...	
4	15.4	15.1	*13.4*	*10.5*	*8.3*	*6.3*	...	...	...	...	...	...	...	...	...	
5	18.1	17.8	*15.8*	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
6	13.4	13.2	12.9	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
7	11.4	11.2	11.0	*10.5*	*8.3*	*6.3*	...	...	...	...	...	...	...	...	...	
8	15.4	15.1	*13.4*	*10.5*	*8.3*	*6.3*	...	...	...	...	...	...	...	...	...	
9	18.1	17.8	*15.8*	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
10	13.4	13.2	12.9	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	18.1	17.8	*15.8*	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
13	13.4	13.2	12.9	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
14	18.1	17.8	*15.8*	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
15	18.1	17.8	*15.8*	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
16	13.4	13.2	12.9	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	15.5	15.3	15.1	*12.3*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
21	11.5	11.4	11.2	11.0	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
01	1	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...	≤ 5	8	1
01	2	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...	≤ 5	8	1
01	3	18Cr–8Ni	Smls. tube	SA-213	TP304L	S30403	...	...	8	1
01	4	18Cr–8Ni	Smls. tube	SA-213	TP304L	S30403	...	...	8	1
01	5	18Cr–8Ni	Plate	SA-240	304L	S30403	...	...	8	1
01	6	18Cr–8Ni	Plate	SA-240	304L	S30403	...	...	8	1
	7	18Cr–8Ni	Wld. tube	SA-249	TP304L	S30403	...	...	8	1
01	8	18Cr–8Ni	Wld. tube	SA-249	TP304L	S30403	...	...	8	1
01	9	18Cr–8Ni	Wld. tube	SA-249	TP304L	S30403	...	...	8	1
01	10	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304L	S30403	...	...	8	1
01	11	18Cr–8Ni	Smls. pipe	SA-312	TP304L	S30403	...	...	8	1
01	12	18Cr–8Ni	Wld. pipe	SA-312	TP304L	S30403	...	...	8	1
01	13	18Cr–8Ni	Wld. pipe	SA-312	TP304L	S30403	...	...	8	1
	14	18Cr–8Ni	Wld. pipe	SA-358	304L	S30403	1	...	8	1
	15	18Cr–8Ni	Smls. & wld. fittings	SA-403	304L	S30403	...	...	8	1
	16	18Cr–8Ni	Wld. pipe	SA-409	TP304L	S30403	...	...	8	1
01	17	18Cr–8Ni	Bar	SA-479	304L	S30403	...	...	8	1
01	18	18Cr–8Ni	Bar	SA-479	304L	S30403	...	...	8	1
	19	18Cr–8Ni	Wld. tube	SA-688	TP304L	S30403	...	...	8	1
	20	18Cr–8Ni	Wld. tube	SA-688	TP304L	S30403	...	...	8	1
	21	18Cr–8Ni	Wld. tube	SA-688	TP304L	S30403	...	...	8	1
	22	18Cr–8Ni	Wld. pipe	SA-813	TP304L	S30403	...	...	8	1
	23	18Cr–8Ni	Wld. pipe	SA-814	TP304L	S30403	...	...	8	1
	24	18Cr–8Ni	Forgings	SA-182	F304	S30400	...	> 5	8	1
	25	18Cr–8Ni	Forgings	SA-182	F304	S30400	...	> 5	8	1
	26	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...	> 5	8	1
	27	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...	> 5	8	1
	28	18Cr–8Ni	Forgings	SA-336	F304	S30400	...	...	8	1
	29	18Cr–8Ni	Forgings	SA-336	F304	S30400	...	...	8	1
	30	18Cr–8Ni	Forgings	SA-336	F304H	S30409	...	...	8	1
	31	18Cr–8Ni	Forgings	SA-336	F304H	S30409	...	...	8	1
	32	18Cr–8Ni	Castings	SA-351	CF3	J92500	...	...	8	1
	33	18Cr–8Ni	Castings	SA-351	CF3	J92500	...	...	8	1
	34	18Cr–8Ni	Castings	SA-351	CF8	J92600	...	...	8	1
	35	18Cr–8Ni	Castings	SA-351	CF8	J92600	...	...	8	1
	36	18Cr–8Ni	Castings	SA-351	CF8	J92600	...	...	8	1
	37	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...	...	8	1
	38	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...	...	8	1
	39	18Cr–8Ni	Forged pipe	SA-430	FP304	S30400	...	...	8	1
	40	18Cr–8Ni	Forged pipe	SA-430	FP304	S30400	...	...	8	1

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	70	25	800	800	800	HA-3	G5, G42	**01**
2	70	25	800	NP	800	HA-3	G42	**01**
3	70	25	800	800	800	HA-3	G5, G42	**01**
4	70	25	800	NP	800	HA-3	G42	**01**
5	70	25	800	800	800	HA-3	G5, G42	**01**
6	70	25	800	NP	800	HA-3	G42	**01**
7	70	25	NP	800	NP	HA-3	G5, W12	
8	70	25	800	NP	800	HA-3	G5, G24, G42	**01**
9	70	25	800	NP	800	HA-3	G24, G42	**01**
10	70	25	800	800	800	HA-3	G5, G42, W12	**01**
11	70	25	800	NP	800	HA-3	G42	**01**
12	70	25	800	NP	800	HA-3	G5, G24, G42	**01**
13	70	25	800	NP	800	HA-3	G24, G42	**01**
14	70	25	NP	800	NP	...	G5	
15	70	25	NP	800	850	HA-3	G5, W12, W14	
16	70	25	NP	800	NP	HA-3	G5, W12	
17	70	25	800	800	800	HA-3	G5, G22, G42	**01**
18	70	25	800	NP	800	HA-3	G22, G42	**01**
19	70	25	NP	800	NP	...	G5, W12	
20	70	25	NP	NP	800	HA-3	G5, G24	
21	70	25	NP	NP	800	HA-3	G24	
22	70	25	NP	800	NP	HA-3	G5, W12	
23	70	25	NP	800	NP	HA-3	G5, W12	
24	70	30	1500	800	1500	HA-1	G5, G12, G18, T7	
25	70	30	1500	NP	1500	HA-1	G12, G18, T8	
26	70	30	1500	800	1500	HA-1	G5, G18, T7	
27	70	30	1500	NP	1500	HA-1	G18, T8	
28	70	30	1500	800	1500	HA-1	G5, G12, G18, T7	
29	70	30	1500	NP	1500	HA-1	G12, G18, T8	
30	70	30	NP	800	1500	HA-1	G5, T7	
31	70	30	NP	NP	1500	HA-1	T8	
32	70	30	NP	800	800	HA-3	G1, G5, G16, G17, G32	
33	70	30	NP	NP	800	HA-3	G1, G32	
34	70	30	1500	800	NP	...	G1, G5, G12, G16, G17, G18, G32, H1, T6	
35	70	30	1500	NP	1500	HA-1	G1, G12, G18, G32, H1, T7	
36	70	30	NP	NP	1500	HA-1	G1, G5, G12, G32, T6	
37	70	30	NP	800	1500	HA-1	G5, G12, S9, T7	
38	70	30	NP	NP	1500	HA-1	G12, S9, T8	
39	70	30	1500	800	1500	HA-1	G5, G12, G18, H1, T7	
40	70	30	1500	NP	1500	HA-1	G12, G18, H1, T8	

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
		–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
01	1	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
01	2	16.7	...	14.3	...	12.8	11.7	10.9	10.4	10.2	10.0	9.8	9.7	...	...
01	3	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
01	4	16.7	...	14.3	...	12.8	11.7	10.9	10.4	10.2	10.0	9.8	9.7	...	...
01	5	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
01	6	16.7	...	14.3	...	12.8	11.7	10.9	10.4	10.2	10.0	9.8	9.7	...	...
	7	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
01	8	14.2	...	14.2	...	14.2	13.4	12.5	11.9	11.7	11.4	11.3	11.1	...	...
01	9	14.2	...	12.1	...	10.9	9.9	9.3	8.8	8.6	8.5	8.3	8.2	...	...
01	10	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
01	11	16.7	...	14.3	...	12.8	11.7	10.9	10.4	10.2	10.0	9.8	9.7	...	...
01	12	14.2	...	14.2	...	14.2	13.4	12.5	11.9	11.7	11.4	11.3	11.1	...	...
01	13	14.2	...	12.1	...	10.9	9.9	9.3	8.8	8.6	8.5	8.3	8.2	...	...
	14	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
	15	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	12.8	...
	16	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
01	17	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
01	18	16.7	...	14.3	...	12.8	11.7	10.9	10.4	10.2	10.0	9.8	9.7	...	...
	19	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
	20	14.2	...	14.2	...	14.2	13.4	12.5	11.9	11.7	11.4	11.3	11.1	...	...
	21	14.2	...	12.1	...	10.9	9.9	9.3	8.8	8.6	8.5	8.3	8.2	...	...
	22	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
	23	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
	24	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	14.9	14.6
	25	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
	26	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	14.9	14.6
	27	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
	28	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	14.9	14.6
	29	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
	30	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	14.9	14.6
	31	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
	32	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	...	...
	33	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	...	...
	34	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	14.9	14.6
	35	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
	36	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	14.9	14.6
	37	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	14.9	14.6
	38	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
	39	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	14.9	14.6
	40	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
25	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
26	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
27	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
28	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
29	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
30	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
31	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	14.3	*12.2*	*9.5*	*7.5*	*6.0*	*4.8*	*3.9*	*3.3*	*2.7*	*2.3*	*2.0*	*1.7*	...	...	...	
35	10.6	10.4	*9.5*	*7.5*	*6.0*	*4.8*	*3.9*	*3.3*	*2.7*	*2.3*	*2.0*	*1.7*	...	...	...	
36	14.3	*12.2*	*9.5*	*7.5*	*6.0*	*4.8*	*3.9*	*3.3*	*2.7*	*2.3*	*2.0*	*1.7*	...	...	...	
37	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
38	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
39	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
40	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
	1	18Cr–8Ni	Forged pipe	SA-430	FP304H	S30409	...	...	8	1
	2	18Cr–8Ni	Forged pipe	SA-430	FP304H	S30409	...	...	8	1
	3	18Cr–8Ni	Cast pipe	SA-451	CPF3	J92500	...	...	8	1
	4	18Cr–8Ni	Cast pipe	SA-451	CPF8	J92600	...	...	8	1
	5	18Cr–8Ni	Forgings	SA-182	F304	S30400	...	≤ 5	8	1
	6	18Cr–8Ni	Forgings	SA-182	F304	S30400	...	≤ 5	8	1
	7	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...	≤ 5	8	1
	8	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...	≤ 5	8	1
	9	18Cr–8Ni	Smls. tube	SA-213	TP304	S30400	...	...	8	1
	10	18Cr–8Ni	Smls. tube	SA-213	TP304	S30400	...	...	8	1
	11	18Cr–8Ni	Smls. tube	SA-213	TP304H	S30409	...	...	8	1
	12	18Cr–8Ni	Smls. tube	SA-213	TP304H	S30409	...	...	8	1
	13	18Cr–8Ni	Plate	SA-240	302	S30200	...	...	8	1
	14	18Cr–8Ni	Plate	SA-240	302	S30200	...	...	8	1
	15	18Cr–8Ni	Plate	SA-240	304	S30400	...	...	8	1
	16	18Cr–8Ni	Plate	SA-240	304	S30400	...	...	8	1
01	17	18Cr–8Ni	Plate	SA-240	304H	S30409	...	...	8	1
01	18	18Cr–8Ni	Plate	SA-240	304H	S30409	...	...	8	1
	19	18Cr–8Ni	Wld. tube	SA-249	TP304	S30400	...	...	8	1
	20	18Cr–8Ni	Wld. tube	SA-249	TP304	S30400	...	...	8	1
	21	18Cr–8Ni	Wld. tube	SA-249	TP304	S30400	...	...	8	1
	22	18Cr–8Ni	Wld. tube	SA-249	TP304	S30400	...	...	8	1
	23	18Cr–8Ni	Wld. tube	SA-249	TP304H	S30409	...	...	8	1
	24	18Cr–8Ni	Wld. tube	SA-249	TP304H	S30409	...	...	8	1
	25	18Cr–8Ni	Wld. tube	SA-249	TP304H	S30409	...	...	8	1
	26	18Cr–8Ni	Wld. tube	SA-249	TP304H	S30409	...	...	8	1
	27	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304	S30400	...	...	8	1
	28	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304	S30400	...	...	8	1
	29	18Cr–8Ni	Wld. pipe	SA-312	TP304	S30400	...	...	8	1
	30	18Cr–8Ni	Wld. pipe	SA-312	TP304	S30400	...	...	8	1
	31	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304H	S30409	...	...	8	1
	32	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304H	S30409	...	...	8	1
	33	18Cr–8Ni	Wld. pipe	SA-312	TP304H	S30409	...	...	8	1
	34	18Cr–8Ni	Wld. pipe	SA-312	TP304H	S30409	...	...	8	1
	35	18Cr–8Ni	Wld. pipe	SA-358	304	S30400	1	...	8	1
	36	18Cr–8Ni	Wld. pipe	SA-358	304H	S30409	1	...	8	1
	37	18Cr–8Ni	Wld. pipe	SA-358	304LN	S30453	1	...	8	1

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	70	30	1500	800	1500	HA-1	G5, G18, H1, T7	
2	70	30	1500	NP	1500	HA-1	G18, H1, T8	
3	70	30	NP	800	NP	...	G5, G16, G17, G32	
4	70	30	NP	800	NP	HA-1	G5, G16, G17, G32	
5	75	30	1500	NP	1500	HA-1	G12, G18, T8	
6	75	30	1500	800	1500	HA-1	G5, G12, G18, T7	
7	75	30	1500	NP	1500	HA-1	G18, T8	
8	75	30	1500	800	1500	HA-1	G5, G18, T7	
9	75	30	1500	NP	1500	HA-1	G12, G18, T8	
10	75	30	1500	800	1500	HA-1	G5, G12, G18, T7	
11	75	30	1500	NP	1500	HA-1	G18, T8	
12	75	30	1500	800	1500	HA-1	G5, G18, T7	
13	75	30	NP	NP	750	HA-1	G5	
14	75	30	NP	NP	750	HA-1	...	
15	75	30	1500	NP	1500	HA-1	G12, G18, T8	
16	75	30	1500	800	1500	HA-1	G5, G12, G18, H1, T7	
17	75	30	1500	800	1500	HA-1	G5, G18, T7	**01**
18	75	30	1500	NP	1500	HA-1	G18, T8	**01**
19	75	30	1500	NP	NP	...	G12, G18, T8, W13	
20	75	30	1500	800	NP	HA-1	G5, G12, G18, T7, W12, W13	
21	75	30	1500	NP	1500	HA-1	G3, G5, G12, G18, G24, T7	
22	75	30	1500	NP	1500	HA-1	G3, G12, G18, G24, T8	
23	75	30	1500	NP	NP	...	G18, T8, W13	
24	75	30	1500	800	NP	HA-1	G5, G18, T7, W12, W13	
25	75	30	1500	NP	1500	HA-1	G3, G5, G18, G24, T7	
26	75	30	1500	NP	1500	HA-1	G3, G18, G24, T8	
27	75	30	1500	800	1500	HA-1	G5, G12, G18, T7, W12, W13	
28	75	30	1500	NP	1500	HA-1	G12, G18, T8, W13	
29	75	30	1500	NP	1500	HA-1	G3, G5, G12, G18, G24, T7	
30	75	30	1500	NP	1500	HA-1	G3, G12, G18, G24, T8	
31	75	30	1500	800	1500	HA-1	G5, G18, T7, W12, W13	
32	75	30	1500	NP	1500	HA-1	G18, T8, W13	
33	75	30	1500	NP	1500	HA-1	G3, G5, G18, G24, T7	
34	75	30	1500	NP	1500	HA-1	G3, G18, G24, T8	
35	75	30	NP	800	NP	HA-1	G5, W12	
36	75	30	NP	800	NP	...	G5, W12	
37	75	30	NP	800	NP	HA-1	G5, W12	

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	14.9	14.6
2	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
3	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	...	...
4	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	...	...
5	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
6	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
7	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
8	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
9	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
10	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
11	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
12	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
13	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	...	...	...
14	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	...	...	...
15	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
16	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
01 17	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
01 18	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
19	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
20	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
21	17.0	...	17.0	...	16.1	15.5	14.8	14.1	13.8	13.5	13.2	12.9	12.6	12.4
22	17.0	...	14.2	...	12.7	11.7	11.0	10.4	10.2	10.0	9.8	9.6	9.4	9.2
23	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
24	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
25	17.0	...	17.0	...	16.1	15.5	14.8	14.1	13.8	13.5	13.2	12.9	12.6	12.4
26	17.0	...	14.2	...	12.7	11.7	11.0	10.4	10.2	10.0	9.8	9.6	9.4	9.2
27	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
28	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
29	17.0	...	17.0	...	16.1	15.5	14.8	14.1	13.8	13.5	13.2	12.9	12.6	12.4
30	17.0	...	14.2	...	12.7	11.7	11.0	10.4	10.2	10.0	9.8	9.6	9.4	9.2
31	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
32	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
33	17.0	...	17.0	...	16.1	15.5	14.8	14.1	13.8	13.5	13.2	12.9	12.6	12.4
34	17.0	...	14.2	...	12.7	11.7	11.0	10.4	10.2	10.0	9.8	9.6	9.4	9.2
35	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
36	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
37	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
2	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
6	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
7	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
8	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
9	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
10	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
11	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
12	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
16	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
17	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	**01**
18	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	**01**
19	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
20	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
21	12.1	11.9	*10.5*	*8.3*	*6.6*	*5.2*	*4.0*	*3.1*	*2.5*	*2.0*	*1.6*	*1.2*	...	...	...	
22	9.0	8.8	8.6	*8.3*	*6.6*	*5.2*	*4.0*	*3.1*	*2.5*	*2.0*	*1.6*	*1.2*	...	...	...	
23	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
24	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
25	12.1	11.9	*10.5*	*8.3*	*6.6*	*5.2*	*4.0*	*3.1*	*2.5*	*2.0*	*1.6*	*1.2*	...	...	...	
26	9.0	8.8	8.6	*8.3*	*6.6*	*5.2*	*4.0*	*3.1*	*2.5*	*2.0*	*1.6*	*1.2*	...	...	...	
27	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
28	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
29	12.1	11.9	*10.5*	*8.3*	*6.6*	*5.2*	*4.0*	*3.1*	*2.5*	*2.0*	*1.6*	*1.2*	...	...	...	
30	9.0	8.8	8.6	*8.3*	*6.6*	*5.2*	*4.0*	*3.1*	*2.5*	*2.0*	*1.6*	*1.2*	...	...	...	
31	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
32	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...	
33	12.1	11.9	*10.5*	*8.3*	*6.6*	*5.2*	*4.0*	*3.1*	*2.5*	*2.0*	*1.6*	*1.2*	...	...	...	
34	9.0	8.8	8.6	*8.3*	*6.6*	*5.2*	*4.0*	*3.1*	*2.5*	*2.0*	*1.6*	*1.2*	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...	...	8	1
2	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...	...	8	1
3	18Cr–8Ni	Smls. pipe	SA-376	TP304H	S30409	...	...	8	1
4	18Cr–8Ni	Smls. pipe	SA-376	TP304H	S30409	...	...	8	1
5	18Cr–8Ni	Smls. & wld. fittings	SA-403	304	S30400	...	...	8	1
6	18Cr–8Ni	Smls. & wld. fittings	SA-403	304H	S30409	...	...	8	1
7	18Cr–8Ni	Wld. pipe	SA-409	TP304	S30400	...	...	8	1
8	18Cr–8Ni	Cast pipe	SA-452	TP304H	S30409	...	...	8	1
9	18Cr–8Ni	Cast pipe	SA-452	TP304H	S30409	...	...	8	1
10	18Cr–8Ni	Bar	SA-479	302	S30200	...	...	8	1
11	18Cr–8Ni	Bar	SA-479	302	S30200	...	...	8	1
12	18Cr–8Ni	Bar	SA-479	304	S30400	...	...	8	1
13	18Cr–8Ni	Bar	SA-479	304	S30400	...	...	8	1
14	18Cr–8Ni	Bar	SA-479	304H	S30409	...	...	8	1
15	18Cr–8Ni	Bar	SA-479	304H	S30409	...	...	8	1
16	18Cr–8Ni	Wld. tube	SA-688	TP304	S30400	...	...	8	1
17	18Cr–8Ni	Wld. tube	SA-688	TP304	S30400	...	...	8	1
18	18Cr–8Ni	Wld. tube	SA-688	TP304	S30400	...	...	8	1
19	18Cr–8Ni	Wld. pipe	SA-813	TP304	S30400	...	...	8	1
20	18Cr–8Ni	Wld. pipe	SA-813	TP304H	S30409	...	...	8	1
21	18Cr–8Ni	Wld. pipe	SA-814	TP304	S30400	...	...	8	1
22	18Cr–8Ni	Wld. pipe	SA-814	TP304H	S30409	...	...	8	1
23	18Cr–8Ni	Castings	SA-351	CF3A	J92500	...	...	8	1
24	18Cr–8Ni	Castings	SA-351	CF3A	J92500	...	...	8	1
25	18Cr–8Ni	Castings	SA-351	CF8A	J92600	...	...	8	1
26	18Cr–8Ni	Castings	SA-351	CF8A	J92600	...	...	8	1
27	18Cr–8Ni	Cast pipe	SA-451	CPF3A	J92500	...	...	8	1
28	18Cr–8Ni	Cast pipe	SA-451	CPF8A	J92600	...	...	8	1
29	18Cr–8Ni–N	Forgings	SA-182	F304LN	S30453	...	> 5	8	1
30	18Cr–8Ni–N	Forgings	SA-336	F304LN	S30453	...	...	8	1
31	18Cr–8Ni–N	Forgings	SA-182	F304LN	S30453	...	≤ 5	8	1
32	18Cr–8Ni–N	Smls. tube	SA-213	TP304LN	S30453	...	...	8	1
33	18Cr–8Ni–N	Plate	SA-240	304LN	S30453	...	...	8	1
34	18Cr–8Ni–N	Wld. tube	SA-249	TP304LN	S30453	...	...	8	1
35	18Cr–8Ni–N	Smls. & wld. pipe	SA-312	TP304LN	S30453	...	...	8	1
36	18Cr–8Ni–N	Smls. pipe	SA-376	TP304LN	S30453	...	...	8	1
37	18Cr–8Ni–N	Smls. & wld. fittings	SA-403	304LN	S30453	WP	...	8	1
38	18Cr–8Ni–N	Bar	SA-479	304LN	S30453	...	...	8	1
39	18Cr–8Ni–N	Wld. tube	SA-688	TP304LN	S30453	...	...	8	1

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	75	30	1500	800	1500	HA-1	G5, G12, G18, H1, T7
2	75	30	1500	NP	1500	HA-1	G12, G18, H1, T8
3	75	30	1500	800	1500	HA-1	G5, G18, H1, T7
4	75	30	1500	NP	1500	HA-1	G18, H1, T8
5	75	30	NP	800	1500	HA-1	G5, G12, T7, W12, W14
6	75	30	NP	800	1500	HA-1	G5, T7, W12, W14
7	75	30	NP	800	NP	HA-1	G5, W12
8	75	30	NP	800	1500	HA-1	G5, G16, G17, G32, T7
9	75	30	NP	NP	1500	HA-1	G32, T8
10	75	30	NP	800	750	HA-1	G5, G24
11	75	30	NP	NP	750	HA-1	G22
12	75	30	1500	800	1500	HA-1	G5, G12, G18, G22, T7
13	75	30	1500	NP	1500	HA-1	G12, G18, G22, T8
14	75	30	1500	800	1500	HA-1	G5, G18, G22, T7
15	75	30	1500	NP	1500	HA-1	G18, G22, T8
16	75	30	NP	800	NP	...	G5, W12
17	75	30	NP	NP	1500	HA-1	G5, G12, G24, T7
18	75	30	NP	NP	1500	HA-1	G12, G24, T8
19	75	30	NP	800	NP	HA-1	G5, W12
20	75	30	NP	800	NP	HA-1	G5, W12
21	75	30	NP	800	NP	HA-1	G5, W12
22	75	30	NP	800	NP	HA-1	G5, W12
23	77	35	NP	650	700	HA-3	G1, G5, G16, G17, G32
24	77	35	NP	NP	700	HA-3	G1, G32
25	77	35	NP	650	650	HA-1	G1, G5, G16, G17, G32
26	77	35	NP	NP	650	HA-1	G1, G32
27	77	35	NP	650	NP	...	G5, G16, G17, G32
28	77	35	NP	650	NP	...	G5, G16, G17, G32
29	70	30	NP	800	NP	HA-1	G5
30	70	30	NP	800	NP	HA-1	G5
31	75	30	NP	800	NP	HA-1	G5
32	75	30	NP	800	NP	HA-1	G5
33	75	30	NP	800	NP	HA-1	G5
34	75	30	NP	800	NP	HA-1	G5, W12
35	75	30	NP	800	NP	HA-1	G5, W12
36	75	30	NP	800	NP	HA-1	G5
37	75	30	NP	800	NP	HA-1	G5, W12
38	75	30	NP	800	NP	HA-1	G5
39	75	30	NP	800	NP	HA-1	G5, W12

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
2	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
3	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
4	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
5	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
6	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
7	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
8	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
9	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
10	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
11	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	...	...	...
12	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
13	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
14	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
15	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
16	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
17	17.0	...	17.0	...	16.1	15.5	14.8	14.1	13.8	13.5	13.2	12.9	12.6	12.4
18	17.0	...	14.2	...	12.7	11.7	11.0	10.4	10.2	10.0	9.8	9.6	9.4	9.2
19	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
20	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
21	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
22	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
23	22.0	...	20.8	...	19.4	18.8	18.6	18.6	18.6	18.5	...	...	...	...
24	22.0	...	19.5	...	17.5	16.1	15.1	14.3	14.0	13.7	...	...	...	...
25	22.0	...	20.8	...	19.4	18.8	18.6	18.6	18.6	...	...	...	...	...
26	22.0	...	19.5	...	17.5	16.1	15.1	14.3	14.0	...	...	...	...	...
27	22.0	...	20.8	...	19.4	18.8	18.6	18.6	18.6	...	...	...	...	...
28	22.0	...	20.8	...	19.4	18.8	18.6	18.6	18.6	...	...	...	...	...
29	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	...	...
30	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	...	...
31	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
32	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
33	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
34	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
35	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
36	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
37	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
38	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
39	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...
2	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...
3	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...
4	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...
5	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...
6	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...
9	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...
13	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...
14	14.3	14.0	*12.4*	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...
15	10.6	10.4	10.1	*9.8*	*7.7*	*6.1*	*4.7*	*3.7*	*2.9*	*2.3*	*1.8*	*1.4*	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	12.1	11.9	*10.5*	*8.3*	*6.6*	*5.2*	*4.0*	*3.1*	*2.5*	*2.0*	*1.6*	*1.2*	...	...	...
18	9.0	8.8	8.6	*8.3*	*6.6*	*5.2*	*4.0*	*3.1*	*2.5*	*2.0*	*1.6*	*1.2*	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	18Cr–8Ni–N	Wld. pipe	SA-813	TP304LN	S30453	...	...	8	1
2	18Cr–8Ni–N	Wld. pipe	SA-814	TP304LN	S30453	...	...	8	1
3	18Cr–8Ni–N	Forged pipe	SA-430	FP304N	S30451	...	...	8	1
4	18Cr–8Ni–N	Forged pipe	SA-430	FP304N	S30451	...	...	8	1
5	18Cr–8Ni–N	Forgings	SA-182	F304N	S30451	...	...	8	1
6	18Cr–8Ni–N	Smls. tube	SA-213	TP304N	S30451	...	...	8	1
7	18Cr–8Ni–N	Smls. tube	SA-213	TP304N	S30451	...	...	8	1
8	18Cr–8Ni–N	Plate	SA-240	304N	S30451	...	...	8	1
9	18Cr–8Ni–N	Plate	SA-240	304N	S30451	...	...	8	1
10	18Cr–8Ni–N	Wld. tube	SA-249	TP304N	S30451	...	...	8	1
11	18Cr–8Ni–N	Wld. tube	SA-249	TP304N	S30451	...	...	8	1
12	18Cr–8Ni–N	Wld. tube	SA-249	TP304N	S30451	...	...	8	1
13	18Cr–8Ni–N	Wld. tube	SA-249	TP304N	S30451	...	...	8	1
14	18Cr–8Ni–N	Wld. tube	SA-249	TP304N	S30451	...	...	8	1
15	18Cr–8Ni–N	Smls. & wld. pipe	SA-312	TP304N	S30451	...	...	8	1
16	18Cr–8Ni–N	Smls. & wld. pipe	SA-312	TP304N	S30451	...	...	8	1
17	18Cr–8Ni–N	Wld. pipe	SA-312	TP304N	S30451	...	...	8	1
18	18Cr–8Ni–N	Wld. pipe	SA-312	TP304N	S30451	...	...	8	1
19	18Cr–8Ni–N	Forgings	SA-336	F304N	S30451	...	...	8	1
20	18Cr–8Ni–N	Forgings	SA-336	F304N	S30451	...	...	8	1
21	18Cr–8Ni–N	Wld. pipe	SA-358	304N	S30451	1	...	8	1
22	18Cr–8Ni–N	Smls. pipe	SA-376	TP304N	S30451	...	...	8	1
23	18Cr–8Ni–N	Smls. pipe	SA-376	TP304N	S30451	...	...	8	1
24	18Cr–8Ni–N	Smls. & wld. fittings	SA-403	304N	S30451	...	...	8	1
25	18Cr–8Ni–N	Bar	SA-479	304N	S30451	...	...	8	1
26	18Cr–8Ni–N	Bar	SA-479	304N	S30451	...	...	8	1
27	18Cr–8Ni–N	Wld. tube	SA-688	TP304N	S30451	...	...	8	1
28	18Cr–8Ni–N	Wld. tube	SA-688	TP304N	S30451	...	...	8	1
29	18Cr–8Ni–N	Wld. tube	SA-688	TP304N	S30451	...	...	8	1
30	18Cr–8Ni–N	Wld. pipe	SA-813	TP304N	S30451	...	...	8	1
31	18Cr–8Ni–N	Wld. pipe	SA-814	TP304N	S30451	...	...	8	1
32	18Cr–8Ni–4Si–N	Bar	SA-479	...	S21800	...	...	8	3
33	18Cr–10Ni–Cb	Forgings	SA-336	F348H	S34809	...	...	8	1
34	18Cr–10Ni–Cb	Forgings	SA-336	F348H	S34809	...	...	8	1
35	18Cr–10Ni–Cb	Castings	SA-351	CF8C	J92710	...	...	8	1
36	18Cr–10Ni–Cb	Castings	SA-351	CF8C	J92710	...	...	8	1
37	18Cr–10Ni–Cb	Castings	SA-351	CF8C	J92710	...	...	8	1
38	18Cr–10Ni–Cb	Cast pipe	SA-451	CPF8C	J92710	...	...	8	1

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	75	30	NP	800	NP	HA-1	G5, W12
2	75	30	NP	800	NP	HA-1	G5, W12
3	75	35	1200	800	1200	HA-1	G5, G12, G18, H1, T7
4	75	35	1200	NP	1200	HA-1	G12, G18, H1, T8
5	80	35	NP	800	NP	HA-1	G5
6	80	35	1200	800	1200	HA-1	G5, G12, G18, T7
7	80	35	1200	NP	1200	HA-1	G12, G18, T8
8	80	35	NP	800	1200	HA-1	G5, G12, T7
9	80	35	NP	NP	1200	HA-1	G12, T8
10	80	35	1200	NP	NP	HA-1	G5, G12, G18, T7, W13
11	80	35	1200	NP	NP	HA-1	G12, G18, T8, W13
12	80	35	1200	NP	NP	HA-1	G3, G5, G12, G18, T5
13	80	35	1200	NP	1200	HA-1	G3, G12, G18, G24, T8
14	80	35	NP	NP	1200	HA-1	G5, G12, G24, T5
15	80	35	1200	800	1200	HA-1	G5, G12, G18, T7, W12, W13
16	80	35	1200	NP	1200	HA-1	G12, G18, T8, W13
17	80	35	1200	NP	1200	HA-1	G3, G5, G12, G18, G24, T5
18	80	35	1200	NP	1200	HA-1	G3, G12, G18, G24, T8
19	80	35	NP	800	1200	HA-1	G5, G12, T7
20	80	35	NP	NP	1200	HA-1	G12, T8
21	80	35	NP	800	NP	...	G5, W12
22	80	35	1200	800	1200	HA-1	G5, G12, G18, H1, T7
23	80	35	1200	NP	1200	HA-1	G12, G18, H1, T8
24	80	35	NP	800	1200	HA-1	G5, T7, W12, W14
25	80	35	1200	NP	NP	...	G12, G18, T8
26	80	35	1200	800	NP	...	G5, G12, G18, T7
27	80	35	NP	800	NP	...	G5, W12
28	80	35	NP	NP	1200	HA-1	G5, G12, G24, T7
29	80	35	NP	NP	1200	HA-1	G12, G24, T8
30	80	35	NP	800	NP	HA-1	G5, W12
31	80	35	NP	800	NP	HA-1	G5, W12
32	95	50	NP	800	NP	...	...
33	65	25	NP	NP	1500	HA-2	G5, H2, T9
34	65	25	NP	NP	1500	HA-2	H2, T9
35	70	30	NP	800	NP	...	G5, G16, G17, G32
36	70	30	NP	NP	1500	HA-2	G1, G5, G12, G32, T7
37	70	30	NP	NP	1500	HA-2	G1, G12, G32, T7
38	70	30	NP	800	NP	...	G5, G16, G17, G32

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
2	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
3	21.4	...	21.4	...	20.4	19.6	18.9	17.9	17.5	17.2	16.9	16.6	16.3	16.0
4	21.4	...	19.1	...	16.7	15.1	14.0	13.3	13.0	12.8	12.5	12.3	12.1	11.8
5	22.9	...	22.9	...	21.7	20.3	18.9	17.9	17.5	17.2	16.9	16.6	...	...
6	22.9	...	22.9	...	21.7	20.3	18.9	17.9	17.5	17.2	16.9	16.6	16.3	16.0
7	22.9	...	19.1	...	16.7	15.1	14.0	13.3	13.0	12.8	12.5	12.3	12.1	11.8
8	22.9	...	22.9	...	21.7	20.3	18.9	17.9	17.5	17.2	16.9	16.6	16.3	16.0
9	22.9	...	19.1	...	16.7	15.1	14.0	13.3	13.0	12.8	12.5	12.3	12.1	11.8
10	22.9	...	22.9	...	21.7	20.3	18.9	17.9	17.5	17.2	16.9	16.6	16.3	16.0
11	22.9	...	19.1	...	16.7	15.1	14.0	13.3	13.0	12.8	12.5	12.3	12.1	11.8
12	19.4	...	19.4	...	18.5	17.3	16.0	15.2	14.9	14.6	14.4	14.1	13.8	13.6
13	19.4	...	16.2	...	14.2	12.8	11.9	11.3	11.0	10.8	10.6	10.5	10.3	10.0
14	19.4	...	19.4	...	18.5	17.3	16.0	15.2	14.9	14.6	14.4	14.1	13.8	13.6
15	22.9	...	22.9	...	21.7	20.3	18.9	17.9	17.5	17.2	16.9	16.6	16.3	16.0
16	22.9	...	19.1	...	16.7	15.1	14.0	13.3	13.0	12.8	12.5	12.3	12.1	11.8
17	19.4	...	19.4	...	18.5	17.3	16.0	15.2	14.9	14.6	14.4	14.1	13.8	13.6
18	19.4	...	16.2	...	14.2	12.8	11.9	11.3	11.0	10.8	10.6	10.5	10.3	10.0
19	22.9	...	22.9	...	21.7	20.3	18.9	17.9	17.5	17.2	16.9	16.6	16.3	16.0
20	22.9	...	19.1	...	16.7	15.1	14.0	13.3	13.0	12.8	12.5	12.3	12.1	11.8
21	22.9	...	22.9	...	21.7	20.3	18.9	17.9	17.5	17.2	16.9	16.6	...	...
22	22.9	...	22.9	...	21.7	20.3	18.9	17.9	17.5	17.2	16.9	16.6	16.3	16.0
23	22.9	...	19.1	...	16.7	15.1	14.0	13.3	13.0	12.8	12.5	12.3	12.1	11.8
24	22.9	...	22.9	...	21.7	20.3	18.9	17.9	17.5	17.2	16.9	16.6	16.3	16.0
25	22.9	...	19.1	...	16.7	15.1	14.0	13.3	13.0	12.8	12.5	12.3	12.1	11.8
26	22.9	...	22.9	...	21.7	20.3	18.9	17.9	17.5	17.2	16.9	16.6	16.3	16.0
27	22.9	...	22.9	...	21.7	20.3	18.9	17.9	17.5	17.2	16.9	16.6	...	...
28	19.4	...	19.4	...	18.5	17.3	16.0	15.2	14.9	14.6	14.4	14.1	13.8	13.6
29	19.4	...	16.2	...	14.2	12.8	11.9	11.3	11.0	10.8	10.6	10.5	10.3	10.0
30	22.9	...	22.9	...	21.7	20.3	18.9	17.9	17.5	17.2	16.9	16.6	...	...
31	22.9	...	22.9	...	21.7	20.3	18.9	17.9	17.5	17.2	16.9	16.6	...	...
32	27.1	...	25.9	...	22.1	19.8	18.4	17.6	17.3	17.1	16.9	16.8	...	...
33	16.7	...	16.7	...	16.3	15.4	14.9	14.6	14.6	14.6	14.6	14.6	14.5	14.5
34	16.7	...	15.3	...	14.3	13.3	12.5	11.9	11.7	11.5	11.4	11.3	11.2	11.2
35	20.0	...	19.1	...	17.6	16.6	16.0	15.7	15.7	15.7	15.7	15.7	...	...
36	20.0	...	19.1	...	17.6	16.6	16.0	15.8	15.7	15.7	15.7	15.7	15.7	15.6
37	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
38	20.0	...	19.1	...	17.6	16.6	16.0	15.7	15.7	15.7	15.7	15.7	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	15.6	15.2	*12.4*	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...
4	11.6	11.3	11.0	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	15.6	15.2	*12.4*	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...
7	11.6	11.3	11.0	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...
8	15.6	15.2	*12.4*	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...
9	11.6	11.3	11.0	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...
10	15.6	15.2	*12.4*	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...
11	11.6	11.3	11.0	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...
12	*13.3*	*13.0*	*10.5*	*8.3*	*6.6*	*5.2*	...	...	...	...	...	...	...	...	...
13	9.8	9.6	9.4	*8.3*	*6.6*	*5.2*	...	...	...	...	...	...	...	...	...
14	*13.3*	*13.0*	*10.5*	*8.3*	*6.6*	*5.2*	...	...	...	...	...	...	...	...	...
15	15.6	15.2	*12.4*	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...
16	11.6	11.3	11.0	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...
17	*13.3*	*13.0*	*10.5*	*8.3*	*6.6*	*5.2*	...	...	...	...	...	...	...	...	...
18	9.8	9.6	9.4	*8.3*	*6.6*	*5.2*	...	...	...	...	...	...	...	...	...
19	15.6	15.2	*12.4*	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...
20	11.6	11.3	11.0	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	15.6	15.2	*12.4*	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...
23	11.6	11.3	11.0	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...
24	15.6	15.2	*12.4*	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...
25	11.6	11.3	11.0	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...
26	15.6	15.2	*12.4*	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	13.3	13.0	*10.5*	*8.3*	*6.6*	*5.2*	...	...	...	...	...	...	...	...	...
29	9.8	9.6	9.4	*8.3*	*6.6*	*5.2*	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	14.4	14.2	14.0	13.7	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
34	11.2	11.2	11.1	11.1	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	15.5	15.3	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
37	13.4	13.4	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	18Cr–10Ni–Cb	Forgings	SA-182	F347	S34700	...	> 5	8	1
2	18Cr–10Ni–Cb	Forgings	SA-336	F347	S34700	...	...	8	1
3	18Cr–10Ni–Cb	Forgings	SA-336	F347	S34700	...	...	8	1
4	18Cr–10Ni–Cb	Forged pipe	SA-430	FP347	S34700	...	...	8	1
5	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...	> 5	8	1
6	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...	> 5	8	1
7	18Cr–10Ni–Cb	Forgings	SA-336	F347H	S34709	...	...	8	1
8	18Cr–10Ni–Cb	Forgings	SA-336	F347H	S34709	...	...	8	1
9	18Cr–10Ni–Cb	Forged pipe	SA-430	FP347H	S34709	...	...	8	1
10	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...	> 5	8	1
11	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...	> 5	8	1
12	18Cr–10Ni–Cb	Forgings	SA-336	F348	S34800	...	...	8	1
13	18Cr–10Ni–Cb	Forgings	SA-336	F348	S34800	...	...	8	1
14	18Cr–10Ni–Cb	Forgings	SA-182	F348H	S34809	...	> 5	8	1
15	18Cr–10Ni–Cb	Forgings	SA-182	F348H	S34809	...	> 5	8	1
16	18Cr–10Ni–Cb	Forgings	SA-182	F347	S34700	...	≤ 5	8	1
17	18Cr–10Ni–Cb	Forgings	SA-182	F347	S34700	...	≤ 5	8	1
18	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347	S34700	...	...	8	1
19	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347	S34700	...	...	8	1
20	18Cr–10Ni–Cb	Plate	SA-240	347	S34700	...	...	8	1
21	18Cr–10Ni–Cb	Plate	SA-240	347	S34700	...	...	8	1
22	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347	S34700	...	...	8	1
23	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347	S34700	...	...	8	1
24	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347	S34700	...	...	8	1
25	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347	S34700	...	...	8	1
26	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP347	S34700	...	...	8	1
27	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP347	S34700	...	...	8	1
28	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP347	S34700	...	...	8	1
29	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP347	S34700	...	...	8	1
30	18Cr–10Ni–Cb	Wld. pipe	SA-358	347	S34700	1	...	8	1
31	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347	S34700	...	...	8	1
32	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347	S34700	...	...	8	1
33	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	347	S34700	...	...	8	1
34	18Cr–10Ni–Cb	Wld. pipe	SA-409	TP347	S34700	...	...	8	1
35	18Cr–10Ni–Cb	Bar	SA-479	347	S34700	...	...	8	1
36	18Cr–10Ni–Cb	Bar	SA-479	347	S34700	...	...	8	1
37	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP347	S34700	...	...	8	1

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	70	30	1500	800	1500	HA-2	G5, G12, G18, H2, T7
2	70	30	1500	800	1500	HA-2	G5, G12, G18, H2, T7
3	70	30	1500	NP	1500	HA-2	G12, G18, H2, T7
4	70	30	1500	800	1500	HA-2	G5, G12, G18, H1, H2, T7
5	70	30	1500	NP	NP	HA-2	G18, T9
6	70	30	1500	800	1500	HA-2	G5, G18, H2, T8
7	70	30	NP	800	1500	HA-2	G5, H2, T8
8	70	30	NP	NP	1500	HA-2	G5, H2, T8
9	70	30	1500	800	1500	HA-2	G5, G18, H1, H2, T8
10	70	30	1500	NP	NP	HA-2	G18, T7
11	70	30	1500	800	1500	HA-2	G5, G12, G18, H2, T7
12	70	30	NP	NP	1500	HA-2	G5, G12, H2, T7
13	70	30	NP	NP	1500	HA-2	G12, H2, T7
14	70	30	1500	NP	NP	HA-2	G18, T9
15	70	30	1500	800	1500	HA-2	G5, G18, H2, T8
16	75	30	1500	800	1500	HA-2	G5, G12, G18, H2, T6
17	75	30	1500	NP	1500	HA-2	G12, G18, H2, T7
18	75	30	1500	800	1500	HA-2	G5, G12, G18, H2, T6
19	75	30	1500	NP	1500	HA-2	G12, G18, H2, T7
20	75	30	1500	800	1500	HA-2	G5, G12, G18, T6
21	75	30	1500	NP	1500	HA-2	G12, G18, T7
22	75	30	1500	NP	NP	...	G12, G18, T7, W13
23	75	30	1500	800	NP	HA-2	G5, G12, G18, T6, W12, W13
24	75	30	1500	NP	1500	HA-2	G3, G5, G12, G18, G24, T6
25	75	30	1500	NP	1500	HA-2	G3, G12, G18, G24, T7
26	75	30	1500	800	1500	HA-2	G5, G12, G18, H2, T6, W12, W13
27	75	30	1500	NP	1500	HA-2	G12, G18, H2, T7, W13
28	75	30	1500	NP	1500	HA-2	G3, G5, G12, G18, G24, H2, T6
29	75	30	1500	NP	1500	HA-2	G3, G12, G18, G24, H2, T7
30	75	30	NP	800	NP	HA-2	G5, W12
31	75	30	1500	800	1500	HA-2	G5, G12, G18, H1, H2, T6
32	75	30	1500	NP	1500	HA-2	G12, G18, H1, H2, T7
33	75	30	NP	800	1500	HA-2	G5, G12, T6, W12, W14
34	75	30	NP	800	NP	HA-2	G5, W12
35	75	30	1500	800	1500	HA-2	G5, G12, G18, G22, H2, T6
36	75	30	1500	NP	1500	HA-2	G12, G18, G22, H2, T7
37	75	30	NP	800	NP	HA-2	G5, W12

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TABLE 1A (CONT'D)
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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	19.1	...	17.6	16.6	16.0	15.8	15.7	15.7	15.7	15.7	15.7	15.6
2	20.0	...	19.1	...	17.6	16.6	16.0	15.8	15.7	15.7	15.7	15.7	15.7	15.6
3	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
4	20.0	...	19.1	...	17.6	16.6	16.0	15.8	15.7	15.7	15.7	15.7	15.7	15.6
5	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
6	20.0	...	19.1	...	17.6	16.6	16.0	15.7	15.7	15.7	15.7	15.7	15.7	15.6
7	20.0	...	19.1	...	17.6	16.6	16.0	15.7	15.7	15.7	15.7	15.7	15.7	15.6
8	20.0	...	19.1	...	17.6	16.6	16.0	15.7	15.7	15.7	15.7	15.7	15.7	15.6
9	20.0	...	19.1	...	17.6	16.6	16.0	15.7	15.7	15.7	15.7	15.7	15.7	15.6
10	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
11	20.0	...	19.1	...	17.6	16.6	16.0	15.8	15.7	15.7	15.7	15.7	15.7	15.6
12	20.0	...	19.1	...	17.6	16.6	16.0	15.8	15.7	15.7	15.7	15.7	15.7	15.6
13	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
14	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
15	20.0	...	19.1	...	17.6	16.6	16.0	15.7	15.7	15.7	15.7	15.7	15.7	15.6
16	20.0	...	20.0	...	18.8	17.8	17.2	16.9	16.8	16.8	16.8	16.8	16.8	16.7
17	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
18	20.0	...	20.0	...	18.8	17.8	17.2	16.9	16.8	16.8	16.8	16.8	16.8	16.7
19	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
20	20.0	...	20.0	...	18.8	17.8	17.2	16.9	16.8	16.8	16.8	16.8	16.8	16.7
21	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
22	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
23	20.0	...	20.0	...	18.8	17.8	17.2	16.9	16.8	16.8	16.8	16.8	16.8	16.7
24	17.0	...	17.0	...	16.0	15.1	14.6	14.3	14.3	14.3	14.3	14.3	14.3	14.2
25	17.0	...	15.6	...	14.6	13.6	12.8	12.2	11.9	11.8	11.6	11.5	11.5	11.4
26	20.0	...	20.0	...	18.8	17.8	17.2	16.9	16.8	16.8	16.8	16.8	16.8	16.7
27	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
28	17.0	...	17.0	...	16.0	15.1	14.6	14.3	14.3	14.3	14.3	14.3	14.3	14.2
29	17.0	...	15.6	...	14.6	13.6	12.8	12.2	11.9	11.8	11.6	11.5	11.5	11.4
30	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	...	...
31	20.0	...	20.0	...	18.8	17.8	17.2	16.9	16.8	16.8	16.8	16.8	16.8	16.7
32	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
33	20.0	...	20.0	...	18.8	17.8	17.2	16.9	16.8	16.8	16.8	16.8	16.8	16.7
34	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	...	...
35	20.0	...	20.0	...	18.8	17.8	17.2	16.9	16.8	16.8	16.8	16.8	16.8	16.7
36	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
37	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	15.5	15.3	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
2	15.5	15.3	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
3	13.4	13.4	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
4	15.5	15.3	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
5	13.4	13.4	13.4	13.3	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
6	15.5	15.3	15.1	*14.1*	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
7	15.5	15.3	15.1	*14.1*	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
8	15.5	15.3	15.1	*14.1*	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
9	15.5	15.3	15.1	*14.1*	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
10	13.4	13.4	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
11	15.5	15.3	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
12	15.5	15.3	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
13	13.4	13.4	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
14	13.4	13.4	13.4	13.3	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
15	15.5	15.3	15.1	*14.1*	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
16	16.6	*16.0*	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
17	13.4	13.4	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
18	16.6	*16.0*	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
19	13.4	13.4	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
20	16.6	*16.0*	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
21	13.4	13.4	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
22	13.4	13.4	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
23	16.6	*16.0*	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
24	14.1	*13.6*	*10.3*	*7.8*	*5.2*	*3.8*	*2.8*	*1.9*	*1.3*	*1.0*	*0.77*	*0.68*	...	...	...
25	11.4	11.4	*10.3*	*7.8*	*5.2*	*3.8*	*2.8*	*1.9*	*1.3*	*1.0*	*0.77*	*0.68*	...	...	...
26	16.6	*16.0*	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
27	13.4	13.4	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
28	14.1	*13.6*	*10.3*	*7.8*	*5.2*	*3.8*	*2.8*	*1.9*	*1.3*	*1.0*	*0.77*	*0.68*	...	...	...
29	11.4	11.4	*10.3*	*7.8*	*5.2*	*3.8*	*2.8*	*1.9*	*1.3*	*1.0*	*0.77*	*0.68*	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	16.6	*16.0*	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
32	13.4	13.4	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
33	16.6	*16.0*	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	16.6	*16.0*	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
36	13.4	13.4	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
	1	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...	≤ 5	8	1
	2	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...	≤ 5	8	1
	3	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347H	S34709	...	...	8	1
	4	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347H	S34709	...	...	8	1
01	5	18Cr–10Ni–Cb	Plate	SA-240	347H	S34709	...	...	8	1
01	6	18Cr–10Ni–Cb	Plate	SA-240	347H	S34709	...	...	8	1
	7	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347H	S34709	...	...	8	1
	8	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347H	S34709	...	...	8	1
	9	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347H	S34709	...	...	8	1
	10	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347H	S34709	...	...	8	1
	11	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP347H	S34709	...	...	8	1
	12	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP347H	S34709	...	...	8	1
	13	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP347H	S34709	...	...	8	1
	14	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP347H	S34709	...	...	8	1
	15	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347H	S34709	...	...	8	1
	16	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347H	S34709	...	...	8	1
	17	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	347H	S34709	...	...	8	1
	18	18Cr–10Ni–Cb	Cast pipe	SA-452	TP347H	S34709	...	...	8	1
	19	18Cr–10Ni–Cb	Cast pipe	SA-452	TP347H	S34709	...	...	8	1
	20	18Cr–10Ni–Cb	Bar	SA-479	347H	S34709	...	...	8	1
	21	18Cr–10Ni–Cb	Bar	SA-479	347H	S34709	...	...	8	1
	22	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP347H	S34709	...	...	8	1
	23	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP347H	S34709	...	...	8	1
	24	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...	≤ 5	8	1
	25	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...	≤ 5	8	1
	26	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348	S34800	...	...	8	1
	27	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348	S34800	...	...	8	1
	28	18Cr–10Ni–Cb	Plate	SA-240	348	S34800	...	...	8	1
	29	18Cr–10Ni–Cb	Plate	SA-240	348	S34800	...	...	8	1
	30	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348	S34800	...	...	8	1
	31	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348	S34800	...	...	8	1
	32	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348	S34800	...	...	8	1
	33	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348	S34800	...	...	8	1
	34	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP348	S34800	...	...	8	1
	35	18Cr–10Ni–Cb	Smls. pipe	SA-312	TP348	S34800	...	...	8	1
	36	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP348	S34800	...	...	8	1
	37	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP348	S34800	...	...	8	1

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	75	30	1500	800	1500	HA-2	G5, G18, H2, T8	
2	75	30	1500	NP	1500	HA-2	G18, H2, T9	
3	75	30	1500	800	1500	HA-2	G5, G18, H2, T8	
4	75	30	1500	NP	1500	HA-2	G18, H2, T9	
5	75	30	1500	800	1500	HA-2	G5, G18, H2, T8	**01**
6	75	30	1500	NP	1500	HA-2	G18, H2, T9	**01**
7	75	30	1500	800	NP	HA-2	G5, G18, T8, W12, W13	
8	75	30	1500	NP	NP	...	G18, T9, W13	
9	75	30	1500	NP	1500	HA-2	G3, G5, G18, G24, T8	
10	75	30	1500	NP	1500	HA-2	G3, G18, G24, T9	
11	75	30	1500	800	1500	HA-2	G5, G18, H2, T8, W12, W13	
12	75	30	1500	NP	1500	HA-2	G18, H2, T9, W13	
13	75	30	1500	NP	1500	HA-2	G3, G5, G18, G24, H2, T8	
14	75	30	1500	NP	1500	HA-2	G3, G18, G24, H2, T9	
15	75	30	1500	800	1500	HA-2	G5, G18, H1, H2, T8	
16	75	30	1500	NP	1500	HA-2	G18, H1, H2, T9	
17	75	30	NP	800	1500	HA-2	G5, T8, W12, W14	
18	75	30	NP	800	1000	HA-2	G5, G16, G17, G32	
19	75	30	NP	NP	1000	HA-2	G32	
20	75	30	1500	800	NP	...	G5, G18, T8	
21	75	30	1500	NP	NP	...	G18, T9	
22	75	30	NP	800	NP	HA-2	G5, W12	
23	75	30	NP	800	NP	HA-2	G5, W12	
24	75	30	1500	800	1500	HA-2	G5, G12, G18, H2, T6	
25	75	30	1500	NP	1500	HA-2	G12, G18, H2, T7	
26	75	30	1500	800	1500	HA-2	G5, G12, G18, H2, T6	
27	75	30	1500	NP	1500	HA-2	G12, G18, H2, T7	
28	75	30	NP	800	1500	HA-2	G5, G12, T6	
29	75	30	NP	NP	1500	HA-2	G12, T7	
30	75	30	1500	NP	NP	...	G12, G18, T7, W13	
31	75	30	1500	800	NP	HA-2	G5, G12, G18, T6, W12, W13	
32	75	30	1500	NP	1500	HA-2	G3, G5, G12, G18, G24, T6	
33	75	30	1500	NP	1500	HA-2	G3, G12, G18, G24, T7	
34	75	30	1500	800	1500	HA-2	G5, G12, G18, H2, T6, W12	
35	75	30	1500	NP	1500	HA-2	G12, G18, H2, T7	
36	75	30	NP	NP	1500	HA-2	G5, G12, G24, H2, T6	
37	75	30	NP	NP	1500	HA-2	G12, G24, H2, T7	

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SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	16.8	16.7
2	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
3	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	16.8	16.7
4	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
01 5	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	16.8	16.7
01 6	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
7	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	16.8	16.7
8	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
9	17.0	...	17.0	...	16.0	15.1	14.6	14.3	14.3	14.3	14.3	14.3	14.3	14.2
10	17.0	...	15.6	...	14.6	13.6	12.8	12.2	11.9	11.8	11.6	11.5	11.5	11.4
11	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	16.8	16.7
12	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
13	17.0	...	17.0	...	16.0	15.1	14.6	14.3	14.3	14.3	14.3	14.3	14.3	14.2
14	17.0	...	15.6	...	14.6	13.6	12.8	12.2	11.9	11.8	11.6	11.5	11.5	11.4
15	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	16.8	16.7
16	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
17	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	16.8	16.7
18	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	16.8	16.7
19	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
20	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	16.8	16.7
21	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
22	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	...	...
23	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	...	...
24	20.0	...	20.0	...	18.8	17.8	17.2	16.9	16.8	16.8	16.8	16.8	16.8	16.7
25	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
26	20.0	...	20.0	...	18.8	17.8	17.2	16.9	16.8	16.8	16.8	16.8	16.8	16.7
27	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
28	20.0	...	20.0	...	18.8	17.8	17.2	16.9	16.8	16.8	16.8	16.8	16.8	16.7
29	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
30	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
31	20.0	...	20.0	...	18.8	17.8	17.2	16.9	16.8	16.8	16.8	16.8	16.8	16.7
32	17.0	...	17.0	...	16.0	15.1	14.6	14.3	14.3	14.3	14.3	14.3	14.3	14.2
33	17.0	...	15.6	...	14.6	13.6	12.8	12.2	11.9	11.8	11.6	11.5	11.5	11.4
34	20.0	...	20.0	...	18.8	17.8	17.2	16.9	16.8	16.8	16.8	16.8	16.8	16.7
35	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
36	17.0	...	17.0	...	16.0	15.1	14.6	14.3	14.3	14.3	14.3	14.3	14.3	14.2
37	17.0	...	15.6	...	14.6	13.6	12.8	12.2	11.9	11.8	11.6	11.5	11.5	11.4

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	16.6	16.4	16.2	*14.1*	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...	
2	13.4	13.4	13.4	13.3	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...	
3	16.6	16.4	16.2	*14.1*	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...	
4	13.4	13.4	13.4	13.3	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...	
5	16.6	16.4	16.2	*14.1*	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...	**01**
6	13.4	13.4	13.4	13.3	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...	**01**
7	16.6	16.4	16.2	*14.1*	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...	
8	13.4	13.4	13.4	13.3	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...	
9	14.1	14.0	13.7	*12.0*	*8.9*	*6.7*	*5.0*	*3.7*	*2.7*	*2.1*	*1.6*	*1.1*	...	...	...	
10	11.4	11.4	11.4	11.3	*8.9*	*6.7*	*5.0*	*3.7*	*2.7*	*2.1*	*1.6*	*1.1*	...	...	...	
11	16.6	16.4	16.2	*14.1*	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...	
12	13.4	13.4	13.4	13.3	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...	
13	14.1	14.0	13.7	*12.0*	*8.9*	*6.7*	*5.0*	*3.7*	*2.7*	*2.1*	*1.6*	*1.1*	...	...	...	
14	11.4	11.4	11.4	11.3	*8.9*	*6.7*	*5.0*	*3.7*	*2.7*	*2.1*	*1.6*	*1.1*	...	...	...	
15	16.6	16.4	16.2	*14.1*	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...	
16	13.4	13.4	13.4	13.3	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...	
17	16.6	16.4	16.2	*14.1*	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...	
18	16.6	16.4	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	13.4	13.4	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	16.6	16.4	16.2	*14.1*	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...	
21	13.4	13.4	13.4	13.3	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	16.6	*16.0*	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...	
25	13.4	13.4	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...	
26	16.6	*16.0*	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...	
27	13.4	13.4	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...	
28	16.6	*16.0*	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...	
29	13.4	13.4	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...	
30	13.4	13.4	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...	
31	16.6	*16.0*	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...	
32	14.1	*13.6*	*10.3*	*7.8*	*5.2*	*3.8*	*2.8*	*1.9*	*1.3*	*1.0*	*0.77*	*0.68*	...	...	...	
33	11.4	11.4	*10.3*	*7.8*	*5.2*	*3.8*	*2.8*	*1.9*	*1.3*	*1.0*	*0.77*	*0.68*	...	...	...	
34	16.6	*16.0*	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...	
35	13.4	13.4	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...	
36	14.1	*13.6*	*10.3*	*7.8*	*5.2*	*3.8*	*2.8*	*1.9*	*1.3*	*1.0*	*0.77*	*0.68*	...	...	...	
37	11.4	11.4	*10.3*	*7.8*	*5.2*	*3.8*	*2.8*	*1.9*	*1.3*	*1.0*	*0.77*	*0.68*	...	...	...	

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	18Cr–10Ni–Cb	Wld. pipe	SA-358	348	S34800	1	...	8	1
2	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP348	S34800	...	...	8	1
3	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP348	S34800	...	...	8	1
4	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	348	S34800	...	...	8	1
5	18Cr–10Ni–Cb	Wld. pipe	SA-409	TP348	S34800	...	...	8	1
6	18Cr–10Ni–Cb	Bar	SA-479	348	S34800	...	...	8	1
7	18Cr–10Ni–Cb	Bar	SA-479	348	S34800	...	...	8	1
8	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP348	S34800	...	...	8	1
9	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP348	S34800	...	...	8	1
10	18Cr–10Ni–Cb	Forgings	SA-182	F348H	S34809	...	≤ 5	8	1
11	18Cr–10Ni–Cb	Forgings	SA-182	F348H	S34809	...	≤ 5	8	1
12	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348H	S34809	...	...	8	1
13	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348H	S34809	...	...	8	1
14	18Cr–10Ni–Cb	Plate	SA-240	348H	S34809	...	...	8	1
15	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348H	S34809	...	...	8	1
16	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348H	S34809	...	...	8	1
17	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348H	S34809	...	...	8	1
18	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348H	S34809	...	...	8	1
19	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP348H	S34809	...	...	8	1
20	18Cr–10Ni–Cb	Smls. pipe	SA-312	TP348H	S34809	...	...	8	1
21	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP348H	S34809	...	...	8	1
22	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP348H	S34809	...	...	8	1
23	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	348H	S34809	...	...	8	1
24	18Cr–10Ni–Cb	Bar	SA-479	348H	S34809	...	...	8	1
25	18Cr–10Ni–Cb	Bar	SA-479	348H	S34809	...	...	8	1
26	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP348H	S34809	...	...	8	1
27	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP348H	S34809	...	...	8	1
28	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...	> 3/8	8	1
29	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...	> 3/8	8	1
30	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321H	S32109	...	> 3/8	8	1
31	18Cr–10Ni–Ti	Forgings	SA-182	F321	S32100	...	> 5	8	1
32	18Cr–10Ni–Ti	Forgings	SA-182	F321	S32100	...	> 5	8	1
33	18Cr–10Ni–Ti	Forgings	SA-336	F321	S32100	...	...	8	1
34	18Cr–10Ni–Ti	Forgings	SA-336	F321	S32100	...	...	8	1
35	18Cr–10Ni–Ti	Forged pipe	SA-430	FP321	S32100	...	...	8	1
36	18Cr–10Ni–Ti	Forged pipe	SA-430	FP321	S32100	...	...	8	1

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TABLE 1A (CONT'D)
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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	75	30	NP	800	NP	HA-2	G5, W12
2	75	30	1500	800	1500	HA-2	G5, G12, G18, H1, H2, T6
3	75	30	1500	NP	1500	HA-2	G12, G18, H1, H2, T7
4	75	30	NP	800	1500	HA-2	G5, G12, T6, W12, W14
5	75	30	NP	800	NP	HA-2	G5, W12
6	75	30	1500	800	1500	HA-2	G5, G12, G18, G22, H2, T6
7	75	30	1500	NP	1500	HA-2	G12, G18, G22, H2, T7
8	75	30	NP	800	NP	HA-2	G5, W12
9	75	30	NP	800	NP	HA-2	G5, W12
10	75	30	1500	800	1500	HA-2	G5, G18, H2, T8
11	75	30	1500	NP	1500	HA-2	G18, H2, T9
12	75	30	1500	800	1500	HA-2	G5, G18, H2, T8
13	75	30	1500	NP	1500	HA-2	G18, H2, T9
14	75	30	NP	800	NP	HA-2	G5
15	75	30	1500	800	NP	HA-2	G5, G18, T8, W12, W13
16	75	30	1500	NP	NP	...	G18, T9, W13
17	75	30	1500	NP	1500	HA-2	G3, G5, G18, G24, T8
18	75	30	1500	NP	1500	HA-2	G3, G18, G24, T9
19	75	30	1500	800	1500	HA-2	G5, G18, H2, T8, W12
20	75	30	1500	NP	1500	HA-2	G18, H2, T9
21	75	30	NP	NP	1500	HA-2	G5, G24, H2, T8
22	75	30	NP	NP	1500	HA-2	G24, H2, T9
23	75	30	NP	800	1500	HA-2	G5, T8, W12, W14
24	75	30	1500	800	NP	...	G5, G18, T8
25	75	30	1500	NP	NP	...	G18, T9
26	75	30	NP	800	NP	HA-2	G5, W12
27	75	30	NP	800	NP	HA-2	G5, W12
28	70	25	NP	800	1500	HA-2	G5, G12, T7
29	70	25	NP	NP	1500	HA-2	G12, T7
30	70	25	NP	800	1500	HA-2	G5, T8
31	70	30	1500	800	1500	HA-2	G5, G12, G18, H2, T6
32	70	30	1500	NP	1500	HA-2	G12, G18, H2, T7
33	70	30	1500	800	1500	HA-2	G5, G12, G18, H2, T6
34	70	30	1500	NP	1500	HA-2	G12, G18, H2, T7
35	70	30	1500	800	1500	HA-2	G5, G12, G18, H1, H2, T6
36	70	30	1500	NP	1500	HA-2	G12, G18, H1, H2, T7

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	...	...
2	20.0	...	20.0	...	18.8	17.8	17.2	16.9	16.8	16.8	16.8	16.8	16.8	16.7
3	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
4	20.0	...	20.0	...	18.8	17.8	17.2	16.9	16.8	16.8	16.8	16.8	16.8	16.7
5	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	...	...
6	20.0	...	20.0	...	18.8	17.8	17.2	16.9	16.8	16.8	16.8	16.8	16.8	16.7
7	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
8	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	...	...
9	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	...	...
10	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	16.8	16.7
11	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
12	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	16.8	16.7
13	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
14	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	...	...
15	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	16.8	16.7
16	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
17	17.0	...	17.0	...	16.0	15.1	14.6	14.3	14.3	14.3	14.3	14.3	14.3	14.2
18	17.0	...	15.6	...	14.6	13.6	12.8	12.2	11.9	11.8	11.6	11.5	11.5	11.4
19	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	16.8	16.7
20	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
21	17.0	...	17.0	...	16.0	15.1	14.6	14.3	14.3	14.3	14.3	14.3	14.3	14.2
22	17.0	...	15.6	...	14.6	13.6	12.8	12.2	11.9	11.8	11.6	11.5	11.5	11.4
23	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	16.8	16.7
24	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	16.8	16.7
25	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
26	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	...	...
27	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	...	...
28	16.7	...	16.7	...	16.7	16.7	16.1	15.2	14.9	14.6	14.3	14.1	13.9	13.8
29	16.7	...	15.0	...	13.8	12.8	11.9	11.3	11.0	10.8	10.6	10.5	10.3	10.2
30	16.7	...	16.7	...	16.7	16.7	16.1	15.2	14.9	14.6	14.3	14.1	13.9	13.8
31	20.0	...	19.0	...	17.8	17.5	17.5	17.5	17.5	17.5	17.2	16.9	16.7	16.5
32	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
33	20.0	...	19.0	...	17.8	17.5	17.5	17.5	17.5	17.5	17.2	16.9	16.7	16.5
34	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
35	20.0	...	19.0	...	17.8	17.5	17.5	17.5	17.5	17.5	17.2	16.9	16.7	16.5
36	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3

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SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	16.6	*16.0*	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
3	13.4	13.4	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
4	16.6	*16.0*	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	16.6	*16.0*	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
7	13.4	13.4	*12.1*	*9.1*	*6.1*	*4.4*	*3.3*	*2.2*	*1.5*	*1.2*	*0.90*	*0.80*	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	16.6	16.4	16.2	*14.1*	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
11	13.4	13.4	13.4	13.3	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
12	16.6	16.4	16.2	*14.1*	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
13	13.4	13.4	13.4	13.3	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	16.6	16.4	16.2	*14.1*	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
16	13.4	13.4	13.4	13.3	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
17	14.1	14.0	13.7	*12.0*	*8.9*	*6.7*	*5.0*	*3.7*	*2.7*	*2.1*	*1.6*	*1.1*	...	...	...
18	11.4	11.4	11.4	11.3	*8.9*	*6.7*	*5.0*	*3.7*	*2.7*	*2.1*	*1.6*	*1.1*	...	...	...
19	16.6	16.4	16.2	*14.1*	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
20	13.4	13.4	13.4	13.3	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
21	14.1	14.0	13.7	*12.0*	*8.9*	*6.7*	*5.0*	*3.7*	*2.7*	*2.1*	*1.6*	*1.1*	...	...	...
22	11.4	11.4	11.4	11.3	*8.9*	*6.7*	*5.0*	*3.7*	*2.7*	*2.1*	*1.6*	*1.1*	...	...	...
23	16.6	16.4	16.2	*14.1*	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
24	16.6	16.4	16.2	*14.1*	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
25	13.4	13.4	13.4	13.3	*10.5*	*7.9*	*5.9*	*4.4*	*3.2*	*2.5*	*1.8*	*1.3*	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	13.6	13.5	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...
29	10.1	10.0	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...
30	13.6	13.5	12.3	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...
31	16.4	*14.9*	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...
32	12.1	12.0	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...
33	16.4	*14.9*	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...
34	12.1	12.0	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...
35	16.4	*14.9*	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...
36	12.1	12.0	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...	> 5	8	1
2	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...	> 5	8	1
3	18Cr–10Ni–Ti	Forgings	SA-336	F321H	S32109	...	...	8	1
4	18Cr–10Ni–Ti	Forgings	SA-336	F321H	S32109	...	...	8	1
5	18Cr–10Ni–Ti	Forged pipe	SA-430	FP321H	S32109	...	...	8	1
6	18Cr–10Ni–Ti	Forged pipe	SA-430	FP321H	S32109	...	...	8	1
7	18Cr–10Ni–Ti	Forgings	SA-182	F321	S32100	...	≤ 5	8	1
8	18Cr–10Ni–Ti	Forgings	SA-182	F321	S32100	...	≤ 5	8	1
9	18Cr–10Ni–Ti	Forgings	SA-182	F321	S32100	...	≤ 5	8	1
10	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321	S32100	...	...	8	1
11	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321	S32100	...	...	8	1
12	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321	S32100	...	...	8	1
13	18Cr–10Ni–Ti	Plate	SA-240	321	S32100	...	...	8	1
14	18Cr–10Ni–Ti	Plate	SA-240	321	S32100	...	...	8	1
15	18Cr–10Ni–Ti	Plate	SA-240	321	S32100	...	...	8	1
16	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321	S32100	...	...	8	1
17	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321	S32100	...	...	8	1
18	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321	S32100	...	...	8	1
19	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321	S32100	...	...	8	1
20	18Cr–10Ni–Ti	Smls. pipe	SA-312	TP321	S32100	...	≤ 3/8	8	1
21	18Cr–10Ni–Ti	Smls. pipe	SA-312	TP321	S32100	...	≤ 3/8	8	1
22	18Cr–10Ni–Ti	Smls. pipe	SA-312	TP321	S32100	...	≤ 3/8	8	1
23	18Cr–10Ni–Ti	Wld. pipe	SA-312	TP321	S32100	...	...	8	1
24	18Cr–10Ni–Ti	Wld. pipe	SA-312	TP321	S32100	...	...	8	1
25	18Cr–10Ni–Ti	Wld. pipe	SA-312	TP321	S32100	...	...	8	1
26	18Cr–10Ni–Ti	Wld. pipe	SA-312	TP321	S32100	...	...	8	1
27	18Cr–10Ni–Ti	Wld. pipe	SA-358	321	S32100	1	...	8	1
28	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...	≤ 3/8	8	1
29	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...	≤ 3/8	8	1
30	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...	≤ 3/8	8	1
31	18Cr–10Ni–Ti	Smls. & wld. fittings	SA-403	321	S32100	...	...	8	1
32	18Cr–10Ni–Ti	Wld. pipe	SA-409	TP321	S32100	...	...	8	1
33	18Cr–10Ni–Ti	Bar	SA-479	321	S32100	...	...	8	1
34	18Cr–10Ni–Ti	Bar	SA-479	321	S32100	...	...	8	1
35	18Cr–10Ni–Ti	Bar	SA-479	321	S32100	...	...	8	1
36	18Cr–10Ni–Ti	Wld. pipe	SA-813	TP321	S32100	...	...	8	1
37	18Cr–10Ni–Ti	Wld. pipe	SA-814	TP321	S32100	...	...	8	1

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TABLE 1A (CONT'D)
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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	70	30	1500	800	1500	HA-2	G5, G18, H2, T8
2	70	30	1500	NP	1500	HA-2	G18, H2, T8
3	70	30	NP	800	1500	HA-2	G5, H2, T8
4	70	30	NP	NP	1500	HA-2	H2, T8
5	70	30	1500	800	1500	HA-2	G5, G18, H1, H2, T8
6	70	30	1500	NP	1500	HA-2	G18, H1, H2, T8
7	75	30	1500	NP	NP	HA-2	G5, G12, G18, T7
8	75	30	1500	NP	1500	HA-2	G12, G18, T7
9	75	30	NP	800	1500	HA-2	G5, G12, H2, T6
10	75	30	1500	NP	NP	...	G5, G12, G18, T7
11	75	30	1500	NP	1500	HA-2	G12, G18, T7
12	75	30	NP	800	1500	HA-2	G5, G12, H2, T6
13	75	30	1500	NP	NP	...	G5, G12, G18, T7
14	75	30	1500	NP	1500	HA-2	G12, G18, T7
15	75	30	NP	800	1500	HA-2	G5, G12, T6
16	75	30	1500	NP	NP	...	G12, G18, T7, W13
17	75	30	1500	800	NP	HA-2	G5, G12, G18, T7, W12, W13
18	75	30	1500	NP	1500	HA-2	G3, G5, G12, G18, G24, T7
19	75	30	1500	NP	1500	HA-2	G3, G12, G18, G24, T7
20	75	30	1500	NP	NP	...	G5, G12, G18, T7
21	75	30	1500	NP	1500	HA-2	G12, G18, T7
22	75	30	NP	800	1500	HA-2	G5, G12, H2, T6, W12
23	75	30	1500	NP	NP	...	G5, G12, G18, T7, W13
24	75	30	1500	NP	NP	...	G12, G18, T7, W13
25	75	30	1500	NP	1500	HA-2	G3, G5, G12, G18, G24, T7
26	75	30	1500	NP	1500	HA-2	G3, G12, G18, G24, T7
27	75	30	NP	800	NP	HA-2	G5, W12
28	75	30	1500	NP	NP	...	G5, G12, G18, H1, T7
29	75	30	1500	NP	1500	HA-2	G12, G18, H1, T7
30	75	30	NP	800	1500	HA-2	G5, G12, H2, T6
31	75	30	NP	800	1500	HA-2	G5, G12, T6, W12, W14
32	75	30	NP	800	NP	HA-2	G5, W12
33	75	30	1500	NP	NP	...	G5, G12, G18, T7
34	75	30	1500	NP	1500	HA-2	G12, G18, G22, T7
35	75	30	NP	800	1500	HA-2	G5, G12, G22, H2, T6
36	75	30	NP	800	NP	HA-2	G5, W12
37	75	30	NP	800	NP	HA-2	G5, W12

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	19.0	...	17.8	17.5	17.5	17.5	17.5	17.5	17.2	16.9	16.7	16.5
2	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
3	20.0	...	19.0	...	17.8	17.5	17.5	17.5	17.5	17.5	17.2	16.9	16.7	16.5
4	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
5	20.0	...	19.0	...	17.8	17.5	17.5	17.5	17.5	17.5	17.2	16.9	16.7	16.5
6	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
7	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
8	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
9	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
10	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
11	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
12	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
13	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
14	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
15	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
16	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
17	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
18	17.0	...	17.0	...	16.2	15.9	15.9	15.5	15.2	14.9	14.6	14.4	14.2	14.1
19	17.0	...	15.3	...	14.1	13.0	12.2	11.5	11.2	11.0	10.8	10.7	10.5	10.4
20	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
21	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
22	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
23	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
24	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
25	17.0	...	17.0	...	16.2	15.9	15.9	15.5	15.2	14.9	14.6	14.4	14.2	14.1
26	17.0	...	15.3	...	14.1	13.0	12.2	11.5	11.2	11.0	10.8	10.7	10.5	10.4
27	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	...	...
28	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
29	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
30	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
31	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
32	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	...	...
33	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
34	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
35	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
36	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	...	...
37	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	...	...

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SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	16.4	16.2	12.3	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	...	...	...
2	12.1	12.0	11.9	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	...	...	...
3	16.4	16.2	12.3	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	...	...	...
4	12.1	12.0	11.9	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	...	...	...
5	16.4	16.2	12.3	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	...	...	...
6	12.1	12.0	11.9	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	...	...	...
7	16.4	16.2	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
8	12.1	12.0	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
9	16.4	14.9	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
10	16.4	16.2	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
11	12.1	12.0	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
12	16.4	14.9	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
13	16.4	16.2	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
14	12.1	12.0	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
15	16.4	14.9	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
16	12.1	12.0	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
17	16.4	16.2	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
18	13.9	13.8	8.2	5.9	4.3	3.1	2.2	1.4	0.9	0.68	0.43	0.26	...	...	...
19	10.3	10.2	8.2	5.9	4.3	3.1	2.2	1.4	0.9	0.68	0.43	0.26	...	...	...
20	16.4	16.2	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
21	12.1	12.0	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
22	16.4	14.9	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
23	16.4	16.2	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
24	12.1	12.0	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
25	13.9	13.8	8.2	5.9	4.3	3.1	2.2	1.4	0.9	0.68	0.43	0.26	...	...	...
26	10.3	10.2	8.2	5.9	4.3	3.1	2.2	1.4	0.9	0.68	0.43	0.26	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	16.4	16.2	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
29	12.1	12.0	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
30	16.4	14.9	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
31	16.4	14.9	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	16.4	16.2	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
34	12.1	12.0	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
35	16.4	14.9	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
	1	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...	≤ 5	8	1
	2	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...	≤ 5	8	1
	3	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321H	S32109	...	...	8	1
	4	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321H	S32109	...	...	8	1
01	5	18Cr–10Ni–Ti	Plate	SA-240	321H	S32109	...	...	8	1
01	6	18Cr–10Ni–Ti	Plate	SA-240	321H	S32109	...	...	8	1
	7	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321H	S32109	...	...	8	1
	8	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321H	S32109	...	...	8	1
	9	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321H	S32109	...	...	8	1
	10	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321H	S32109	...	...	8	1
	11	18Cr–10Ni–Ti	Smls. pipe	SA-312	TP321H	S32109	...	≤ 3/8	8	1
	12	18Cr–10Ni–Ti	Smls. pipe	SA-312	TP321H	S32109	...	≤ 3/8	8	1
	13	18Cr–10Ni–Ti	Wld. pipe	SA-312	TP321H	S32109	...	...	8	1
	14	18Cr–10Ni–Ti	Wld. pipe	SA-312	TP321H	S32109	...	...	8	1
	15	18Cr–10Ni–Ti	Wld. pipe	SA-312	TP321H	S32109	...	...	8	1
	16	18Cr–10Ni–Ti	Wld. pipe	SA-312	TP321H	S32109	...	...	8	1
	17	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321H	S32109	...	≤ 3/8	8	1
	18	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321H	S32109	...	≤ 3/8	8	1
	19	18Cr–10Ni–Ti	Smls. & wld. fittings	SA-403	321H	S32109	...	...	8	1
	20	18Cr–10Ni–Ti	Bar	SA-479	321H	S32109	...	...	8	1
	21	18Cr–10Ni–Ti	Bar	SA-479	321H	S32109	...	...	8	1
	22	18Cr–10Ni–Ti	Wld. pipe	SA-813	TP321H	S32109	...	...	8	1
	23	18Cr–10Ni–Ti	Wld. pipe	SA-814	TP321H	S32109	...	...	8	1
	24	18Cr–11Ni	Plate	SA-240	305	S30500	...	...	8	1
	25	18Cr–13Ni–3Mo	Forgings	SA-182	F317L	S31703	...	> 5	8	1
	26	18Cr–13Ni–3Mo	Forgings	SA-182	F317L	S31703	...	> 5	8	1
	27	18Cr–13Ni–3Mo	Forgings	SA-182	F317L	S31703	...	≤ 5	8	1
	28	18Cr–13Ni–3Mo	Forgings	SA-182	F317L	S31703	...	≤ 5	8	1
	29	18Cr–13Ni–3Mo	Forgings	SA-182	F317	S31700	...	≤ 5	8	1
	30	18Cr–13Ni–3Mo	Forgings	SA-182	F317	S31700	...	≤ 5	8	1
	31	18Cr–13Ni–3Mo	Plate	SA-240	317	S31700	...	...	8	1
	32	18Cr–13Ni–3Mo	Plate	SA-240	317	S31700	...	...	8	1
	33	18Cr–13Ni–3Mo	Plate	SA-240	317L	S31703	...	...	8	1
	34	18Cr–13Ni–3Mo	Plate	SA-240	317L	S31703	...	...	8	1
	35	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317	S31700	...	...	8	1
	36	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317	S31700	...	...	8	1
	37	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317	S31700	...	...	8	1
	38	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317L	S31703	...	...	8	1
	39	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317L	S31703	...	...	8	1

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	75	30	1500	800	1500	HA-2	G5, G18, T8	
2	75	30	1500	NP	1500	HA-2	G18, T8	
3	75	30	1500	800	1500	HA-2	G5, G18, T8	
4	75	30	1500	NP	1500	HA-2	G18, T8	
5	75	30	1500	800	NP	HA-2	G5, G18, H2, T8	01
6	75	30	1500	NP	NP	HA-2	G18, H2, T8	01
7	75	30	1500	NP	NP	...	G18, T8, W13	
8	75	30	1500	800	NP	HA-2	G5, G18, T8, W12, W13	
9	75	30	1500	NP	1500	HA-2	G3, G5, G18, G24, T8	
10	75	30	1500	NP	1500	HA-2	G3, G18, G24, T8	
11	75	30	1500	800	1500	HA-2	G5, G18, T8, W12	
12	75	30	1500	NP	1500	HA-2	G18, T8	
13	75	30	1500	NP	NP	...	G5, G18, T8, W13	
14	75	30	1500	NP	NP	...	G18, T8, W13	
15	75	30	1500	NP	1500	HA-2	G3, G18, G24, T8	
16	75	30	1500	NP	1500	HA-2	G3, G5, G18, G24, T8	
17	75	30	1500	800	1500	HA-2	G5, G18, H1, T8	
18	75	30	1500	NP	1500	HA-2	G18, H1, T8	
19	75	30	NP	800	1500	HA-2	G5, T8, W12, W14	
20	75	30	1500	NP	NP	...	G18, T8	
21	75	30	1500	800	NP	...	G5, G18, T8	
22	75	30	NP	800	NP	HA-2	G5, W12	
23	75	30	NP	800	NP	HA-2	G5, W12	
24	75	30	NP	800	NP	...	G5	
25	65	25	NP	NP	850	HA-4	G5	
26	65	25	NP	NP	850	HA-4	...	
27	70	25	NP	NP	850	HA-4	G5	
28	70	25	NP	NP	850	HA-4	...	
29	75	30	NP	NP	1500	HA-2	G5, G12, T8	
30	75	30	NP	NP	1500	HA-2	G12, T9	
31	75	30	NP	NP	1500	HA-2	G5, G12, T8	
32	75	30	NP	NP	1500	HA-2	G12, T9	
33	75	30	NP	NP	850	HA-4	G5	
34	75	30	NP	NP	850	HA-4	...	
35	75	30	NP	800	NP	...	G5, W12	
36	75	30	NP	NP	1500	HA-2	G5, G12, G24, T8	
37	75	30	NP	NP	1500	HA-2	G12, G24, T9	
38	75	30	NP	NP	850	HA-4	G5, G24	
39	75	30	NP	NP	850	HA-4	G24	

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
2	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
3	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
4	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
01 5	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
01 6	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
7	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
8	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
9	17.0	...	17.0	...	16.2	15.9	15.9	15.5	15.2	14.9	14.6	14.4	14.2	14.1
10	17.0	...	15.3	...	14.1	13.0	12.2	11.5	11.2	11.0	10.8	10.7	10.5	10.4
11	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
12	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
13	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
14	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
15	17.0	...	15.3	...	14.1	13.0	12.2	11.5	11.2	11.0	10.8	10.7	10.5	10.4
16	17.0	...	17.0	...	16.2	15.9	15.9	15.5	15.2	14.9	14.6	14.4	14.2	14.1
17	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
18	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
19	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
20	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
21	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
22	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	...	...
23	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	...	...
24	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
25	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	12.7	...
26	16.7	...	14.2	...	12.7	11.7	10.9	10.4	10.2	10.0	9.8	9.6	9.4	...
27	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	12.7	...
28	16.7	...	14.2	...	12.7	11.7	10.9	10.4	10.2	10.0	9.8	9.6	9.4	...
29	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
30	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
31	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
32	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
33	20.0	...	20.0	...	19.6	18.9	17.7	16.9	16.5	16.2	15.8	15.5	15.2	...
34	20.0	...	17.0	...	15.2	14.0	13.1	12.5	12.2	12.0	11.7	11.5	11.3	...
35	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
36	17.0	...	17.0	...	17.0	16.4	15.3	14.5	14.1	13.9	13.7	13.5	13.4	13.2
37	17.0	...	14.7	...	13.2	12.1	11.3	10.7	10.5	10.3	10.1	10.0	9.9	9.8
38	17.0	...	17.0	...	16.7	16.0	15.1	14.3	14.0	13.7	13.5	13.2	12.9	...
39	17.0	...	14.5	...	12.9	11.9	11.2	10.6	10.4	10.2	10.0	9.8	9.6	...

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	16.4	16.2	12.3	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
2	12.1	12.0	11.9	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
3	16.4	16.2	12.3	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
4	12.1	12.0	11.9	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
5	16.4	16.2	12.3	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	**01**
6	12.1	12.0	11.9	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	**01**
7	12.1	12.0	11.9	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
8	16.4	16.2	12.3	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
9	13.9	13.8	10.5	*7.7*	*5.9*	*4.6*	*3.5*	*2.7*	*2.1*	*1.6*	*1.3*	*0.94*	...	...	...	
10	10.3	10.2	10.1	*7.7*	*5.9*	*4.6*	*3.5*	*2.7*	*2.1*	*1.6*	*1.3*	*0.94*	...	...	...	
11	16.4	16.2	12.3	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
12	12.1	12.0	11.9	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
13	16.4	16.2	12.3	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
14	12.1	12.0	11.9	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
15	10.3	10.2	10.1	*7.7*	*5.9*	*4.6*	*3.5*	*2.7*	*2.1*	*1.6*	*1.3*	*0.94*	...	...	...	
16	13.9	13.8	10.5	*7.7*	*5.9*	*4.6*	*3.5*	*2.7*	*2.1*	*1.6*	*1.3*	*0.94*	...	...	...	
17	16.4	16.2	12.3	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
18	12.1	12.0	11.9	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
19	16.4	16.2	12.3	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
20	12.1	12.0	11.9	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
21	16.4	16.2	12.3	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
30	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
31	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
32	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	13.1	13.0	12.9	*10.5*	*8.3*	*6.3*	*4.7*	*3.5*	*2.6*	*1.9*	*1.5*	*1.1*	...	...	...	
37	9.7	9.6	9.5	9.4	*8.3*	*6.3*	*4.7*	*3.5*	*2.6*	*1.9*	*1.5*	*1.1*	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	18Cr–13Ni–3Mo	Smls. & wld. pipe	SA-312	TP317	S31700	...	...	8	1
2	18Cr–13Ni–3Mo	Smls. pipe	SA-312	TP317	S31700	...	...	8	1
3	18Cr–13Ni–3Mo	Wld. pipe	SA-312	TP317	S31700	...	...	8	1
4	18Cr–13Ni–3Mo	Wld. pipe	SA-312	TP317	S31700	...	...	8	1
5	18Cr–13Ni–3Mo	Smls. pipe	SA-312	TP317L	S31703	...	...	8	1
6	18Cr–13Ni–3Mo	Smls. pipe	SA-312	TP317L	S31703	...	...	8	1
7	18Cr–13Ni–3Mo	Wld. pipe	SA-312	TP317L	S31703	...	...	8	1
8	18Cr–13Ni–3Mo	Wld. pipe	SA-312	TP317L	S31703	...	...	8	1
9	18Cr–13Ni–3Mo	Smls. & wld. fittings	SA-403	317	S31700	...	...	8	1
10	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	CR	...	8	1
11	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	CR	...	8	1
12	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	WP-S	...	8	1
13	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	WP-S	...	8	1
14	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	WP-W	...	8	1
15	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	WP-W	...	8	1
16	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	WP-WU	...	8	1
17	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	WP-WU	...	8	1
18	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	WP-WX	...	8	1
19	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	WP-WX	...	8	1
20	18Cr–18Ni–2Si	Smls. tube	SA-213	XM-15	S38100	...	...	8	1
21	18Cr–18Ni–2Si	Smls. tube	SA-213	XM-15	S38100	...	...	8	1
22	18Cr–18Ni–2Si	Plate	SA-240	XM-15	S38100	...	...	8	1
23	18Cr–18Ni–2Si	Plate	SA-240	XM-15	S38100	...	...	8	1
24	18Cr–18Ni–2Si	Wld. tube	SA-249	TPXM-15	S38100	...	...	8	1
25	18Cr–18Ni–2Si	Wld. tube	SA-249	TPXM-15	S38100	...	...	8	1
26	18Cr–18Ni–2Si	Wld. pipe	SA-312	TPXM-15	S38100	...	...	8	1
27	18Cr–18Ni–2Si	Wld. pipe	SA-312	TPXM-15	S38100	...	...	8	1
28	19Cr–9Ni–½Mo	Castings	SA-351	CF10	J92590	...	...	8	1
29	19Cr–9Ni–½Mo	Castings	SA-351	CF10	J92590	...	...	8	1
30	19Cr–9Ni–2Mo	Castings	SA-351	CF10M	...	...	...	8	1
31	19Cr–9Ni–2Mo	Castings	SA-351	CF10M	...	...	...	8	1
32	19Cr–10Ni–3Mo	Castings	SA-351	CG8M	J93000	...	...	8	1
33	19Cr–10Ni–3Mo	Castings	SA-351	CG8M	J93000	...	...	8	1
34	19Cr–15Ni–4Mo	Smls. tube	SA-213	...	S31725	...	...	8	4
35	19Cr–15Ni–4Mo	Smls. tube	SA-213	...	S31725	...	...	8	4
36	19Cr–15Ni–4Mo	Plate	SA-240	...	S31725	...	...	8	4
37	19Cr–15Ni–4Mo	Plate	SA-240	...	S31725	...	...	8	4
38	19Cr–15Ni–4Mo	Wld. tube	SA-249	...	S31725	...	...	8	4
39	19Cr–15Ni–4Mo	Wld. tube	SA-249	...	S31725	...	...	8	4

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	75	30	NP	800	1500	HA-2	G5, G12, T8, W12
2	75	30	NP	NP	1500	HA-2	G12, T9
3	75	30	NP	NP	1500	HA-2	G5, G12, G24, T8
4	75	30	NP	NP	1500	HA-2	G12, G24, T9
5	75	30	NP	NP	850	HA-4	G5
6	75	30	NP	NP	850	HA-4	...
7	75	30	NP	NP	850	HA-4	G5, G24
8	75	30	NP	NP	850	HA-4	G24
9	75	30	NP	NP	1500	HA-2	G5, G12, T8, W14
10	75	30	NP	NP	850	HA-4	G5, G24
11	75	30	NP	NP	850	HA-4	G24
12	75	30	NP	NP	850	HA-4	G5
13	75	30	NP	NP	850	HA-4	...
14	75	30	NP	NP	850	HA-4	G5, G24
15	75	30	NP	NP	850	HA-4	G24
16	75	30	NP	NP	850	HA-4	G5, G24
17	75	30	NP	NP	850	HA-4	G24
18	75	30	NP	NP	850	HA-4	G5, G24
19	75	30	NP	NP	850	HA-4	G24
20	75	30	NP	NP	1000	HA-2	G5
21	75	30	NP	NP	1000	HA-2	...
22	75	30	NP	NP	1000	HA-2	G5
23	75	30	NP	NP	1000	HA-2	...
24	75	30	NP	NP	1000	HA-2	G5, G24
25	75	30	NP	NP	1000	HA-2	G24
26	75	30	NP	NP	950	HA-2	G5, G24
27	75	30	NP	NP	1000	HA-2	G24
28	70	30	NP	NP	1500	HA-1	G1, G5, G32, T6
29	70	30	NP	NP	1500	HA-1	G1, G32, T7
30	70	30	NP	NP	1500	HA-2	G1, G5, G32, T6
31	70	30	NP	NP	1500	HA-2	G1, G32, T8
32	75	35	NP	NP	1000	HA-2	G1, G5, G32
33	75	35	NP	NP	1000	HA-2	G1, G32
34	75	30	NP	NP	400	HA-4	G5
35	75	30	NP	NP	400	HA-4	...
36	75	30	NP	NP	400	HA-4	G5
37	75	30	NP	NP	400	HA-4	...
38	75	30	NP	NP	400	HA-4	G5, G24
39	75	30	NP	NP	400	HA-4	G24

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
2	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
3	17.0	...	17.0	...	17.0	16.4	15.3	14.5	14.1	13.9	13.7	13.5	13.4	13.2
4	17.0	...	14.7	...	13.2	12.1	11.3	10.7	10.5	10.3	10.1	10.0	9.9	9.8
5	20.0	20.0	20.0	20.0	19.6	18.9	17.7	16.9	16.5	16.2	15.8	15.5	15.2	...
6	20.0	18.2	17.0	16.0	15.2	14.0	13.1	12.5	12.2	12.0	11.7	11.5	11.3	...
7	17.0	17.0	17.0	17.0	16.7	16.0	15.1	14.3	14.0	13.7	13.5	13.2	12.9	...
8	17.0	15.5	14.5	13.6	12.9	11.9	11.2	10.6	10.4	10.2	10.0	9.8	9.6	...
9	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
10	17.0	...	17.0	...	16.7	16.0	15.1	14.3	14.0	13.7	13.5	13.2	12.9	...
11	17.0	...	14.5	...	12.9	11.9	11.2	10.6	10.4	10.2	10.0	9.8	9.6	...
12	20.0	...	20.0	...	19.6	18.9	17.7	16.9	16.5	16.2	15.8	15.5	15.2	...
13	20.0	...	17.0	...	15.2	14.0	13.1	12.5	12.2	12.0	11.7	11.5	11.3	...
14	17.0	...	17.0	...	16.7	16.0	15.1	14.3	14.0	13.7	13.5	13.2	12.9	...
15	17.0	...	14.5	...	12.9	11.9	11.2	10.6	10.4	10.2	10.0	9.8	9.6	...
16	17.0	...	17.0	...	16.7	16.0	15.1	14.3	14.0	13.7	13.5	13.2	12.9	...
17	17.0	...	14.5	...	12.9	11.9	11.2	10.6	10.4	10.2	10.0	9.8	9.6	...
18	17.0	...	17.0	...	16.7	16.0	15.1	14.3	14.0	13.7	13.5	13.2	12.9	...
19	17.0	...	14.5	...	12.9	11.9	11.2	10.6	10.4	10.2	10.0	9.8	9.6	...
20	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
21	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
22	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
23	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
24	17.0	...	17.0	...	16.1	15.5	14.8	14.1	13.8	13.5	13.2	12.9	12.6	12.4
25	17.0	...	14.2	...	12.7	11.7	11.0	10.4	10.2	10.0	9.8	9.6	9.4	9.2
26	17.0	...	17.0	...	16.1	15.5	14.8	14.1	13.8	13.5	13.2	12.9	12.6	12.4
27	17.0	...	14.2	...	12.7	11.7	11.0	10.4	10.2	10.0	9.8	9.6	9.4	9.2
28	20.0	...	19.0	...	17.7	17.2	17.0	16.5	16.2	15.8	15.5	15.2	14.9	14.6
29	20.0	...	16.7	...	15.0	13.8	12.9	12.2	12.0	11.7	11.5	11.3	11.1	10.8
30	20.0	...	20.0	...	19.5	19.3	17.9	17.0	16.6	16.3	16.1	15.9	15.7	15.5
31	20.0	...	17.5	...	15.7	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
32	21.4	...	20.8	...	19.6	19.1	18.4	17.5	17.1	16.8	16.6	16.4	16.2	16.0
33	21.4	...	18.8	...	16.4	14.7	13.6	12.9	12.7	12.5	12.3	12.1	12.0	11.8
34	20.0	...	20.0	...	19.6	18.9	...	...	...	...	...	...	...	...
35	20.0	...	16.9	...	15.2	14.0	...	...	...	...	...	...	...	...
36	20.0	...	20.0	...	19.6	18.9	...	...	...	...	...	...	...	...
37	20.0	...	16.9	...	15.2	14.0	...	...	...	...	...	...	...	...
38	17.0	...	17.0	...	16.6	16.1	...	...	...	...	...	...	...	...
39	17.0	...	14.4	...	12.9	11.9	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...
2	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...
3	13.1	13.0	12.9	*10.5*	*8.3*	*6.3*	*4.7*	*3.5*	*2.6*	*1.9*	*1.5*	*1.1*	...	...	...
4	9.7	9.6	9.5	9.4	*8.3*	*6.3*	*4.7*	*3.5*	*2.6*	*1.9*	*1.5*	*1.1*	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	14.3	14.0	...	...	...	...	...	...	...	...	...	...	...	...	...
21	10.6	10.4	...	...	...	...	...	...	...	...	...	...	...	...	...
22	14.3	14.0	...	...	...	...	...	...	...	...	...	...	...	...	...
23	10.6	10.4	...	...	...	...	...	...	...	...	...	...	...	...	...
24	12.1	11.9	...	...	...	...	...	...	...	...	...	...	...	...	...
25	9.0	8.8	...	...	...	...	...	...	...	...	...	...	...	...	...
26	12.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	9.0	8.8	...	...	...	...	...	...	...	...	...	...	...	...	...
28	14.4	*12.2*	*9.5*	*7.5*	*6.0*	*4.8*	*3.9*	*3.3*	*2.7*	*2.3*	*2.0*	*1.7*	...	...	...
29	10.6	10.4	*9.5*	*7.5*	*6.0*	*4.8*	*3.9*	*3.3*	*2.7*	*2.3*	*2.0*	*1.7*	...	...	...
30	15.3	*14.9*	*11.5*	*8.9*	*6.9*	*5.4*	*4.3*	*3.4*	*2.8*	*2.3*	*1.9*	*1.6*	...	...	...
31	11.4	11.3	11.2	*8.9*	*6.9*	*5.4*	*4.3*	*3.4*	*2.8*	*2.3*	*1.9*	*1.6*	...	...	...
32	15.7	12.2	...	...	...	...	...	...	...	...	...	...	...	...	...
33	11.6	11.3	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
	1	19Cr–15Ni–4Mo	Smls. pipe	SA-312	...	S31725	...	...	8	4
	2	19Cr–15Ni–4Mo	Smls. pipe	SA-312	...	S31725	...	...	8	4
	3	19Cr–15Ni–4Mo	Wld. pipe	SA-312	...	S31725	...	...	8	4
	4	19Cr–15Ni–4Mo	Wld. pipe	SA-312	...	S31725	...	...	8	4
	5	19Cr–15Ni–4Mo	Wld. pipe	SA-358	...	S31725	...	...	8	4
	6	19Cr–15Ni–4Mo	Wld. pipe	SA-358	...	S31725	...	...	8	4
	7	19Cr–15Ni–4Mo	Smls. pipe	SA-376	...	S31725	...	...	8	4
	8	19Cr–15Ni–4Mo	Smls. pipe	SA-376	...	S31725	...	...	8	4
	9	19Cr–15Ni–4Mo	Wld. pipe	SA-409	...	S31725	...	...	8	4
	10	19Cr–15Ni–4Mo	Wld. pipe	SA-409	...	S31725	...	...	8	4
	11	19Cr–15Ni–4Mo	Bar	SA-479	...	S31725	...	...	8	4
	12	19Cr–15Ni–4Mo	Bar	SA-479	...	S31725	...	...	8	4
	13	20Cr–10Ni	Bar	SA-479	ER308	S30880	...	...	...	...
01	14	20Cr–18Ni–6Mo	Castings	SA-351	CK3MCuN	J93254	...	...	8	4
	15	20Cr–18Ni–6Mo	Castings	SA-351	CK3MCuN	J93254	...	...	8	4
01	16	20Cr–18Ni–6Mo	Forgings	SA-182	F44	S31254	...	...	8	4
	17	20Cr–18Ni–6Mo	Forgings	SA-182	F44	S31254	...	...	8	4
01	18	20Cr–18Ni–6Mo	Wld. tube	SA-249	...	S31254	...	...	8	4
	19	20Cr–18Ni–6Mo	Wld. tube	SA-249	...	S31254	...	...	8	4
01	20	20Cr–18Ni–6Mo	Smls. pipe	SA-312	...	S31254	...	...	8	4
	21	20Cr–18Ni–6Mo	Smls. pipe	SA-312	...	S31254	...	...	8	4
01	22	20Cr–18Ni–6Mo	Wld. pipe	SA-312	...	S31254	...	...	8	4
	23	20Cr–18Ni–6Mo	Wld. pipe	SA-312	...	S31254	...	...	8	4
01	24	20Cr–18Ni–6Mo	Wld. pipe	SA-358	...	S31254	...	...	8	4
	25	20Cr–18Ni–6Mo	Wld. pipe	SA-358	...	S31254	...	...	8	4
01	26	20Cr–18Ni–6Mo	Fittings	SA-403	...	S31254	...	...	8	4
01	27	20Cr–18Ni–6Mo	Plate	SA-240	...	S31254	...	> 3/16	8	4
01	28	20Cr–18Ni–6Mo	Plate	SA-240	...	S31254	...	> 3/16	8	4
01	29	20Cr–18Ni–6Mo	Plate	SA-240	...	S31254	...	≤ 3/16	8	4
01	30	20Cr–18Ni–6Mo	Plate	SA-240	...	S31254	...	≤ 3/16	8	4
	31	21Cr–6Ni–9Mn	Forgings	SA-182	FXM-11	S21904	...	...	8	3
	32	21Cr–6Ni–9Mn	Smls. pipe	SA-312	TPXM-11	S21904	...	...	8	3
	33	21Cr–6Ni–9Mn	Smls. pipe	SA-312	TPXM-11	S21904	...	...	8	3
	34	21Cr–6Ni–9Mn	Wld. pipe	SA-312	TPXM-11	S21904	...	...	8	3
	35	21Cr–6Ni–9Mn	Wld. pipe	SA-312	TPXM-11	S21904	...	...	8	3
	36	21Cr–6Ni–9Mn	Forgings	SA-336	FXM-11	S21904	...	...	8	3
	37	21Cr–6Ni–9Mn	Forgings	SA-336	FXM-11	S21904	...	...	8	3
	38	21Cr–6Ni–9Mn	Plate	SA-666	XM-11	S21904	...	...	8	3
	39	21Cr–6Ni–9Mn	Plate	SA-666	XM-11	S21904	...	...	8	3

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	75	30	NP	NP	400	HA-4	G5	
2	75	30	NP	NP	400	HA-4	...	
3	75	30	NP	NP	400	HA-4	G5, G24	
4	75	30	NP	NP	400	HA-4	G24	
5	75	30	NP	NP	400	HA-4	G5, G24	
6	75	30	NP	NP	400	HA-4	G24	
7	75	30	NP	NP	400	HA-4	G5	
8	75	30	NP	NP	400	HA-4	...	
9	75	30	NP	NP	400	HA-4	G5, G24	
10	75	30	NP	NP	400	HA-4	G24	
11	75	30	NP	NP	400	HA-4	G5	
12	75	30	NP	NP	400	HA-4	...	
13	75	30	NP	800	NP	...	G5	
14	80	38	NP	750	750	HA-2	G1, G5	**01**
15	80	38	NP	NP	750	HA-2	G1	
16	94	44	NP	750	750	HA-2	G5	**01**
17	94	44	NP	NP	750	HA-2	...	
18	94	44	NP	750	750	HA-2	G5, G24	**01**
19	94	44	NP	NP	750	HA-2	G24	
20	94	44	NP	750	750	HA-2	G5	**01**
21	94	44	NP	NP	750	HA-2	...	
22	94	44	NP	750	750	HA-2	G5, G24	**01**
23	94	44	NP	NP	750	HA-2	G24	
24	94	44	NP	750	750	HA-2	G5, G24	**01**
25	94	44	NP	NP	750	HA-2	G24	
26	94	44	NP	750	NP	HA-2	G5, W12	**01**
27	95	45	NP	750	750	HA-2	G5	**01**
28	95	45	NP	NP	750	HA-2	...	**01**
29	100	45	NP	750	750	HA-2	G5	**01**
30	100	45	NP	NP	750	HA-2	...	**01**
31	90	50	NP	NP	600	CS-2	...	
32	90	50	NP	NP	600	CS-2	G5	
33	90	50	NP	NP	600	CS-2	...	
34	90	50	NP	NP	600	CS-2	G5, G24	
35	90	50	NP	NP	600	CS-2	G24	
36	90	50	NP	NP	600	CS-2	G5	
37	90	50	NP	NP	600	CS-2	...	
38	90	50	NP	NP	600	CS-2	G5	
39	90	50	NP	NP	600	CS-2	...	

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
		–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
	1	20.0	...	20.0	...	19.6	18.9	...	...	...	...	...	...	...	...
	2	20.0	...	16.9	...	15.2	14.0	...	...	...	...	...	...	...	...
	3	17.0	...	17.0	...	16.6	16.1	...	...	...	...	...	...	...	...
	4	17.0	...	14.4	...	12.9	11.9	...	...	...	...	...	...	...	...
	5	17.0	...	17.0	...	16.6	16.1	...	...	...	...	...	...	...	...
	6	17.0	...	14.4	...	12.9	11.9	...	...	...	...	...	...	...	...
	7	20.0	...	20.0	...	19.6	18.9	...	...	...	...	...	...	...	...
	8	20.0	...	16.9	...	15.2	14.0	...	...	...	...	...	...	...	...
	9	17.0	...	17.0	...	16.6	16.1	...	...	...	...	...	...	...	...
	10	17.0	...	14.4	...	12.9	11.9	...	...	...	...	...	...	...	...
	11	20.0	...	20.0	...	19.6	18.9	...	...	...	...	...	...	...	...
	12	20.0	...	16.9	...	15.2	14.0	...	...	...	...	...	...	...	...
	13	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
01	14	22.9	...	22.9	...	21.7	20.7	20.0	19.6	19.4	19.3	19.2	...	...	...
	15	22.9	...	20.7	...	18.5	17.1	16.1	15.4	15.2	15.1	15.0	...	...	...
01	16	26.9	...	26.9	...	25.5	24.3	23.5	23.0	22.8	22.7	22.6	...	...	...
	17	26.9	...	23.9	...	21.4	19.8	18.6	17.9	17.6	17.4	17.3	...	...	...
01	18	22.8	...	22.8	...	21.7	20.7	20.0	19.5	19.4	19.3	19.2	...	...	...
	19	22.8	...	20.3	...	18.2	16.8	15.8	15.2	15.0	14.8	14.7	...	...	...
01	20	26.9	...	26.9	...	25.5	24.3	23.5	23.0	22.8	22.7	22.6	...	...	...
	21	26.9	...	23.9	...	21.4	19.8	18.6	17.9	17.6	17.4	17.3	...	...	...
01	22	22.8	...	22.8	...	21.7	20.7	20.0	19.5	19.4	19.3	19.2	...	...	...
	23	22.8	...	20.3	...	18.2	16.8	15.8	15.2	15.0	14.8	14.7	...	...	...
01	24	22.8	...	22.8	...	21.7	20.7	20.0	19.5	19.4	19.3	19.2	...	...	...
	25	22.8	...	20.3	...	18.2	16.8	15.8	15.2	15.0	14.8	14.7	...	...	...
01	26	26.9	...	26.9	...	25.5	24.3	23.5	23.0	22.8	22.7	22.6	...	...	...
01	27	27.1	...	27.1	...	25.8	24.6	23.7	23.2	23.1	23.0	22.9	...	...	...
01	28	27.1	...	24.5	...	21.9	20.2	19.1	18.3	18.0	17.8	17.7	...	...	...
01	29	28.6	...	28.6	...	27.2	25.9	25.0	24.4	24.3	24.1	23.9	...	...	...
01	30	28.6	...	24.5	...	21.9	20.2	19.1	18.3	18.0	17.8	17.7	...	...	...
	31	25.7	...	25.7	...	22.0	19.6	18.1	17.1	...	...	...	...	...	...
	32	25.7	...	25.7	...	24.0	22.8	22.0	21.5	...	...	...	...	...	...
	33	25.7	...	25.7	...	22.0	19.6	18.1	17.1	...	...	...	...	...	...
	34	21.9	...	21.9	...	20.4	19.4	18.7	18.3	...	...	...	...	...	...
	35	21.9	...	21.9	...	18.7	16.6	15.3	14.6	...	...	...	...	...	...
	36	25.7	...	25.7	...	24.0	22.8	22.0	21.5	...	...	...	...	...	...
	37	25.7	...	25.7	...	22.0	19.6	18.1	17.1	...	...	...	...	...	...
	38	25.7	...	25.7	...	24.0	22.8	22.0	21.5	...	...	...	...	...	...
	39	25.7	...	25.7	...	22.0	19.6	18.1	17.1	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	21Cr–11Ni–N	Forgings	SA-182	F45	S30815	...	...	8	2
2	21Cr–11Ni–N	Forgings	SA-182	F45	S30815	...	...	8	2
3	21Cr–11Ni–N	Smls. tube	SA-213	...	S30815	...	...	8	2
4	21Cr–11Ni–N	Smls. tube	SA-213	...	S30815	...	...	8	2
5	21Cr–11Ni–N	Plate	SA-240	...	S30815	...	...	8	2
6	21Cr–11Ni–N	Plate	SA-240	...	S30815	...	...	8	2
7	21Cr–11Ni–N	Wld. tube	SA-249	...	S30815	...	...	8	2
8	21Cr–11Ni–N	Wld. tube	SA-249	...	S30815	...	...	8	2
9	21Cr–11Ni–N	Smls. pipe	SA-312	...	S30815	...	...	8	2
10	21Cr–11Ni–N	Smls. pipe	SA-312	...	S30815	...	...	8	2
11	21Cr–11Ni–N	Wld. pipe	SA-312	...	S30815	...	...	8	2
12	21Cr–11Ni–N	Wld. pipe	SA-312	...	S30815	...	...	8	2
13	21Cr–11Ni–N	Bar	SA-479	...	S30815	...	...	8	2
14	21Cr–11Ni–N	Bar	SA-479	...	S30815	...	...	8	2
15	22Cr–5Ni–3Mo–N	Forgings	SA-182	F51	S31803	...	...	10H	1
16	22Cr–5Ni–3Mo–N	Plate	SA-240	...	S31803	...	...	10H	1
17	22Cr–5Ni–3Mo–N	Smls. tube	SA-789	...	S31803	...	...	10H	1
18	22Cr–5Ni–3Mo–N	Wld. tube	SA-789	...	S31803	...	...	10H	1
19	22Cr–5Ni–3Mo–N	Smls. pipe	SA-790	...	S31803	...	...	10H	1
20	22Cr–5Ni–3Mo–N	Wld. pipe	SA-790	...	S31803	...	...	10H	1
21	22Cr–5Ni–3Mo–N	Smls. & wld. fittings	SA-815	...	S31803	...	...	10H	1
22	22Cr–13Ni–5Mn	Castings	SA-351	CG6MMN	J93790	...	...	8	3
23	22Cr–13Ni–5Mn	Forgings	SA-182	FXM-19	S20910	...	...	8	3
24	22Cr–13Ni–5Mn	Smls. tube	SA-213	XM-19	S20910	...	...	8	3
25	22Cr–13Ni–5Mn	Plate	SA-240	XM-19	S20910	...	...	8	3
26	22Cr–13Ni–5Mn	Wld. tube	SA-249	TPXM-19	S20910	...	...	8	3
27	22Cr–13Ni–5Mn	Wld. tube	SA-249	TPXM-19	S20910	...	...	8	3
28	22Cr–13Ni–5Mn	Smls. & wld. pipe	SA-312	TPXM-19	S20910	...	...	8	3
29	22Cr–13Ni–5Mn	Smls. pipe	SA-312	TPXM-19	S20910	...	...	8	3
30	22Cr–13Ni–5Mn	Wld. pipe	SA-312	TPXM-19	S20910	...	...	8	3
31	22Cr–13Ni–5Mn	Wld. pipe	SA-358	XM-19	S20910	1	...	8	3
32	22Cr–13Ni–5Mn	Smls. & wld. fittings	SA-403	XM-19	S20910	...	...	8	3
33	22Cr–13Ni–5Mn	Bar	SA-479	XM-19	S20910	...	...	8	3
34	22Cr–13Ni–5Mn	Wld. pipe	SA-813	TPXM-19	S20910	...	...	8	3
35	22Cr–13Ni–5Mn	Wld. pipe	SA-814	TPXM-19	S20910	...	...	8	3
36	23Cr–4Ni–Mo–Cu	Plate	SA-240	...	S32304	...	...	10H	1
37	23Cr–4Ni–Mo–Cu–N	Smls. tube	SA-789	...	S32304	...	> 1	10H	1
38	23Cr–4Ni–Mo–Cu–N	Wld. tube	SA-789	...	S32304	...	> 1	10H	1

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	87	45	NP	NP	1650	HA-6	G5, G40, T5
2	87	45	NP	NP	1650	HA-6	G40, T6
3	87	45	NP	NP	1650	HA-6	G5, G40, T5
4	87	45	NP	NP	1650	HA-6	G40, T6
5	87	45	NP	NP	1650	HA-6	G5, G40, T5
6	87	45	NP	NP	1650	HA-6	G40, T6
7	87	45	NP	NP	1650	HA-6	G5, G24, G40, T5
8	87	45	NP	NP	1650	HA-6	G24, G40, T6
9	87	45	NP	NP	1650	HA-6	G5, G40, T5
10	87	45	NP	NP	1650	HA-6	G40, T6
11	87	45	NP	NP	1650	HA-6	G5, G24, G40, T5
12	87	45	NP	NP	1650	HA-6	G24, G40, T6
13	87	45	NP	NP	1650	HA-6	G5, G40, T5
14	87	45	NP	NP	1650	HA-6	G40, T6
15	90	65	NP	NP	600	HA-5	G32
16	90	65	NP	NP	600	HA-5	G32
17	90	65	NP	NP	600	HA-5	G32
18	90	65	NP	NP	600	HA-5	G24, G32
19	90	65	NP	NP	600	HA-5	G32
20	90	65	NP	NP	600	HA-5	G24, G32
21	90	65	NP	NP	600	HA-5	G32, W14
22	85	42.5	NP	NP	1050	HA-2	G1
23	100	55	NP	800	1200	HA-2	G5, T8
24	100	55	NP	NP	1200	HA-2	T8
25	100	55	NP	800	1200	HA-2	G5, T8
26	100	55	NP	800	NP	HA-2	G5, W12
27	100	55	NP	NP	1200	HA-2	G24, T8
28	100	55	NP	800	NP	HA-2	G5, W12
29	100	55	NP	NP	1200	HA-2	T8
30	100	55	NP	NP	1200	HA-2	G24, T8
31	100	55	NP	800	NP	HA-2	G5, W12
32	100	55	NP	800	1200	HA-2	G5, T8, W12, W14
33	100	55	NP	800	1200	HA-2	G5, G22, T8
34	100	55	NP	800	NP	HA-2	G5, W12
35	100	55	NP	800	NP	HA-2	G5, W12
36	87	58	NP	NP	600	HA-5	G32
37	87	58	NP	NP	600	HA-5	G32
38	87	58	NP	NP	600	HA-5	G24, G32

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	24.9	...	24.7	...	23.3	22.4	21.8	21.4	21.2	21.0	20.8	20.6	20.3	20.0
2	24.9	...	24.7	...	22.0	19.9	18.5	17.7	17.4	17.2	17.0	16.8	16.6	16.4
3	24.9	...	24.7	...	23.3	22.4	21.8	21.4	21.2	21.0	20.8	20.6	20.3	20.0
4	24.9	...	24.7	...	22.0	19.9	18.5	17.7	17.4	17.2	17.0	16.8	16.6	16.4
5	24.9	...	24.7	...	23.3	22.4	21.8	21.4	21.2	21.0	20.8	20.6	20.3	20.0
6	24.9	...	24.7	...	22.0	19.9	18.5	17.7	17.4	17.2	17.0	16.8	16.6	16.4
7	21.1	...	21.0	...	19.8	19.1	18.5	18.2	18.0	17.8	17.7	17.5	17.3	17.0
8	21.1	...	21.0	...	18.7	16.9	15.8	15.0	14.8	14.6	14.5	14.3	14.2	14.0
9	24.9	...	24.7	...	23.3	22.4	21.8	21.4	21.2	21.0	20.8	20.6	20.3	20.0
10	24.9	...	24.7	...	22.0	19.9	18.5	17.7	17.4	17.2	17.0	16.8	16.6	16.4
11	21.1	...	21.0	...	19.8	19.1	18.5	18.2	18.0	17.8	17.7	17.5	17.3	17.0
12	21.1	...	21.0	...	18.7	16.9	15.8	15.0	14.8	14.6	14.5	14.3	14.2	14.0
13	24.9	...	24.7	...	23.3	22.4	21.8	21.4	21.2	21.0	20.8	20.6	20.3	20.0
14	24.9	...	24.7	...	22.0	19.9	18.5	17.7	17.4	17.2	17.0	16.8	16.6	16.4
15	25.7	...	25.7	...	24.8	23.9	23.3	23.1	...	...	...	...	...	...
16	25.7	...	25.7	...	24.8	23.9	23.3	23.1	...	...	...	...	...	...
17	25.7	...	25.7	...	24.8	23.9	23.3	23.1	...	...	...	...	...	...
18	21.9	...	21.9	...	21.1	20.3	19.8	19.6	...	...	...	...	...	...
19	25.7	...	25.7	...	24.8	23.9	23.3	23.1	...	...	...	...	...	...
20	21.9	...	21.9	...	21.1	20.3	19.8	19.6	...	...	...	...	...	...
21	25.7	...	25.7	...	24.8	23.9	23.3	23.1	...	...	...	...	...	...
22	19.4	...	19.3	...	17.8	16.8	16.0	15.4	15.2	14.9	14.7	14.6	14.4	14.2
23	28.6	...	28.4	...	26.9	26.0	25.5	25.1	24.9	24.7	24.5	24.2	23.9	23.6
24	28.6	...	28.4	...	26.9	26.0	25.5	25.0	24.6	24.2	23.9	23.5	23.3	23.0
25	28.6	...	28.4	...	26.9	26.0	25.5	25.1	24.9	24.7	24.5	24.2	23.9	23.6
26	28.6	...	28.4	...	26.9	26.0	25.5	25.1	24.9	24.7	24.5	24.2	...	...
27	24.3	...	24.1	...	22.9	22.1	21.6	21.2	20.9	20.6	20.3	20.0	19.8	19.5
28	28.6	...	28.4	...	26.9	26.0	25.5	25.1	24.9	24.7	24.5	24.2	...	...
29	28.6	...	28.4	...	26.9	26.0	25.5	25.0	24.6	24.2	23.9	23.5	23.3	23.0
30	24.3	...	24.1	...	22.9	22.1	21.6	21.2	20.9	20.6	20.3	20.0	19.8	19.5
31	28.6	...	28.4	...	26.9	26.0	25.5	25.1	24.9	24.7	24.5	24.2	...	...
32	28.6	...	28.4	...	26.9	26.0	25.5	25.1	24.9	24.7	24.5	24.2	23.9	23.6
33	28.6	...	28.4	...	26.9	26.0	25.5	25.1	24.9	24.7	24.5	24.2	23.9	23.6
34	28.6	...	28.4	...	26.9	26.0	25.5	25.1	24.9	24.7	24.5	24.2	...	...
35	28.6	...	28.4	...	26.9	26.0	25.5	25.1	24.9	24.7	24.5	24.2	...	...
36	24.9	...	24.0	...	22.5	21.7	21.3	21.0	...	...	...	...	...	...
37	24.9	...	24.0	...	22.5	21.7	21.3	21.0	...	...	...	...	...	...
38	21.1	...	20.4	...	19.1	18.5	18.1	17.9	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	*19.1*	*14.9*	*11.6*	*9.0*	*6.9*	*5.2*	*4.0*	*3.1*	*2.4*	*1.9*	*1.6*	*1.3*	*1.0*	*0.86*	*0.71*
2	16.2	*14.9*	*11.6*	*9.0*	*6.9*	*5.2*	*4.0*	*3.1*	*2.4*	*1.9*	*1.6*	*1.3*	*1.0*	*0.86*	*0.71*
3	*19.1*	*14.9*	*11.6*	*9.0*	*6.9*	*5.2*	*4.0*	*3.1*	*2.4*	*1.9*	*1.6*	*1.3*	*1.0*	*0.86*	*0.71*
4	16.2	*14.9*	*11.6*	*9.0*	*6.9*	*5.2*	*4.0*	*3.1*	*2.4*	*1.9*	*1.6*	*1.3*	*1.0*	*0.86*	*0.71*
5	*19.1*	*14.9*	*11.6*	*9.0*	*6.9*	*5.2*	*4.0*	*3.1*	*2.4*	*1.9*	*1.6*	*1.3*	*1.0*	*0.86*	*0.71*
6	16.2	*14.9*	*11.6*	*9.0*	*6.9*	*5.2*	*4.0*	*3.1*	*2.4*	*1.9*	*1.6*	*1.3*	*1.0*	*0.86*	*0.71*
7	*16.3*	*12.7*	*9.9*	*7.7*	*5.9*	*4.4*	*3.4*	*2.6*	*2.0*	*1.6*	*1.4*	*1.1*	*0.85*	*0.73*	*0.60*
8	13.8	*12.7*	*9.9*	*7.7*	*5.9*	*4.4*	*3.4*	*2.6*	*2.0*	*1.6*	*1.4*	*1.1*	*0.85*	*0.73*	*0.60*
9	*19.1*	*14.9*	*11.6*	*9.0*	*6.9*	*5.2*	*4.0*	*3.1*	*2.4*	*1.9*	*1.6*	*1.3*	*1.0*	*0.86*	*0.71*
10	16.2	*14.9*	*11.6*	*9.0*	*6.9*	*5.2*	*4.0*	*3.1*	*2.4*	*1.9*	*1.6*	*1.3*	*1.0*	*0.86*	*0.71*
11	*16.3*	*12.7*	*9.9*	*7.7*	*5.9*	*4.4*	*3.4*	*2.6*	*2.0*	*1.6*	*1.4*	*1.1*	*0.85*	*0.73*	*0.60*
12	13.8	*12.7*	*9.9*	*7.7*	*5.9*	*4.4*	*3.4*	*2.6*	*2.0*	*1.6*	*1.4*	*1.1*	*0.85*	*0.73*	*0.60*
13	*19.1*	*14.9*	*11.6*	*9.0*	*6.9*	*5.2*	*4.0*	*3.1*	*2.4*	*1.9*	*1.6*	*1.3*	*1.0*	*0.86*	*0.71*
14	16.2	*14.9*	*11.6*	*9.0*	*6.9*	*5.2*	*4.0*	*3.1*	*2.4*	*1.9*	*1.6*	*1.3*	*1.0*	*0.86*	*0.71*
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	14.1	13.9	13.6	...	...	...	...	...	...	...	...	...	...	...	...
23	23.2	22.8	22.3	*20.4*	*13.0*	*8.3*	...	...	...	...	...	...	...	...	...
24	22.7	22.5	22.2	*20.4*	*13.0*	*8.3*	...	...	...	...	...	...	...	...	...
25	23.2	22.8	22.3	*20.4*	*13.0*	*8.3*	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	19.3	19.1	18.9	*17.3*	*11.1*	*7.1*	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	22.7	22.5	22.2	*20.4*	*13.0*	*8.3*	...	...	...	...	...	...	...	...	...
30	19.3	19.1	18.9	*17.3*	*11.1*	*7.1*	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	23.2	22.8	22.3	*20.4*	*13.0*	*8.3*	...	...	...	...	...	...	...	...	...
33	23.2	22.8	22.3	*20.4*	*13.0*	*8.3*	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
	1	23Cr–4Ni–Mo–Cu–N	Smls. pipe	SA-790	...	S32304	...	...	10H	1
	2	23Cr–4Ni–Mo–Cu–N	Wld. pipe	SA-790	...	S32304	...	...	10H	1
01	3	23Cr–4Ni–Mo–Cu–N	Smls. tube	SA-789	...	S32304	...	≤ 1	10H	1
01	4	23Cr–4Ni–Mo–Cu–N	Wld. tube	SA-789	...	S32304	...	≤ 1	10H	1
	5	23Cr–12Ni	Smls. & wld. fittings	SA-403	309	S30900	...	...	8	2
	6	23Cr–12Ni	Smls. tube	SA-213	TP309S	S30908	...	...	8	2
	7	23Cr–12Ni	Smls. tube	SA-213	TP309S	S30908	...	...	8	2
	8	23Cr–12Ni	Plate	SA-240	309S	S30908	...	...	8	2
	9	23Cr–12Ni	Plate	SA-240	309S	S30908	...	...	8	2
	10	23Cr–12Ni	Wld. tube	SA-249	TP309S	S30908	...	...	8	2
	11	23Cr–12Ni	Wld. tube	SA-249	TP309S	S30908	...	...	8	2
	12	23Cr–12Ni	Smls. & wld. pipe	SA-312	TP309S	S30908	...	...	8	2
	13	23Cr–12Ni	Smls. pipe	SA-312	TP309S	S30908	...	...	8	2
	14	23Cr–12Ni	Wld. pipe	SA-312	TP309S	S30908	...	...	8	2
	15	23Cr–12Ni	Wld. pipe	SA-312	TP309S	S30908	...	...	8	2
	16	23Cr–12Ni	Wld. pipe	SA-312	TP309S	S30908	...	...	8	2
	17	23Cr–12Ni	Wld. pipe	SA-312	TP309S	S30908	...	...	8	2
	18	23Cr–12Ni	Wld. pipe	SA-358	309S	S30908	1	...	8	2
	19	23Cr–12Ni	Bar	SA-479	309S	S30908	...	...	8	2
	20	23Cr–12Ni	Bar	SA-479	309S	S30908	...	...	8	2
	21	23Cr–12Ni	Wld. pipe	SA-813	TP309S	S30908	...	...	8	2
	22	23Cr–12Ni	Wld. pipe	SA-813	TP309S	S30908	...	...	8	2
	23	23Cr–12Ni	Wld. pipe	SA-814	TP309S	S30908	...	...	8	2
	24	23Cr–12Ni	Wld. pipe	SA-814	TP309S	S30908	...	...	8	2
	25	23Cr–12Ni	Smls. tube	SA-213	TP309H	S30909	...	...	8	2
	26	23Cr–12Ni	Smls. tube	SA-213	TP309H	S30909	...	...	8	2
	27	23Cr–12Ni	Plate	SA-240	309H	S30909	...	...	8	2
	28	23Cr–12Ni	Plate	SA-240	309H	S30909	...	...	8	2
	29	23Cr–12Ni	Wld. tube	SA-249	TP309H	S30909	...	...	8	2
	30	23Cr–12Ni	Wld. tube	SA-249	TP309H	S30909	...	...	8	2
	31	23Cr–12Ni	Wld. tube	SA-249	TP309H	S30909	...	...	8	2
	32	23Cr–12Ni	Smls. pipe	SA-312	TP309H	S30909	...	...	8	2
	33	23Cr–12Ni	Smls. pipe	SA-312	TP309H	S30909	...	...	8	2
	34	23Cr–12Ni	Wld. pipe	SA-312	TP309H	S30909	...	...	8	2
	35	23Cr–12Ni	Wld. pipe	SA-312	TP309H	S30909	...	...	8	2
	36	23Cr–12Ni	Bar	SA-479	309H	S30909	...	...	8	2
	37	23Cr–12Ni	Bar	SA-479	309H	S30909	...	...	8	2

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	87	58	NP	NP	600	HA-5	G32	
2	87	58	NP	NP	600	HA-5	G24, G32	
3	100	65	NP	NP	600	HA-5	G32	**01**
4	100	65	NP	NP	600	HA-5	G24, G32	**01**
5	75	30	NP	800	1500	HA-2	G5, G12, T5, W12, W14	
6	75	30	1500	NP	1500	HA-2	G5, G12, G18, T5	
7	75	30	1500	NP	1500	HA-2	G12, G18, T6	
8	75	30	1500	800	1500	HA-2	G5, G12, G18, T5	
9	75	30	1500	NP	1500	HA-2	G12, G18, T6	
10	75	30	NP	NP	1500	HA-2	G5, G12, G24, T5	
11	75	30	NP	NP	1500	HA-2	G12, G24, T6	
12	75	30	1500	800	1500	HA-2	G5, G12, G18, T5, W12	
13	75	30	1500	NP	1500	HA-2	G12, G18, T6	
14	75	30	1500	NP	NP	...	G5, G12, G18, T5, W13	
15	75	30	1500	NP	NP	HA-2	G12, G18, T6, W13	
16	75	30	1500	NP	1500	HA-2	G3, G5, G12, G18, G24, T5	
17	75	30	1500	NP	1500	HA-2	G3, G12, G18, G24, T6	
18	75	30	NP	800	NP	...	G5, W12	
19	75	30	1000	NP	1000	HA-2	G5, G12, G18, G22, T5	
20	75	30	1000	NP	1000	HA-2	G12, G18, G22, T6	
21	75	30	NP	NP	1500	HA-2	G5, G12, G24, T5	
22	75	30	NP	NP	1500	HA-2	G12, G24, T6	
23	75	30	NP	NP	1500	HA-2	G5, G12, G24, T5	
24	75	30	NP	NP	1500	HA-2	G12, G24, T6	
25	75	30	1500	NP	1500	HA-2	G5, G18, T6	
26	75	30	1500	NP	1500	HA-2	G18, T7	
27	75	30	1500	NP	1500	HA-2	G5, G18, H1, T6	
28	75	30	1500	NP	1500	HA-2	G18, H1, T7	
29	75	30	NP	800	NP	HA-2	G5, W12	
30	75	30	NP	NP	1500	HA-2	G5, G24, T6	
31	75	30	NP	NP	1500	HA-2	G24, T7	
32	75	30	1500	NP	1500	HA-2	G5, G18, T6	
33	75	30	1500	NP	1500	HA-2	G18, T7	
34	75	30	1500	NP	1500	HA-2	G3, G5, G18, G24, T6	
35	75	30	1500	NP	1500	HA-2	G3, G18, G24, T7	
36	75	30	1500	NP	1500	HA-2	G5, G18, T6	
37	75	30	1500	NP	1500	HA-2	G18, T7	

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	24.9	...	24.0	...	22.5	21.7	21.3	21.0	...	...	...	...	...	...
2	21.1	...	20.4	...	19.1	18.5	18.1	17.9	...	...	...	...	...	...
01 3	28.6	...	27.6	...	25.9	25.0	24.6	24.3	...	...	...	...	...	...
01 4	24.3	...	23.4	...	22.0	21.3	20.9	20.6	...	...	...	...	...	...
5	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	17.5	17.2
6	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	17.5	17.2
7	20.0	...	17.5	...	16.1	15.1	14.4	13.9	13.7	13.5	13.3	13.1	12.9	12.7
8	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	17.5	17.2
9	20.0	...	17.5	...	16.1	15.1	14.4	13.9	13.7	13.5	13.3	13.1	12.9	12.7
10	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.1	14.8	14.6
11	17.0	...	14.9	...	13.7	12.8	12.2	11.8	11.6	11.5	11.3	11.2	11.0	10.8
12	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	17.5	17.2
13	20.0	...	17.5	...	16.1	15.1	14.4	13.9	13.7	13.5	13.3	13.1	12.9	12.7
14	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	17.5	17.2
15	20.0	...	17.5	...	16.1	15.1	14.4	13.9	13.7	13.5	13.3	13.1	12.9	12.7
16	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.1	14.8	14.6
17	17.0	...	14.9	...	13.7	12.8	12.2	11.8	11.6	11.5	11.3	11.2	11.0	10.8
18	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	...	...
19	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	17.5	17.2
20	20.0	...	17.5	...	16.1	15.1	14.4	13.9	13.7	13.5	13.3	13.1	12.9	12.7
21	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.1	14.8	14.6
22	17.0	...	14.9	...	13.7	12.8	12.2	11.8	11.6	11.5	11.3	11.2	11.0	10.8
23	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.1	14.8	14.6
24	17.0	...	14.9	...	13.7	12.8	12.2	11.8	11.6	11.5	11.3	11.2	11.0	10.8
25	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	17.5	17.2
26	20.0	...	17.5	...	16.1	15.1	14.4	13.9	13.7	13.5	13.3	13.1	12.9	12.7
27	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	17.5	17.2
28	20.0	...	17.5	...	16.1	15.1	14.4	13.9	13.7	13.5	13.3	13.1	12.9	12.7
29	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	...	...
30	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.1	14.8	14.6
31	17.0	...	14.9	...	13.7	12.8	12.2	11.8	11.6	11.5	11.3	11.2	11.0	10.8
32	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	17.5	17.2
33	20.0	...	17.5	...	16.1	15.1	14.4	13.9	13.7	13.5	13.3	13.1	12.9	12.7
34	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.1	14.8	14.6
35	17.0	...	14.9	...	13.7	12.8	12.2	11.8	11.6	11.5	11.3	11.2	11.0	10.8
36	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	17.5	17.2
37	20.0	...	17.5	...	16.1	15.1	14.4	13.9	13.7	13.5	13.3	13.1	12.9	12.7

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
5	*15.9*	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...	
6	*15.9*	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...	
7	12.5	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...	
8	*15.9*	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...	
9	12.5	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...	
10	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...	
11	10.6	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...	
12	*15.9*	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...	
13	12.5	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...	
14	*15.9*	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...	
15	12.5	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...	
16	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...	
17	10.6	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	*15.9*	*9.9*	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	12.5	*9.9*	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...	
22	10.6	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...	
23	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...	
24	10.6	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...	
25	16.9	*13.8*	*10.3*	*7.6*	*5.5*	*4.0*	*3.0*	*2.2*	*1.7*	*1.3*	*1.0*	*0.75*	...	...	...	
26	12.5	12.3	*10.3*	*7.6*	*5.5*	*4.0*	*3.0*	*2.2*	*1.7*	*1.3*	*1.0*	*0.75*	...	...	...	
27	16.9	*13.8*	*10.3*	*7.6*	*5.5*	*4.0*	*3.0*	*2.2*	*1.7*	*1.3*	*1.0*	*0.75*	...	...	...	
28	12.5	12.3	*10.3*	*7.6*	*5.5*	*4.0*	*3.0*	*2.2*	*1.7*	*1.3*	*1.0*	*0.75*	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	14.4	*11.7*	*8.8*	*6.5*	*4.7*	*3.4*	*2.6*	*1.9*	*1.4*	*1.1*	*0.82*	*0.64*	...	...	...	
31	10.6	10.4	*8.8*	*6.5*	*4.7*	*3.4*	*2.6*	*1.9*	*1.4*	*1.1*	*0.82*	*0.64*	...	...	...	
32	16.9	*13.8*	*10.3*	*7.6*	*5.5*	*4.0*	*3.0*	*2.2*	*1.7*	*1.3*	*1.0*	*0.75*	...	...	...	
33	12.5	12.3	*10.3*	*7.6*	*5.5*	*4.0*	*3.0*	*2.2*	*1.7*	*1.3*	*1.0*	*0.75*	...	...	...	
34	14.4	*11.7*	*8.8*	*6.5*	*4.7*	*3.4*	*2.6*	*1.9*	*1.4*	*1.1*	*0.82*	*0.64*	...	...	...	
35	10.6	10.4	*8.8*	*6.5*	*4.7*	*3.4*	*2.6*	*1.9*	*1.4*	*1.1*	*0.82*	*0.64*	...	...	...	
36	16.9	*13.8*	*10.3*	*7.6*	*5.5*	*4.0*	*3.0*	*2.2*	*1.7*	*1.3*	*1.0*	*0.75*	...	...	...	
37	12.5	12.3	*10.3*	*7.6*	*5.5*	*4.0*	*3.0*	*2.2*	*1.7*	*1.3*	*1.0*	*0.75*	...	...	...	

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	23Cr–12Ni–Cb	Smls. tube	SA-213	TP309Cb	S30940	...	...	8	2
2	23Cr–12Ni–Cb	Smls. tube	SA-213	TP309Cb	S30940	...	...	8	2
3	23Cr–12Ni–Cb	Plate	SA-240	309Cb	S30940	...	...	8	2
4	23Cr–12Ni–Cb	Plate	SA-240	309Cb	S30940	...	...	8	2
5	23Cr–12Ni–Cb	Wld. tube	SA-249	TP309Cb	S30940	...	...	8	2
6	23Cr–12Ni–Cb	Wld. tube	SA-249	TP309Cb	S30940	...	...	8	2
7	23Cr–12Ni–Cb	Smls. & wld. pipe	SA-312	TP309Cb	S30940	...	...	8	2
8	23Cr–12Ni–Cb	Smls. pipe	SA-312	TP309Cb	S30940	...	...	8	2
9	23Cr–12Ni–Cb	Wld. pipe	SA-312	TP309Cb	S30940	...	...	8	2
10	23Cr–12Ni–Cb	Wld. pipe	SA-312	TP309Cb	S30940	...	...	8	2
11	23Cr–12Ni–Cb	Bar	SA-479	309Cb	S30940	...	...	8	2
12	23Cr–12Ni–Cb	Bar	SA-479	309Cb	S30940	...	...	8	2
13	23Cr–12Ni–Cb	Wld. pipe	SA-813	TP309Cb	S30940	...	...	8	2
14	23Cr–12Ni–Cb	Wld. pipe	SA-813	TP309Cb	S30940	...	...	8	2
15	23Cr–12Ni–Cb	Wld. pipe	SA-814	TP309Cb	S30940	...	...	8	2
16	23Cr–12Ni–Cb	Wld. pipe	SA-814	TP309Cb	S30940	...	...	8	2
17	24Cr–10Ni–4Mo–N	Castings	SA-351	CE8MN	J93345	...	...	10H	1
18	25Cr–4Ni–4Mo–Ti	Plate	SA-240	...	S44635	...	...	10I	1
19	25Cr–4Ni–4Mo–Ti	Wld. tube	SA-268	...	S44635	...	...	10I	1
20	25Cr–5Ni–3Mo–2Cu	Castings	SA-351	CD4MCu	J93370	...	...	10H	1
21	25Cr–5Ni–3Mo–2Cu	Plate	SA-240	...	S32550	...	...	10H	1
22	25Cr–5Ni–3Mo–2Cu	Bar	SA-479	...	S32550	...	...	10H	1
23	25Cr–5Ni–3Mo–2Cu	Smls. tube	SA-789	...	S32550	...	...	10H	1
24	25Cr–5Ni–3Mo–2Cu	Wld. tube	SA-789	...	S32550	...	...	10H	1
25	25Cr–5Ni–3Mo–2Cu	Smls. pipe	SA-790	...	S32550	...	...	10H	1
26	25Cr–5Ni–3Mo–2Cu	Wld. pipe	SA-790	...	S32550	...	...	10H	1
27	25Cr–6Ni–Mo–N	Plate	SA-240	...	S31200	...	...	10H	1
28	25Cr–6.5Ni–3Mo–N	Smls. tube	SA-789	...	S31260	...	...	10H	1
29	25Cr–6.5Ni–3Mo–N	Wld. tube	SA-789	...	S31260	...	...	10H	1
30	25Cr–6.5Ni–3Mo–N	Smls. pipe	SA-790	...	S31260	...	...	10H	1
31	25Cr–6.5Ni–3Mo–N	Wld. pipe	SA-790	...	S31260	...	...	10H	1
32	25Cr–6.5Ni–3Mo–N	Plate	SA-240	...	S31260	...	...	10H	1
33	25Cr–7Ni–4Mo–N	Smls. tube	SA-789	...	S32750	...	≤ 1	10H	1
34	25Cr–7Ni–4Mo–N	Wld. tube	SA-789	...	S32750	...	≤ 1	10H	1
35	25Cr–7Ni–4Mo–N	Smls. pipe	SA-790	...	S32750	...	≤ 1	10H	1
36	25Cr–7Ni–4Mo–N	Wld. pipe	SA-790	...	S32750	...	≤ 1	10H	1
37	25Cr–12Ni	Castings	SA-351	CH8	J93400	...	...	8	2
38	25Cr–12Ni	Castings	SA-351	CH8	J93400	...	...	8	2
39	25Cr–12Ni	Cast pipe	SA-451	CPH8	J93400	...	...	8	2

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	75	30	NP	NP	1500	HA-2	G5, G12, T5
2	75	30	NP	NP	1500	HA-2	G12, T6
3	75	30	NP	NP	1500	HA-2	G5, G12, T5
4	75	30	NP	NP	1500	HA-2	G12, T6
5	75	30	NP	NP	1500	HA-2	G5, G12, G24, T5
6	75	30	NP	NP	1500	HA-2	G12, G24, T6
7	75	30	NP	800	1500	HA-2	G5, G12, T5, W12
8	75	30	NP	NP	1500	HA-2	G12, T6
9	75	30	NP	NP	1500	HA-2	G5, G12, G24, T5
10	75	30	NP	NP	1500	HA-2	G12, G24, T6
11	75	30	NP	NP	1000	HA-2	G5, G12, G22
12	75	30	NP	NP	1000	HA-2	G12, G22
13	75	30	NP	NP	1500	HA-2	G5, G12, G24, T5
14	75	30	NP	NP	1500	HA-2	G12, G24, T6
15	75	30	NP	NP	1500	HA-2	G5, G12, G13, G24, T5
16	75	30	NP	NP	1500	HA-2	G12, G24, T6
17	95	65	NP	NP	600	HA-4	G1, G32
18	90	75	NP	NP	500	CS-2	G32
19	90	75	NP	NP	500	CS-2	G24, G32
20	100	70	NP	600	NP	...	G7, G29, G32, H4
21	110	80	NP	NP	500	HA-5	G32, G33
22	110	80	NP	NP	500	HA-5	G32, G33
23	110	80	NP	NP	500	HA-5	G32, G33
24	110	80	NP	NP	500	HA-5	G24, G32, G33
25	110	80	NP	NP	500	HA-5	G32, G33
26	110	80	NP	NP	500	HA-5	G24, G32, G33
27	100	65	NP	NP	600	HA-5	G32
28	100	65	NP	NP	650	HA-5	G32
29	100	65	NP	NP	650	HA-5	G24, G32
30	100	65	NP	NP	650	HA-5	G32
31	100	65	NP	NP	650	HA-5	G24, G32
32	100	70	NP	NP	650	HA-5	G32
33	116	80	NP	NP	600	HA-5	G32, G33
34	116	80	NP	NP	600	HA-5	G24, G32, G33
35	116	80	NP	NP	600	HA-5	G32, G33
36	116	80	NP	NP	600	HA-5	G24, G32, G33
37	65	28	NP	800	1500	HA-3	G1, G5, G12, G16, G17, G32, T6
38	65	28	NP	NP	1500	HA-3	G1, G12, G32, T7
39	65	28	NP	800	NP	...	G5, G16, G17, G32

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	17.5	17.2
2	20.0	...	17.5	...	16.1	15.1	14.4	13.9	13.7	13.5	13.3	13.1	12.9	12.7
3	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	17.5	17.2
4	20.0	...	17.5	...	16.1	15.1	14.4	13.9	13.7	13.5	13.3	13.1	12.9	12.7
5	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.1	14.8	14.6
6	17.0	...	14.9	...	13.7	12.8	12.2	11.8	11.6	11.5	11.3	11.2	11.0	10.8
7	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	17.5	17.2
8	20.0	...	17.5	...	16.1	15.1	14.4	13.9	13.7	13.5	13.3	13.1	12.9	12.7
9	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.1	14.8	14.6
10	17.0	...	14.9	...	13.7	12.8	12.2	11.8	11.6	11.5	11.3	11.2	11.0	10.8
11	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	17.5	17.2
12	20.0	...	17.5	...	16.1	15.1	14.4	13.9	13.7	13.5	13.3	13.1	12.9	12.7
13	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.1	14.8	14.6
14	17.0	...	14.9	...	13.7	12.8	12.2	11.8	11.6	11.5	11.3	11.2	11.0	10.8
15	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.1	14.8	14.6
16	17.0	...	14.9	...	13.7	12.8	12.2	11.8	11.6	11.5	11.3	11.2	11.0	10.8
17	27.1	...	27.1	...	25.1	24.2	24.2	24.2	...	...	...	...	...	...
18	25.7	...	24.9	...	23.5	22.5	22.0	...	...	...	...	...	...	...
19	21.9	...	21.2	...	19.9	19.1	18.7	...	...	...	...	...	...	...
20	28.6	...	28.6	...	27.9	27.5	27.5	27.4	...	...	...	...	...	...
21	31.4	...	31.3	...	29.5	28.6	28.2	...	...	...	...	...	...	...
22	31.4	...	31.3	...	29.5	28.6	28.2	...	...	...	...	...	...	...
23	31.4	...	31.3	...	29.5	28.6	28.2	...	...	...	...	...	...	...
24	26.7	...	26.6	...	25.1	24.3	24.0	...	...	...	...	...	...	...
25	31.4	...	31.3	...	29.5	28.6	28.2	...	...	...	...	...	...	...
26	26.7	...	26.6	...	25.1	24.3	24.0	...	...	...	...	...	...	...
27	28.6	...	28.6	...	27.1	26.3	26.1	26.1	...	...	...	...	...	...
28	28.6	...	28.5	...	27.1	26.4	26.3	26.3	26.3	...	...	...	...	...
29	24.3	...	24.3	...	23.0	22.5	22.4	22.4	22.4	...	...	...	...	...
30	28.6	...	28.5	...	27.1	26.4	26.3	26.3	26.3	...	...	...	...	...
31	24.3	...	24.3	...	23.0	22.5	22.4	22.4	22.4	...	...	...	...	...
32	28.6	...	28.5	...	27.1	26.4	26.3	26.3	26.3	...	...	...	...	...
33	33.1	...	33.0	...	31.2	30.1	29.6	29.4	...	...	...	...	...	...
34	28.2	...	28.0	...	26.5	25.6	25.2	25.0	...	...	...	...	...	...
35	33.1	...	33.0	...	31.2	30.1	29.6	29.4	...	...	...	...	...	...
36	28.2	...	28.0	...	26.5	25.6	25.2	25.0	...	...	...	...	...	...
37	18.6	...	17.0	...	15.8	15.4	15.4	15.4	15.3	15.2	15.0	14.8	14.4	13.9
38	18.6	...	15.3	...	14.1	13.5	13.1	12.7	12.4	12.1	11.8	11.4	11.0	10.7
39	18.6	...	17.0	...	15.8	15.4	15.4	15.4	15.3	15.2	15.0	14.8	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	*15.9*	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...
2	12.5	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...
3	*15.9*	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...
4	12.5	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...
5	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...
6	10.6	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...
7	*15.9*	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...
8	12.5	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...
9	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...
10	10.6	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...
11	15.9	9.9	...	...	...	...	...	...	...	...	...	...	...	...	...
12	12.5	9.9	...	...	...	...	...	...	...	...	...	...	...	...	...
13	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...
14	10.6	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...
15	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...
16	10.6	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	13.2	*11.1*	*8.5*	*6.5*	*5.0*	*3.8*	*2.9*	*2.3*	*1.8*	*1.3*	*0.90*	*0.80*	...	...	...
38	10.3	9.9	*8.5*	*6.5*	*5.0*	*3.8*	*2.9*	*2.3*	*1.8*	*1.3*	*0.90*	*0.80*	...	...	...
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	25Cr–12Ni	Castings	SA-351	CH20	J93402	...	...	8	2
2	25Cr–12Ni	Castings	SA-351	CH20	J93402	...	...	8	2
3	25Cr–12Ni	Cast pipe	SA-451	CPH20	J93402	...	...	8	2
4	25Cr–20Ni	Castings	SA-351	CK20	J94202	...	...	8	2
5	25Cr–20Ni	Castings	SA-351	CK20	J94202	...	...	8	2
6	25Cr–20Ni	Cast pipe	SA-451	CPK20	J94202	...	...	8	2
7	25Cr–20Ni	Forgings	SA-182	F310	S31000	...	> 5	8	2
8	25Cr–20Ni	Forgings	SA-182	F310	S31000	...	≤ 5	8	2
9	25Cr–20Ni	Forgings	SA-336	F310	S31000	...	...	8	2
10	25Cr–20Ni	Smls. & wld. fittings	SA-403	310	S31000	...	...	8	2
11	25Cr–20Ni	Smls. tube	SA-213	TP310S	S31008	...	...	8	2
12	25Cr–20Ni	Smls. tube	SA-213	TP310S	S31008	...	...	8	2
13	25Cr–20Ni	Plate	SA-240	310S	S31008	...	...	8	2
14	25Cr–20Ni	Plate	SA-240	310S	S31008	...	...	8	2
15	25Cr–20Ni	Wld. tube	SA-249	TP310S	S31008	...	...	8	2
16	25Cr–20Ni	Wld. tube	SA-249	TP310S	S31008	...	...	8	2
17	25Cr–20Ni	Smls. & wld. pipe	SA-312	TP310S	S31008	...	...	8	2
18	25Cr–20Ni	Smls. pipe	SA-312	TP310S	S31008	...	...	8	2
19	25Cr–20Ni	Wld. pipe	SA-312	TP310S	S31008	...	...	8	2
20	25Cr–20Ni	Wld. pipe	SA-312	TP310S	S31008	...	...	8	2
21	25Cr–20Ni	Wld. pipe	SA-358	310S	S31008	1	...	8	2
22	25Cr–20Ni	Bar	SA-479	310S	S31008	...	...	8	2
23	25Cr–20Ni	Bar	SA-479	310S	S31008	...	...	8	2
24	25Cr–20Ni	Wld. pipe	SA-813	TP310S	S31008	...	...	8	2
25	25Cr–20Ni	Wld. pipe	SA-813	TP310S	S31008	...	...	8	2
26	25Cr–20Ni	Wld. pipe	SA-814	TP310S	S31008	...	...	8	2
27	25Cr–20Ni	Wld. pipe	SA-814	TP310S	S31008	...	...	8	2
28	25Cr–20Ni	Smls. tube	SA-213	TP310H	S31009	...	...	8	2
29	25Cr–20Ni	Plate	SA-240	310H	S31009	...	...	8	2
30	25Cr–20Ni	Plate	SA-240	310H	S31009	...	...	8	2
31	25Cr–20Ni	Wld. tube	SA-249	TP310H	S31009	...	...	8	2
32	25Cr–20Ni	Wld. tube	SA-249	TP310H	S31009	...	...	8	2
33	25Cr–20Ni	Wld. tube	SA-249	TP310H	S31009	...	...	8	2
34	25Cr–20Ni	Smls. pipe	SA-312	TP310H	S31009	...	...	8	2
35	25Cr–20Ni	Smls. pipe	SA-312	TP310H	S31009	...	...	8	2
36	25Cr–20Ni	Wld. pipe	SA-312	TP310H	S31009	...	...	8	2
37	25Cr–20Ni	Wld. pipe	SA-312	TP310H	S31009	...	...	8	2
38	25Cr–20Ni	Bar	SA-479	310H	S31009	...	...	8	2
39	25Cr–20Ni	Bar	SA-479	310H	S31009	...	...	8	2

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	70	30	NP	800	1500	HA-2	G1, G5, G12, G16, G17, T6
2	70	30	NP	NP	1500	HA-2	G1, G12, T7
3	70	30	NP	800	NP	...	G5, G16, G17
4	65	28	NP	800	1500	HA-3	G1, G5, G12, G16, G17, T6
5	65	28	NP	NP	1500	HA-3	G1, G12, T8
6	65	28	NP	800	NP	...	G5, G16, G17
7	70	30	NP	800	NP	HA-2	G5
8	75	30	NP	800	1500	HA-2	G5, G12, G14, T5
9	75	30	NP	800	1500	HA-2	G5, G12, T5
10	75	30	NP	800	1500	HA-2	G5, G12, T5, W12, W14
11	75	30	1500	NP	1500	HA-2	G5, G12, G18, T5
12	75	30	1500	NP	1500	HA-2	G12, G18, T6
13	75	30	1500	800	1500	HA-2	G5, G12, G18, T5
14	75	30	1500	NP	1500	HA-2	G12, G18, T6
15	75	30	NP	NP	1500	HA-2	G5, G12, G24, T5
16	75	30	NP	NP	1500	HA-2	G12, G24, T6
17	75	30	1500	800	1500	HA-2	G5, G12, G18, T5, W12
18	75	30	1500	NP	1500	HA-2	G12, G18, T6
19	75	30	1500	NP	1500	HA-2	G3, G5, G12, G14, G18, G24, T5
20	75	30	1500	NP	1500	HA-2	G3, G12, G14, G18, G24, T6
21	75	30	NP	800	NP	...	G5, W12
22	75	30	1000	NP	1000	HA-2	G12, G18, G22, T6
23	75	30	1000	800	1000	HA-2	G5, G12, G18, G22, T5
24	75	30	NP	NP	1500	HA-2	G5, G12, G24, T5
25	75	30	NP	NP	1500	HA-2	G12, G24, T6
26	75	30	NP	NP	1500	HA-2	G5, G12, G24, T5
27	75	30	NP	NP	1500	HA-2	G12, G24, T6
28	75	30	1500	800	1500	HA-2	G5, G18, T6
29	75	30	1500	NP	1500	HA-2	G5, G18, T6
30	75	30	1500	NP	1500	HA-2	G18, T7
31	75	30	NP	800	NP	HA-2	G5, W12
32	75	30	NP	NP	1500	HA-2	G5, G12, G24, T6
33	75	30	NP	NP	1500	HA-2	G12, G24, T7
34	75	30	1500	NP	1500	HA-2	G5, G18, T6
35	75	30	1500	NP	1500	HA-2	G18, T7
36	75	30	1500	NP	1500	HA-2	G3, G5, G18, G24, T6
37	75	30	1500	NP	1500	HA-2	G3, G18, G24, T7
38	75	30	1500	NP	1500	HA-2	G5, G18, T6
39	75	30	1500	NP	1500	HA-2	G18, T7

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	18.3	...	17.0	16.6	16.6	16.6	16.5	16.4	16.2	15.9	15.5	14.9
2	20.0	...	16.3	...	15.1	14.5	14.0	13.6	13.3	12.9	12.6	12.2	11.8	11.4
3	20.0	...	18.3	...	17.0	16.6	16.6	16.6	16.5	16.4	16.2	15.9	...	...
4	18.6	...	17.0	...	15.8	15.4	15.4	15.4	15.3	15.2	15.0	14.8	14.4	13.9
5	18.6	...	15.3	...	14.1	13.5	13.1	12.7	12.4	12.1	11.8	11.4	11.0	10.7
6	18.6	...	17.0	...	15.8	15.4	15.4	15.4	15.3	15.2	15.0	14.8	...	...
7	20.0	...	19.8	...	18.9	18.6	18.5	18.5	18.2	17.9	17.7	17.4	...	...
8	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
9	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
10	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
11	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
12	20.0	...	17.6	...	16.1	15.1	14.3	13.7	13.5	13.3	13.1	12.9	12.7	12.5
13	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
14	20.0	...	17.6	...	16.1	15.1	14.3	13.7	13.5	13.3	13.1	12.9	12.7	12.5
15	17.0	...	17.0	...	17.0	16.9	16.4	15.7	15.5	15.2	15.0	14.8	14.6	14.4
16	17.0	...	15.0	...	13.7	12.8	12.1	11.7	11.5	11.3	11.1	11.0	10.8	10.7
17	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
18	20.0	...	17.6	...	16.1	15.1	14.3	13.7	13.5	13.3	13.1	12.9	12.7	12.5
19	17.0	...	17.0	...	17.0	16.9	16.4	15.7	15.5	15.2	15.0	14.8	14.6	14.4
20	17.0	...	15.0	...	13.7	12.8	12.1	11.7	11.5	11.3	11.1	11.0	10.8	10.7
21	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	...	...
22	20.0	...	17.6	...	16.1	15.1	14.3	13.7	13.5	13.3	13.1	12.9	12.7	12.5
23	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
24	17.0	...	17.0	...	17.0	16.9	16.4	15.7	15.5	15.2	15.0	14.8	14.6	14.4
25	17.0	...	15.0	...	13.7	12.8	12.1	11.7	11.5	11.3	11.1	11.0	10.8	10.7
26	17.0	...	17.0	...	17.0	16.9	16.4	15.7	15.5	15.2	15.0	14.8	14.6	14.4
27	17.0	...	15.0	...	13.7	12.8	12.1	11.7	11.5	11.3	11.1	11.0	10.8	10.7
28	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
29	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
30	20.0	...	17.6	...	16.1	15.1	14.3	13.7	13.5	13.3	13.1	12.9	12.7	12.5
31	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	...	...
32	17.0	...	17.0	...	17.0	16.9	16.4	15.7	15.5	15.2	15.0	14.8	14.6	14.4
33	17.0	...	15.0	...	13.7	12.8	12.1	11.7	11.5	11.3	11.1	11.0	10.8	10.7
34	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
35	20.0	...	17.6	...	16.1	15.1	14.3	13.7	13.5	13.3	13.1	12.9	12.7	12.5
36	17.0	...	17.0	...	17.0	16.9	16.4	15.7	15.5	15.2	15.0	14.8	14.6	14.4
37	17.0	...	15.0	...	13.7	12.8	12.1	11.7	11.5	11.3	11.1	11.0	10.8	10.7
38	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
39	20.0	...	17.6	...	16.1	15.1	14.3	13.7	13.5	13.3	13.1	12.9	12.7	12.5

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	14.3	11.1	8.5	6.5	5.0	3.8	2.9	2.3	1.8	1.3	0.90	0.80	...	...	...
2	11.0	10.6	8.5	6.5	5.0	3.8	2.9	2.3	1.8	1.3	0.90	0.80	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	13.2	11.3	9.8	8.5	7.3	6.0	4.8	3.5	2.4	1.6	1.1	0.80	...	...	...
5	10.3	9.9	9.5	8.5	7.3	6.0	4.8	3.5	2.4	1.6	1.1	0.80	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	15.9	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20	...	...	...
9	15.9	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20	...	...	...
10	15.9	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20	...	...	...
11	15.9	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20	...	...	...
12	12.3	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20	...	...	...
13	15.9	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20	...	...	...
14	12.3	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20	...	...	...
15	13.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...
16	10.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...
17	15.9	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20	...	...	...
18	12.3	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20	...	...	...
19	13.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...
20	10.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	12.3	9.9	...	...	...	...	...	...	...	...	...	...	...	...	...
23	15.9	9.9	...	...	...	...	...	...	...	...	...	...	...	...	...
24	13.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...
25	10.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...
26	13.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...
27	10.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...
28	16.7	13.8	10.3	7.6	5.5	4.0	3.0	2.2	1.7	1.3	0.97	0.75	...	...	...
29	16.7	13.8	10.3	7.6	5.5	4.0	3.0	2.2	1.7	1.3	0.97	0.75	...	...	...
30	12.3	12.1	10.3	7.6	5.5	4.0	3.0	2.2	1.7	1.3	0.97	0.75	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	14.2	11.7	8.8	6.5	4.7	3.4	2.6	1.9	1.4	1.1	0.82	0.64	...	...	...
33	10.5	10.3	8.8	6.5	4.7	3.4	2.6	1.9	1.4	1.1	0.82	0.64	...	...	...
34	16.7	13.8	10.3	7.6	5.5	4.0	3.0	2.2	1.7	1.3	0.97	0.75	...	...	...
35	12.3	12.1	10.3	7.6	5.5	4.0	3.0	2.2	1.7	1.3	0.97	0.75	...	...	...
36	14.2	11.7	8.8	6.5	4.7	3.4	2.6	1.9	1.4	1.1	0.82	0.64	...	...	...
37	10.5	10.3	8.8	6.5	4.7	3.4	2.6	1.9	1.4	1.1	0.82	0.64	...	...	...
38	16.7	13.8	10.3	7.6	5.5	4.0	3.0	2.2	1.7	1.3	0.97	0.75	...	...	...
39	12.3	12.1	10.3	7.6	5.5	4.0	3.0	2.2	1.7	1.3	0.97	0.75	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	25Cr–20Ni–Cb	Smls. tube	SA-213	TP310Cb	S31040	...	...	8	2
2	25Cr–20Ni–Cb	Smls. tube	SA-213	TP310Cb	S31040	...	...	8	2
3	25Cr–20Ni–Cb	Plate	SA-240	310Cb	S31040	...	...	8	2
4	25Cr–20Ni–Cb	Plate	SA-240	310Cb	S31040	...	...	8	2
5	25Cr–20Ni–Cb	Wld. tube	SA-249	TP310Cb	S31040	...	...	8	2
6	25Cr–20Ni–Cb	Wld. tube	SA-249	TP310Cb	S31040	...	...	8	2
7	25Cr–20Ni–Cb	Smls. & wld. pipe	SA-312	TP310Cb	S31040	...	...	8	2
8	25Cr–20Ni–Cb	Smls. pipe	SA-312	TP310Cb	S31040	...	...	8	2
9	25Cr–20Ni–Cb	Wld. pipe	SA-312	TP310Cb	S31040	...	...	8	2
10	25Cr–20Ni–Cb	Wld. pipe	SA-312	TP310Cb	S31040	...	...	8	2
11	25Cr–20Ni–Cb	Bar	SA-479	310Cb	S31040	...	...	8	2
12	25Cr–20Ni–Cb	Bar	SA-479	310Cb	S31040	...	...	8	2
13	25Cr–20Ni–Cb	Wld. pipe	SA-813	TP310Cb	S31040	...	...	8	2
14	25Cr–20Ni–Cb	Wld. pipe	SA-813	TP310Cb	S31040	...	...	8	2
15	25Cr–20Ni–Cb	Wld. pipe	SA-814	TP310Cb	S31040	...	...	8	2
16	25Cr–20Ni–Cb	Wld. pipe	SA-814	TP310Cb	S31040	...	...	8	2
17	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...	$0.250 < t \leq 1.250$	8	2
18	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...	$0.250 < t \leq 1.250$	8	2
19	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...	$0.250 < t \leq 1.250$	8	2
20	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...	$0.250 < t \leq 1.250$	8	2
21	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...	$0.250 < t \leq 1.250$	8	2
22	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...	$0.250 < t \leq 1.250$	8	2
23	25Cr–22Ni–2Mo–N	Plate	SA-240	310MoLN	S31050	...	...	8	2
24	25Cr–22Ni–2Mo–N	Plate	SA-240	310MoLN	S31050	...	...	8	2
25	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...	≤ 0.250, wall	8	2
26	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...	≤ 0.250, wall	8	2
27	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...	≤ 0.250, wall	8	2
28	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...	≤ 0.250, wall	8	2
29	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...	≤ 0.250, wall	8	2
30	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...	≤ 0.250, wall	8	2

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	75	30	NP	NP	1500	HA-2	G5, G12, T5
2	75	30	NP	NP	1500	HA-2	G12, T6
3	75	30	NP	NP	1500	HA-2	G5, G12, T5
4	75	30	NP	NP	1500	HA-2	G12, T6
5	75	30	NP	NP	1500	HA-2	G5, G12, G24, T5
6	75	30	NP	NP	1500	HA-2	G12, G24, T6
7	75	30	NP	800	1500	HA-2	G5, G12, T5, W12
8	75	30	NP	NP	1500	HA-2	G12, T6
9	75	30	NP	NP	1500	HA-2	G5, G12, G24, T5
10	75	30	NP	NP	1500	HA-2	G12, G14, G24, T6
11	75	30	NP	NP	1000	HA-2	G5, G12, G22, T5
12	75	30	NP	NP	1000	HA-2	G12, G22, T6
13	75	30	NP	NP	1500	HA-2	G5, G12, G24, T5
14	75	30	NP	NP	1500	HA-2	G12, G24, T6
15	75	30	NP	NP	1500	HA-2	G5, G12, G24, T5
16	75	30	NP	NP	1500	HA-2	G12, G24, T6
17	78	37	NP	NP	900	HA-2	G5
18	78	37	NP	NP	900	HA-2	...
19	78	37	NP	NP	900	HA-2	G5, G24
20	78	37	NP	NP	900	HA-2	G24
21	78	37	NP	NP	900	HA-2	G5, G24
22	78	37	NP	NP	900	HA-2	G24
23	80	35	NP	NP	600	HA-2	G5
24	80	35	NP	NP	600	HA-2	...
25	84	39	NP	NP	900	HA-2	G5
26	84	39	NP	NP	900	HA-2	...
27	84	39	NP	NP	900	HA-2	G5, G24
28	84	39	NP	NP	900	HA-2	G24
29	84	39	NP	NP	900	HA-2	G5, G24
30	84	39	NP	NP	900	HA-2	G24

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
2	20.0	...	17.6	...	16.1	15.1	14.3	13.7	13.5	13.3	13.1	12.9	12.7	12.5
3	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
4	20.0	...	17.6	...	16.1	15.1	14.3	13.7	13.5	13.3	13.1	12.9	12.7	12.5
5	17.0	...	17.0	...	17.0	16.9	16.4	15.7	15.5	15.2	15.0	14.8	14.6	14.4
6	17.0	...	15.0	...	13.7	12.8	12.1	11.7	11.5	11.3	11.1	11.0	10.8	10.7
7	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
8	20.0	...	17.6	...	16.1	15.1	14.3	13.7	13.5	13.3	13.1	12.9	12.7	12.5
9	17.0	...	17.0	...	17.0	16.9	16.4	15.7	15.5	15.2	15.0	14.8	14.6	14.4
10	17.0	...	15.0	...	13.7	12.8	12.1	11.7	11.5	11.3	11.1	11.0	10.8	10.7
11	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
12	20.0	...	17.6	...	16.1	15.1	14.3	13.7	13.5	13.3	13.1	12.9	12.7	12.5
13	17.0	...	17.0	...	17.0	16.9	16.4	15.7	15.5	15.2	15.0	14.8	14.6	14.4
14	17.0	...	15.0	...	13.7	12.8	12.1	11.7	11.5	11.3	11.1	11.0	10.8	10.7
15	17.0	...	17.0	...	17.0	16.9	16.4	15.7	15.5	15.2	15.0	14.8	14.6	14.4
16	17.0	...	15.0	...	13.7	12.8	12.1	11.7	11.5	11.3	11.1	11.0	10.8	10.7
17	22.3	...	22.0	...	20.8	20.0	19.5	19.0	18.8	18.7	18.5	18.4	18.2	17.9
18	22.3	...	21.0	...	19.1	17.8	16.8	15.9	15.5	15.1	14.8	14.4	14.0	13.7
19	18.9	...	18.7	...	17.7	17.0	16.5	16.2	16.0	15.9	15.8	15.6	15.5	15.2
20	18.9	...	17.8	...	16.2	15.1	14.3	13.5	13.2	12.9	12.5	12.2	11.9	11.7
21	18.9	...	18.7	...	17.7	17.0	16.5	16.2	16.0	15.9	15.8	15.6	15.5	15.2
22	18.9	...	17.8	...	16.2	15.1	14.3	13.5	13.2	12.9	12.5	12.2	11.9	11.7
23	22.9	...	22.6	...	21.4	20.5	20.0	19.5	...	...	...	...	...	...
24	22.9	...	19.9	...	18.1	16.8	15.9	15.1	...	...	...	...	...	...
25	24.0	...	23.7	...	22.4	21.6	21.0	20.5	20.3	20.1	20.0	19.8	19.6	19.3
26	24.0	...	22.1	...	20.1	18.7	17.7	16.8	16.4	16.0	15.6	15.2	14.8	14.5
27	20.4	...	20.2	...	19.1	18.3	17.8	17.4	17.3	17.1	17.0	16.8	16.6	16.4
28	20.4	...	18.8	...	17.1	15.9	15.0	14.3	13.9	13.6	13.2	12.9	12.6	12.3
29	20.4	...	20.2	...	19.1	18.3	17.8	17.4	17.3	17.1	17.0	16.8	16.6	16.4
30	20.4	...	18.8	...	17.1	15.9	15.0	14.3	13.9	13.6	13.2	12.9	12.6	12.3

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR FERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	*15.9*	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...
2	12.3	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...
3	*15.9*	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...
4	12.3	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...
5	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...
6	10.5	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...
7	*15.9*	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...
8	12.3	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...
9	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...
10	10.5	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...
11	*15.9*	*9.9*	...	...	...	...	...	...	...	...	...	...	...	...	...
12	12.3	*9.9*	...	...	...	...	...	...	...	...	...	...	...	...	...
13	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...
14	10.5	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...
15	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...
16	10.5	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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NOTES TO TABLE 1A

GENERAL NOTES:

(a) The following abbreviations are used: Applic., Applicability; Cond., Condition; Desig., Designation; Smls., Seamless; and Wld., Welded.
(b) The stress values in this Table may be interpolated to determine values for intermediate temperatures.
(c) When used for Section III Class MC design, the stress values listed herein shall be multiplied by a factor of 1.1 (NE-3112.4); these values shall be considered as design stress intensities or allowable stress values as required by NE-3200 or NE-3300, respectively.
(d) For Section VIII applications, stress values in restricted shear such as dowel bolts or similar construction in which the shearing member is so restricted that the section under consideration would fail without reduction of area shall be 0.80 times the values in the above Table.
(e) For Section VIII applications, stress values in bearing shall be 1.60 times the values in the above Table.
(f) Stress values for –20 to 100°F are applicable for colder temperatures when toughness requirements of Section III or Section VIII are met.

NOTES — GENERAL REQUIREMENTS:

G1 To these stress values a casting quality factor as specified in PG-25 of Section I or UG-24 of Section VIII, Division 1 shall be applied.
G2 These stress values include a joint efficiency factor of 0.60.
G3 These stress values include a joint efficiency factor of 0.85.
G4 For Section I applications, these stresses apply when used for boiler, water wall, superheater, and economizer tubes that are enclosed within a setting. A joint efficiency factor of 0.85 is included in values above 850°F.
G5 Due to the relatively low yield strength of these materials, these higher stress values were established at temperatures where the short time tensile properties govern to permit the use of these alloys where slightly greater deformation is acceptable. The stress values in this range exceed $66\frac{2}{3}$% but do not exceed 90% of the yield strength at temperature. Use of these stresses may result in dimensional changes due to permanent strain. These stress values are not recommended for the flanges of gasketed joints or other applications where slight amounts of distortion can cause leakage or malfunction. Table Y-2 lists multiplying factors which, when applied to the yield strength values shown in Table Y-1, will give allowable stress values that will result in lower levels of permanent strain.
01 G6 ...
G7 At temperatures above 500°F, this material may be susceptible to embrittlement.
G8 This material has reduced toughness at room temperature after exposure at high temperature. The degree of embrittlement depends on composition, heat treatment, time, and temperature. The lowest temperature of concern is about 500°F. See Appendix 6, 6-360.
G9 For Section III applications, the stress-rupture test is not required for design temperatures 800°F and below.
G10 Upon prolonged exposure to temperatures above 800°F, the carbide phase of carbon steel may be converted to graphite.
G11 Upon prolonged exposure to temperatures above 875°F, the carbide phase of carbon–molybdenum steel may be converted to graphite.
G12 At temperatures above 1000°F, these stress values apply only when the carbon is 0.04% or higher on heat analysis.
G13 These stress values at 1050°F and above shall be used only when the grain size is ASTM No. 6 or coarser.
G14 These stress values shall be used when the grain size is not determined or is determined to be finer than ASTM No. 6.
G15 For Section I applications, use is limited to stays as defined in PG-13 except as permitted by PG-11.
G16 For Section III Class 3 applications, these *S* values do not include a casting quality factor. Statically and centrifugally cast products meeting the requirements of NC-2570 shall receive a casting quality factor of 1.00.
G17 For Section III Class 3 applications, statically and centrifugally cast products meeting the requirements of NC-2571(a) and (b), and cast pipe fittings, pumps, and valves with inlet piping connections of 2 in. nominal pipe size and less, shall receive a casting quality factor of 1.00. Other casting quality factors shall be in accordance with the following:
(a) for visual examination, 0.80;
(b) for magnetic particle examination, 0.85;
(c) for liquid penetrant examination, 0.85;
(d) for radiography, 1.00;
(e) for ultrasonic examination, 1.00;
(f) for magnetic particle or liquid penetrant plus ultrasonic examination or radiography, 1.00.
G18 For Section I applications, this material may not be used for parts of firetube boilers under external pressure.
G19 Although external pressure chart title is listed for SA-537, use Class 1 curves for this specification.
G20 Although external pressure chart title is listed for SA-537, use Class 2 curves for this specification.
G21 For external pressure chart listing, use Class 1 curve.
G22 For Section I applications, use of external pressure charts for material in the form of barstock is permitted for stiffening rings only.
G23 For temperatures above the maximum temperature shown on the external pressure chart for this material, Fig. CS-2 may be used for the design using this material.
G24 A factor of 0.85 has been applied in arriving at the maximum allowable stress values in tension for this material. Divide tabulated values by 0.85 for maximum allowable longitudinal tensile stress.
G25 For Section III applications, for both Class 2 and Class 3, the completed vessel after final heat treatment shall be examined by the ultrasonic method in accordance with NB-2542 except that angle beam examination in both the circumferential and the axial directions may be performed in lieu of the straight beam examination in the axial direction. The tensile strength shall not exceed 125,000 psi.
G26 Material that conforms to Class 10, 11, or 12 is not permitted.
G27 Material that conforms to Class 11 or 12 is not permitted.
G28 For Section III applications, impact testing in accordance with Subarticle NX-2300 is not required.
G29 For Section III applications, impact testing in accordance with the requirements of NC-2300 is required for Class 2 components and in accordance with ND-2300 for Class 3 components.
G30 For Section VIII applications, these stress values are based on expected minimum values of 45,000 psi tensile strength and yield strength of 20,000 psi resulting from loss of strength due to thermal treatment required for the glass coating operation. UG-85 does not apply.
G31 These stress values are established from a consideration of strength only and will be satisfactory for average service. For bolted joints where freedom from leakage over a long period of time without retightening is required, lower stress values may be necessary as determined from the flexibility of the flange and bolts and corresponding relaxation properties.

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NOTES TO TABLE 1A (CONT'D)

NOTES — GENERAL REQUIREMENTS (CONT'D):

G32 This steel may be expected to develop embrittlement after service at moderately elevated temperature; see Appendix 6. For P-No. 10H Gr. 1 materials, exposure to temperatures in the range of 1100°F to 1700°F for relatively short periods of time may result in severe loss of ductility due to sigma formation; see 6-340 and 6-360.
G33 For Section VIII applications, the requirements of UHA-34 apply.
G34 For Section VIII applications, see UCS-6(b).
G35 See Appendix 6.
G36 For Section III applications, the use of these materials shall be limited to materials for tanks covered in Subsections NC and ND, component supports, and for nonpressure-retaining attachments (NC/ND-2190).
G37 For Section I, use is limited to stays as defined in PG-13 except as permitted in PG-11. When this material is used for pressure retention applications, such as plates used for pressure vessel shells, and bars and shapes used as shell stiffeners or staybars, these stresses shall be multiplied by a quality factor of 0.92. See Appendix 1.
G38 Stresses set on the basis that this material is generally equivalent to SA-36.
G39 See Appendix 31 of Section VIII, Division 1.
G40 Creep-fatigue, thermal ratcheting, and environmental effects are increasingly significant failure modes at temperatures in excess of 1500°F and shall be considered in the design.
01 G41 These stresses are based on weld metal properties.
01 G42 For Section I, use is limited to PEB-5.3. See PG-5.5 for cautionary note.
01 G43 See Table Y-1 for yield strength values as a function of thickness over this range. Allowable stresses are independent of yield strength in this thickness range.

NOTES — HEAT TREATMENT REQUIREMENTS:

H1 For temperatures above 1000°F, these stress values may be used only if the material is solution treated by heating to the minimum temperature specified in the material specification, but not lower than 1900°F, and quenching in water or rapidly cooling by other means.
H2 For temperatures above 1000°F, these stress values may be used only if the material is heat treated by heating to a minimum temperature of 2000°F.
H3 Minimum postweld heat treatment shall be 1300°F.
H4 This material, when heat treated in accordance with SA-351, may contain up to 60% ferrite.
H5 For Section III applications, if heat treatment is performed after forming or fabrication, it shall be performed at 1500–1850°F for a period of time not to exceed 10 min at temperature, followed by rapid cooling. For Section VIII applications involving consideration of heat treatment after forming or welding, see Table UHA-32 for P-No. 10K, Group No. 1 materials.

NOTES — SIZE REQUIREMENTS:

S1 For Section I applications, stress values at temperatures of 850°F and above are permissible but, except for tubular products 3 in. O.D. or less enclosed within the boiler setting, use of these materials at these temperatures is not current practice.
S2 For Section I applications, stress values at temperatures of 900°F and above are permissible but, except for tubular products 3 in. O.D. or less enclosed within the boiler setting, use of these materials at these temperatures is not current practice.
S3 For Section I applications, stress values at temperatures of 1000°F and above are permissible but, except for tubular products 3 in. O.D. or less enclosed within the boiler setting, use of these materials at these temperatures is not current practice.
S4 For Section I applications, stress values at temperatures of 1150°F and above are permissible but, except for tubular products 3 in. O.D. or less enclosed within the boiler setting, use of these materials at these temperatures is not current practice.
S5 Material that conforms to Class 10, 11, or 12 is not permitted when the nominal thickness of the material exceeds $^{3}/_{4}$ in.
S6 Material that conforms to Class 10, 11, or 12 is not permitted when the nominal thickness of the material exceeds $1^{1}/_{4}$ in.
S7 The maximum thickness of unheat-treated forgings shall not exceed $3^{3}/_{4}$ in. The maximum thickness as-heat-treated may be 4 in.
S8 The maximum section thickness shall not exceed 3 in. for double-normalized-and-tempered forgings, or 5 in. for quenched-and-tempered forgings.
S9 Both NPS 8 and larger, and schedule 140 and heavier.

NOTES — TIME-DEPENDENT PROPERTIES:

T1 Allowable stresses for temperatures of 700°F and above are values obtained from time-dependent properties.
T2 Allowable stresses for temperatures of 750°F and above are values obtained from time-dependent properties.
T3 Allowable stresses for temperatures of 850°F and above are values obtained from time-dependent properties.
T4 Allowable stresses for temperatures of 900°F and above are values obtained from time-dependent properties.
T5 Allowable stresses for temperatures of 950°F and above are values obtained from time-dependent properties.
T6 Allowable stresses for temperatures of 1000°F and above are values obtained from time-dependent properties.
T7 Allowable stresses for temperatures of 1050°F and above are values obtained from time-dependent properties.
T8 Allowable stresses for temperatures of 1100°F and above are values obtained from time-dependent properties.
T9 Allowable stresses for temperatures of 1150°F and above are values obtained from time-dependent properties.

NOTES — WELDING REQUIREMENTS:

W1 Not for welded construction.
W2 For Section VIII applications, welding or brazing is not permitted when carbon content exceeds 0.35% by ladle analysis except for limited types of welding as allowed in Part UF.
W3 Welded.
W4 Nonwelded, or welded if the tensile strength of the Section IX reduced section tension test is not less than 100 ksi.
W5 Welded, with the tensile strength of the Section IX reduced tension test less than 100 ksi but not less than 95 ksi.
W6 This material may be welded by the resistance technique.
W7 In welded construction for temperatures above 850°F, the weld metal shall have a carbon content of greater than 0.05%.

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NOTES TO TABLE 1A (CONT'D)

NOTES — WELDING REQUIREMENTS (CONT'D):

W8 Welding and oxygen or other thermal cutting processes are not permitted when carbon content exceeds 0.35% by heat analysis.

W9 For Section I applications, for pressure retaining welds in $2\frac{1}{4}$Cr–1Mo materials, other than circumferential butt welds less than or equal to $3\frac{1}{2}$ in. in outside diameter, when the design metal temperatures exceed 850°F, the weld metal shall have a carbon content greater than 0.05%.

W10 For Section III applications, material that conforms to Class 10, 13, 20, 23, 30, 33, 40, 43, 50, or 53 is not permitted for Class 2 and Class 3 construction when a weld efficiency factor of 1.00 is used in accordance with Note W12.

W11 For Section VIII applications, Section IX, QW-250 Variables QW-404.12, QW-406.3, QW-407.2, and QW-409.1 shall also apply to this material. These variables shall be applied in accordance with the rules for welding of Part UF.

W12 These *S* values do not include a longitudinal weld efficiency factor. For Section III applications, for materials welded without filler metal, ultrasonic examination, radiographic examination, or eddy current examination, in accordance with NC-2550, shall provide a longitudinal weld efficiency factor of 1.00. Materials welded with filler metal meeting the requirements of NC-2560 shall receive a longitudinal weld efficiency factor of 1.00. Other longitudinal weld efficiency factors shall be in accordance with the following:

(a) for single butt weld, with filler metal, 0.80;
(b) for single or double butt weld, without filler metal, 0.85;
(c) for double butt weld, with filler metal, 0.90;
(d) for single or double butt weld, with radiography, 1.00.

W13 For Section I applications, electric resistance and autogenous welded tubing may be used with these stresses, provided the following additional restrictions and requirements are met:

(a) The tubing shall be used for boiler, waterwall, superheater, and economizer tubes that are enclosed within the setting.
(b) The maximum outside diameter shall be $3\frac{1}{2}$ in.
(c) The weld seam of each tube shall be subjected to an angle beam ultrasonic inspection per SA-450.
(d) A complete volumetric inspection of the entire length of each tube shall be performed in accordance with SA-450.
(e) Material test reports shall be supplied.

W14 These *S* values do not include a weld factor. For Section VIII, Division 1 applications using welds made without filler metal, the tabulated tensile stress values shall be multiplied by 0.85. For welds made with filler metal, consult UW-12 of Section VIII, Division 1.

01 W15 Not for welded construction in Section III.

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TABLE 1B
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
1	...	Plate, sheet	SB-209	...	Alclad 3003	O
2	...	Plate, sheet	SB-209	...	Alclad 3003	O
3	...	Plate, sheet	SB-209	...	Alclad 3003	H112
4	...	Plate, sheet	SB-209	...	Alclad 3003	H112
5	...	Plate, sheet	SB-209	...	Alclad 3003	H112
6	...	Plate, sheet	SB-209	...	Alclad 3003	H12
7	...	Plate, sheet	SB-209	...	Alclad 3003	H12
8	...	Plate, sheet	SB-209	...	Alclad 3003	H14
9	...	Plate, sheet	SB-209	...	Alclad 3003	H14
10	...	Drawn smls. tube	SB-210	...	Alclad 3003	O
11	...	Drawn smls. tube	SB-210	...	Alclad 3003	H113
12	...	Drawn smls. tube	SB-210	...	Alclad 3003	H14
13	...	Drawn smls. tube	SB-210	...	Alclad 3003	H18
14	...	Cond. & heat exch. tubes	SB-234	...	Alclad 3003	H14
15	...	Cond. & heat exch. tubes	SB-234	...	Alclad 3003	H25
16	...	Smls. extr. tube	SB-241	...	Alclad 3003	O
17	...	Smls. extr. tube	SB-241	...	Alclad 3003	H112
18	...	Plate, sheet	SB-209	...	Alclad 3004	O
19	...	Plate, sheet	SB-209	...	Alclad 3004	O
20	...	Plate, sheet	SB-209	...	Alclad 3004	H112
21	...	Plate, sheet	SB-209	...	Alclad 3004	H112
22	...	Plate, sheet	SB-209	...	Alclad 3004	H32
23	...	Plate, sheet	SB-209	...	Alclad 3004	H32
24	...	Plate, sheet	SB-209	...	Alclad 3004	H34
25	...	Plate, sheet	SB-209	...	Alclad 3004	H34
26	...	Plate, sheet	SB-209	...	Alclad 6061	T4
27	...	Plate, sheet	SB-209	...	Alclad 6061	T451
28	...	Plate, sheet	SB-209	...	Alclad 6061	T451
29	...	Plate, sheet	SB-209	...	Alclad 6061	T4 wld.
30	...	Plate, sheet	SB-209	...	Alclad 6061	T451 wld.
31	...	Plate, sheet	SB-209	...	Alclad 6061	T6
32	...	Plate, sheet	SB-209	...	Alclad 6061	T651
33	...	Plate, sheet	SB-209	...	Alclad 6061	T651
34	...	Plate, sheet	SB-209	...	Alclad 6061	T651
35	...	Plate, sheet	SB-209	...	Alclad 6061	T6 wld.
36	...	Plate, sheet	SB-209	...	Alclad 6061	T651 wld.

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TABLE 1B
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	0.006–0.499	21	13	4.5	NP	250 (Cl. 3 only)	400	NFA-7	G16
2	0.500–3.000	21	14	5	NP	250 (Cl. 3 only)	400	NFA-7	G25
3	0.250–0.499	21	16	9	NP	300 (Cl. 3 only)	400	NFA-7	G16, W3
4	0.500–2.000	21	15	6	NP	200 (Cl. 3 only)	400	NFA-7	G26, W3
5	2.001–3.000	21	14.5	6	NP	200 (Cl. 3 only)	400	NFA-7	G26, W3
6	0.017–0.499	21	16	11	NP	300 (Cl. 3 only)	400	NFA-7	G16, W3
7	0.500–2.000	21	17	12	NP	300 (Cl. 3 only)	400	NFA-7	G25, W3
8	0.009–0.499	21	19	16	NP	250 (Cl. 3 only)	400	NFA-7	G16, W3
9	0.500–1.000	21	20	17	NP	250 (Cl. 3 only)	400	NFA-7	G25, W3
10	0.010–0.500	21	13	4.5	NP	250 (Cl. 3 only)	400	NFA-7	G16
11	0.050–0.500	21	13	4.5	NP	250 (Cl. 3 only)	400	NFA-7	G16, W3
12	0.010–0.500	21	19	16	NP	250 (Cl. 3 only)	400	NFA-1	G16, W3
13	0.010–0.500	21	26	23	NP	250 (Cl. 3 only)	400	NFA-1	G16, W3
14	0.010–0.200	21	19	16	NP	250 (Cl. 3 only)	400	NFA-1	G16, W4
15	0.010–0.200	21	21	18	NP	250 (Cl. 3 only)	400	NFA-1	G16, W4
16	...	21	13	4.5	NP	250 (Cl. 3 only)	400	NFA-7	G16
17	...	21	13	4.5	NP	250 (Cl. 3 only)	400	...	G16, W3
18	0.051–0.499	22	21	8	NP	300 (Cl. 3 only)	400	NFA-7	G16
19	0.500–3.000	22	22	8.5	NP	300 (Cl. 3 only)	400	NFA-7	G25
20	0.250–0.499	22	22	8.5	NP	300 (Cl. 3 only)	400	NFA-7	G16, W3
21	0.500–3.000	22	23	9	NP	300 (Cl. 3 only)	400	NFA-7	G25, W3
22	0.051–0.499	22	27	20	NP	250 (Cl. 3 only)	400	NFA-7	G16, W3
23	0.500–2.000	22	28	21	NP	250 (Cl. 3 only)	400	NFA-7	G25, W3
24	0.051–0.499	22	31	24	NP	250 (Cl. 3 only)	400	NFA-7	G16, W3
25	0.500–1.000	22	32	25	NP	250 (Cl. 3 only)	400	NFA-7	G25, W3
26	0.051–0.249	23	27	14	NP	400 (Cl. 3 only)	400	NFA-12	G16, G24, W4
27	0.250–0.499	23	27	14	NP	400 (Cl. 3 only)	400	NFA-12	G16, G24, W4
28	0.500–3.000	23	30	16	NP	400 (Cl. 3 only)	400	NFA-12	G24, G25, W4
29	0.051–0.249	23	24	...	NP	400 (Cl. 3 only)	400	NFA-12	G24, W7
30	0.250–3.000	23	24	...	NP	400 (Cl. 3 only)	400	NFA-12	G24, W7
31	0.051–0.249	23	38	32	NP	400 (Cl. 3 only)	400	NFA-12	G16, G24, W4
32	0.250–0.499	23	38	32	NP	400 (Cl. 3 only)	400	NFA-12	G16, G24, W4
33	0.500–4.000	23	42	35	NP	400 (Cl. 3 only)	400	NFA-12	G24, G25, W4
34	4.001–5.000	23	40	35	NP	400 (Cl. 3 only)	400	NFA-12	G24, G25, G26, W4
35	0.051–0.249	23	24	...	NP	400 (Cl. 3 only)	400	NFA-12	G24, W7
36	0.250–5.000	23	24	...	NP	400 (Cl. 3 only)	400	NFA-12	G24, W7

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TABLE 1B
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
1	3.0	3.0	3.0	2.7	2.2	1.6	1.3	...	...	...	...	...	...	...	...	...	...
2	3.0	3.0	3.0	2.7	2.2	1.6	1.3	...	...	...	...	...	...	...	...	...	...
3	4.3	4.3	4.3	3.8	3.3	2.7	2.1	...	...	...	...	...	...	...	...	...	...
4	3.9	3.9	3.9	3.0	2.2	1.6	1.3	...	...	...	...	...	...	...	...	...	...
5	3.8	3.8	3.7	2.9	2.2	1.6	1.3	...	...	...	...	...	...	...	...	...	...
6	4.3	4.3	4.3	3.8	3.3	2.7	2.1	...	...	...	...	...	...	...	...	...	...
7	4.3	4.3	4.3	3.8	3.3	2.7	2.1	...	...	...	...	...	...	...	...	...	...
8	5.1	5.1	5.1	4.5	3.9	2.7	2.1	...	...	...	...	...	...	...	...	...	...
9	5.1	5.1	5.1	4.5	3.9	2.7	2.1	...	...	...	...	...	...	...	...	...	...
10	3.0	3.0	3.0	2.7	2.2	1.6	1.3	...	...	...	...	...	...	...	...	...	...
11	3.0	3.0	3.0	2.7	2.2	1.6	1.3	...	...	...	...	...	...	...	...	...	...
12	5.1	5.1	5.1	4.5	3.9	2.7	2.1	...	...	...	...	...	...	...	...	...	...
13	7.0	7.0	6.9	5.8	4.8	3.2	2.3	...	...	...	...	...	...	...	...	...	...
14	5.1	5.1	5.1	4.5	3.9	2.7	2.1	...	...	...	...	...	...	...	...	...	...
15	5.7	5.7	5.7	4.8	3.9	2.7	2.1	...	...	...	...	...	...	...	...	...	...
16	3.0	3.0	3.0	2.7	2.2	1.6	1.2	...	...	...	...	...	...	...	...	...	...
17	3.0	3.0	3.0	2.7	2.2	1.6	1.2	...	...	...	...	...	...	...	...	...	...
18	5.0	5.0	5.0	5.0	4.5	3.4	2.1	...	...	...	...	...	...	...	...	...	...
19	5.0	5.0	5.0	5.0	4.5	3.4	2.1	...	...	...	...	...	...	...	...	...	...
20	5.2	5.2	5.2	5.2	4.6	3.4	2.1	...	...	...	...	...	...	...	...	...	...
21	5.9	5.9	5.9	5.3	4.6	3.4	2.1	...	...	...	...	...	...	...	...	...	...
22	7.2	7.2	7.2	6.2	5.2	3.4	2.1	...	...	...	...	...	...	...	...	...	...
23	7.2	7.2	7.2	6.2	5.2	3.4	2.1	...	...	...	...	...	...	...	...	...	...
24	8.2	8.2	8.2	6.7	5.2	3.4	2.1	...	...	...	...	...	...	...	...	...	...
25	8.2	8.2	8.2	6.7	5.2	3.4	2.1	...	...	...	...	...	...	...	...	...	...
26	7.8	7.8	7.8	7.0	6.2	5.7	4.0	...	...	...	...	...	...	...	...	...	...
27	7.8	7.8	7.8	7.0	6.2	5.7	4.0	...	...	...	...	...	...	...	...	...	...
28	7.8	7.8	7.8	7.0	6.2	5.7	4.0	...	...	...	...	...	...	...	...	...	...
29	6.0	6.0	6.0	5.9	5.5	4.6	3.5	...	...	...	...	...	...	...	...	...	...
30	6.0	6.0	6.0	5.9	5.5	4.6	3.5	...	...	...	...	...	...	...	...	...	...
31	10.9	10.9	10.9	9.2	7.6	5.7	4.0	...	...	...	...	...	...	...	...	...	...
32	10.9	10.9	10.9	9.2	7.6	5.7	4.0	...	...	...	...	...	...	...	...	...	...
33	10.9	10.9	10.9	9.2	7.6	5.7	4.0	...	...	...	...	...	...	...	...	...	...
34	10.3	10.3	10.3	8.8	7.4	5.7	4.0	...	...	...	...	...	...	...	...	...	...
35	6.0	6.0	6.0	5.9	5.5	4.6	3.5	...	...	...	...	...	...	...	...	...	...
36	6.0	6.0	6.0	5.9	5.5	4.6	3.5	...	...	...	...	...	...	...	...	...	...

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TABLE 1B
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
1	...	Castings	SB-26	...	A02040	T4
2	...	Castings	SB-108	...	A02040	T4
3	...	Castings	SB-26	...	A03560	T71
4	...	Castings	SB-26	...	A03560	T6
5	...	Castings	SB-108	...	A03560	T6
6	...	Castings	SB-26	...	A24430	F
7	...	Plate, sheet	SB-209	...	A91060	O
8	...	Plate, sheet	SB-209	...	A91060	H112
9	...	Plate, sheet	SB-209	...	A91060	H112
10	...	Plate, sheet	SB-209	...	A91060	H112
11	...	Plate, sheet	SB-209	...	A91060	H12
12	...	Plate, sheet	SB-209	...	A91060	H14
13	...	Drawn smls. tube	SB-210	...	A91060	O
14	...	Drawn smls. tube	SB-210	...	A91060	H14
15	...	Drawn smls. tube	SB-210	...	A91060	H113
16	...	Bar, rod, shapes	SB-221	...	A91060	O
17	...	Bar, rod, shapes	SB-221	...	A91060	H112
18	...	Cond. & heat exch. tubes	SB-234	...	A91060	H14
19	...	Smls. extr. tube	SB-241	...	A91060	O
20	...	Smls. extr. tube	SB-241	...	A91060	H112
21	...	Plate, sheet	SB-209	...	A91100	O
22	...	Plate, sheet	SB-209	...	A91100	H112
23	...	Plate, sheet	SB-209	...	A91100	H112
24	...	Plate, sheet	SB-209	...	A91100	H112
25	...	Plate, sheet	SB-209	...	A91100	H12
26	...	Plate, sheet	SB-209	...	A91100	H14
27	...	Bar, rod, shapes	SB-221	...	A91100	O
28	...	Bar, rod, shapes	SB-221	...	A91100	H112
29	...	Smls. extr. tube	SB-241	...	A91100	O
30	...	Smls. extr. tube	SB-241	...	A91100	H112
31	...	Die forgings	SB-247	...	A92014	T4
32	...	Die forgings	SB-247	...	A92014	T6
33	...	Die forgings	SB-247	...	A92014	T6
34	...	Bar, rod, wire	SB-211	...	A92024	T4
35	...	Bar, rod, wire	SB-211	...	A92024	T4
36	...	Bar, rod, wire	SB-211	...	A92024	T4
37	...	Bar, rod, wire	SB-211	...	A92024	T4

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	≤ 2.000	...	45	28	NP	NP	150	...	G15, W4
2	≤ 2.000	...	48	29	NP	NP	150	NFA-12	G15, W4
3	...	...	25	18	NP	350 (Cl. 3 only)	400	NFA-1	G15, W4
4	...	...	30	20	NP	250 (Cl. 3 only)	250	NFA-12	G15, W4
5	...	...	33	22	NP	NP	250	NFA-12	G15, W4
6	...	...	17	6	NP	400 (Cl. 3 only)	400	NFA-1	G15, W4
7	0.051–3.000	21	8	2.5	NP	300 (Cl. 3 only)	400	NFA-7	T3
8	0.250–0.499	21	11	7	NP	300 (Cl. 3 only)	400	NFA-7	T3, W3
9	0.500–1.000	21	10	5	NP	300 (Cl. 3 only)	400	NFA-7	T4, W3
10	1.001–3.000	21	9	4	NP	250 (Cl. 3 only)	400	NFA-7	T3, W3
11	0.051–2.000	21	11	9	NP	300 (Cl. 3 only)	400	NFA-7	T3, W3
12	0.051–1.000	21	12	10	NP	300 (Cl. 3 only)	400	NFA-7	T3, W3
13	0.018–0.500	21	8.5	2.5	NP	300 (Cl. 3 only)	400	NFA-7	T3
14	0.018–0.500	...	12	10	NP	300 (Cl. 3 only)	400	NFA-7	T3, W3
15	0.018–0.500	21	8.5	2.5	NP	300 (Cl. 3 only)	400	NFA-7	T3, W3
16	...	21	8.5	2.5	NP	300 (Cl. 3 only)	400	NFA-7	G13, T3
17	...	21	8.5	2.5	NP	300 (Cl. 3 only)	400	...	G13, T3, W3
18	0.010–0.200	21	12	10	NP	300 (Cl. 3 only)	400	NFA-7	T3, W4
19	...	21	8.5	2.5	NP	300 (Cl. 3 only)	400	NFA-7	T3
20	...	21	8.5	2.5	NP	300 (Cl. 3 only)	400	...	T3, W3
21	0.006–3.000	21	11	3.5	NP	250 (Cl. 3 only)	400	NFA-7	T4
22	0.250–0.499	21	13	7	NP	250 (Cl. 3 only)	400	NFA-7	T4, W3
23	0.500–2.000	21	12	5	NP	250 (Cl. 3 only)	400	NFA-7	T4, W3
24	2.001–3.000	21	11.5	4	NP	250 (Cl. 3 only)	400	NFA-7	T4, W3
25	0.051–2.000	21	14	11	NP	250 (Cl. 3 only)	400	NFA-7	T4, W3
26	0.009–1.000	21	16	14	NP	250 (Cl. 3 only)	400	NFA-7	T4, W3
27	...	21	11	3	NP	250 (Cl. 3 only)	400	...	T4
28	...	21	11	3	NP	250 (Cl. 3 only)	400	...	T4, W3
29	...	21	11	3	NP	250 (Cl. 3 only)	400	NFA-7	T4
30	...	21	11	3	NP	250 (Cl. 3 only)	400	NFA-7	T4, W3
31	≤ 4.000	...	55	30	NP	400 (Cl. 3 only)	400	NFA-14	T3, W4
32	≤ 2.000	...	65	56	NP	400 (Cl. 3 only)	400	NFA-14	T2, W4
33	2.001–4.000	...	63	54	NP	400 (Cl. 3 only)	400	NFA-14	T2, W4
34	0.125–0.499	...	62	45	NP	400 (Cl. 3 only)	400	...	T2, W4
35	0.500–4.500	...	62	42	NP	400 (Cl. 3 only)	400	...	T2, W4
36	4.501–6.500	...	62	40	NP	400 (Cl. 3 only)	400	...	T2, W4
37	6.501–8.000	...	58	38	NP	400 (Cl. 3 only)	400	...	T2, W4

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
1	8.4	7.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	10.3	8.6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	7.2	7.2	7.2	6.3	5.4	4.1	2.4	...	...	...	...	...	...	...	...	...	...
4	8.6	8.6	8.6	6.3	...	...	...	...	...	...	...	...	...	...	...	...	...
5	9.5	9.3	8.5	6.4	...	...	...	...	...	...	...	...	...	...	...	...	...
6	4.0	4.0	4.0	3.8	3.5	3.1	2.8	...	...	...	...	...	...	...	...	...	...
7	1.7	1.7	1.6	1.5	1.3	*1.1*	*0.80*	...	...	...	...	...	...	...	...	...	...
8	3.2	3.0	2.4	2.1	1.8	*1.6*	*1.0*	...	...	...	...	...	...	...	...	...	...
9	2.9	2.7	2.2	1.9	1.7	1.4	*1.0*	...	...	...	...	...	...	...	...	...	...
10	2.6	2.4	1.9	1.7	1.5	*1.1*	*0.80*	...	...	...	...	...	...	...	...	...	...
11	3.2	3.2	2.6	2.3	2.1	*1.8*	*1.1*	...	...	...	...	...	...	...	...	...	...
12	3.4	3.4	3.4	3.0	2.6	*1.8*	*1.2*	...	...	...	...	...	...	...	...	...	...
13	1.7	1.7	1.6	1.5	1.3	*1.1*	*0.80*	...	...	...	...	...	...	...	...	...	...
14	3.4	3.4	3.4	3.0	2.6	*1.8*	*1.2*	...	...	...	...	...	...	...	...	...	...
15	1.7	1.7	1.6	1.5	1.3	*1.1*	*0.80*	...	...	...	...	...	...	...	...	...	...
16	1.7	1.7	1.6	1.5	1.3	*1.1*	*0.80*	...	...	...	...	...	...	...	...	...	...
17	1.7	1.7	1.6	1.5	1.3	*1.1*	*0.80*	...	...	...	...	...	...	...	...	...	...
18	3.4	3.4	3.4	3.0	2.6	*1.8*	*1.2*	...	...	...	...	...	...	...	...	...	...
19	1.7	1.7	1.6	1.5	1.3	*1.1*	*0.80*	...	...	...	...	...	...	...	...	...	...
20	1.7	1.7	1.6	1.4	1.2	*1.0*	*0.80*	...	...	...	...	...	...	...	...	...	...
21	2.3	2.3	2.3	2.3	1.8	1.4	*1.0*	...	...	...	...	...	...	...	...	...	...
22	3.7	3.7	3.7	2.7	2.4	1.7	*1.0*	...	...	...	...	...	...	...	...	...	...
23	3.3	3.3	3.3	2.5	2.2	1.7	*1.0*	...	...	...	...	...	...	...	...	...	...
24	2.7	2.7	2.7	2.4	1.8	1.4	*1.0*	...	...	...	...	...	...	...	...	...	...
25	4.0	4.0	4.0	3.2	2.8	2.0	*1.2*	...	...	...	...	...	...	...	...	...	...
26	4.6	4.6	4.6	3.7	2.8	2.0	*1.2*	...	...	...	...	...	...	...	...	...	...
27	2.0	2.0	2.0	2.0	1.8	1.4	*1.0*	...	...	...	...	...	...	...	...	...	...
28	2.0	2.0	2.0	2.0	1.8	1.4	*1.0*	...	...	...	...	...	...	...	...	...	...
29	2.0	2.0	2.0	2.0	1.8	1.4	*1.0*	...	...	...	...	...	...	...	...	...	...
30	2.0	2.0	2.0	2.0	1.8	1.4	*1.0*	...	...	...	...	...	...	...	...	...	...
31	15.7	15.7	13.3	12.5	11.5	*6.8*	*3.9*	...	...	...	...	...	...	...	...	...	...
32	18.6	18.6	18.6	14.8	*11.5*	*6.8*	*3.9*	...	...	...	...	...	...	...	...	...	...
33	18.0	18.0	18.0	14.8	*11.5*	*6.8*	*3.9*	...	...	...	...	...	...	...	...	...	...
34	17.7	17.7	17.7	13.7	*10.4*	*6.5*	*4.5*	...	...	...	...	...	...	...	...	...	...
35	17.7	17.7	17.7	13.7	*10.4*	*6.5*	*4.5*	...	...	...	...	...	...	...	...	...	...
36	17.7	17.7	17.7	13.7	*10.4*	*6.5*	*4.5*	...	...	...	...	...	...	...	...	...	...
37	16.6	16.6	16.6	12.8	*9.7*	*6.1*	*4.2*	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
1	...	Bar, rod, shapes	SB-221	...	A92024	T3
2	...	Bar, rod, shapes	SB-221	...	A92024	T3
3	...	Bar, rod, shapes	SB-221	...	A92024	T3
4	...	Bar, rod, shapes	SB-221	...	A92024	T3
5	...	Plate, sheet	SB-209	...	A93003	0
6	...	Plate, sheet	SB-209	...	A93003	H112
7	...	Plate, sheet	SB-209	...	A93003	H112
8	...	Plate, sheet	SB-209	...	A93003	H112
9	...	Plate, sheet	SB-209	...	A93003	H12
10	...	Plate, sheet	SB-209	...	A93003	H14
11	...	Drawn smls. tube	SB-210	...	A93003	0
12	...	Drawn smls. tube	SB-210	...	A93003	H113
13	...	Drawn smls. tube	SB-210	...	A93003	H12
14	...	Drawn smls. tube	SB-210	...	A93003	H14
15	...	Drawn smls. tube	SB-210	...	A93003	H18
16	...	Bar, rod, shapes	SB-221	...	A93003	0
17	...	Bar, rod, shapes	SB-221	...	A93003	H112
18	...	Cond. & heat exch. tubes	SB-234	...	A93003	H14
19	...	Cond. & heat exch. tubes	SB-234	...	A93003	H25
20	...	Smls. extr. tube	SB-241	...	A93003	0
21	...	Smls. extr. tube	SB-241	...	A93003	H112
22	...	Smls. pipe	SB-241	...	A93003	H112
23	...	Smls. pipe	SB-241	...	A93003	H18
24	...	Die forgings	SB-247	...	A93003	H112
25	...	Die forgings	SB-247	...	A93003	H112 wld.
26	...	Plate, sheet	SB-209	...	A93004	0
27	...	Plate, sheet	SB-209	...	A93004	H112
28	...	Plate, sheet	SB-209	...	A93004	H32
29	...	Plate, sheet	SB-209	...	A93004	H34
30	...	Plate, sheet	SB-209	...	A95052	0
31	...	Plate, sheet	SB-209	...	A95052	H112
32	...	Plate, sheet	SB-209	...	A95052	H112
33	...	Plate, sheet	SB-209	...	A95052	H32
34	...	Plate, sheet	SB-209	...	A95052	H34
35	...	Drawn smls. tube	SB-210	...	A95052	0
36	...	Drawn smls. tube	SB-210	...	A95052	H32
37	...	Drawn smls. tube	SB-210	...	A95052	H34

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	≤ 0.249	...	57	42	NP	400 (Cl. 3 only)	400	...	G24, T2, W4
2	0.250–0.749	...	60	44	NP	400 (Cl. 3 only)	400	...	G24, T2, W4
3	0.750–1.499	...	65	46	NP	400 (Cl. 3 only)	400	...	G24, T2, W4
4	≥ 1.500	...	68	48	NP	400 (Cl. 3 only)	400	...	G24, T2, W4
5	0.006–3.000	21	14	5	NP	250 (Cl. 3 only)	400	NFA-1	T3
6	0.250–0.499	21	17	10	NP	300 (Cl. 3 only)	400	NFA-1	T4, W3
7	0.500–2.000	21	15	6	NP	200 (Cl. 3 only)	400	NFA-1	T3, W3
8	2.001–3.000	21	14.5	6	NP	200 (Cl. 3 only)	400	NFA-1	T3, W3
9	0.017–2.000	21	17	12	NP	300 (Cl. 3 only)	400	NFA-1	T4, W3
10	0.009–1.000	21	20	17	NP	250 (Cl. 3 only)	400	NFA-2	T4, W3
11	0.010–0.500	21	14	5	NP	250 (Cl. 3 only)	400	NFA-1	T3
12	0.010–0.500	21	14	5	NP	250 (Cl. 3 only)	400	NFA-1	T3, W3
13	0.010–0.500	21	17	12	NP	300 (Cl. 3 only)	400	NFA-1	T4, W3
14	0.010–0.500	21	20	17	NP	250 (Cl. 3 only)	400	NFA-2	T4, W3
15	0.010–0.500	21	27	24	NP	250 (Cl. 3 only)	400	NFA-2	T4, W3
16	...	21	14	5	NP	250 (Cl. 3 only)	400	NFA-1	T3
17	...	21	14	5	NP	250 (Cl. 3 only)	400	NFA-1	T3, W3
18	0.010–0.200	21	20	17	NP	250 (Cl. 3 only)	400	NFA-2	T4, W4
19	0.010–0.200	21	22	19	NP	250 (Cl. 3 only)	400	NFA-2	T4, W4
20	...	21	14	5	NP	250 (Cl. 3 only)	400	NFA-1	T3
21	...	21	14	5	NP	250 (Cl. 3 only)	400	NFA-1	T3, W3
22	≥ 1.000	21	14	5	NP	250 (Cl. 3 only)	400	NFA-1	T3, W4
23	< 1.000	21	27	24	NP	250 (Cl. 3 only)	400	NFA-1	T4, W4
24	≤ 4.000	21	14	5	NP	250 (Cl. 3 only)	400	NFA-1	T3
25	≤ 4.000	21	14	...	NP	250 (Cl. 3 only)	400	NFA-1	T3, W7
26	0.006–3.000	22	22	8.5	NP	300 (Cl. 3 only)	400	NFA-3	...
27	0.250–3.000	22	23	9	NP	300 (Cl. 3 only)	400	NFA-3	W3
28	0.051–2.000	22	28	21	NP	250 (Cl. 3 only)	400	NFA-3	W3
29	0.051–1.000	22	32	25	NP	250 (Cl. 3 only)	400	NFA-4	W3
30	0.051–3.000	22	25	9.5	NP	250 (Cl. 3 only)	400	NFA-8	...
31	0.250–0.499	22	28	16	NP	250 (Cl. 3 only)	400	NFA-8	W3
32	0.500–3.000	22	25	9.5	NP	250 (Cl. 3 only)	400	NFA-8	W3
33	0.051–2.000	22	31	23	NP	200 (Cl. 3 only)	400	NFA-3	W3
34	0.051–1.000	22	34	26	NP	200 (Cl. 3 only)	400	NFA-4	W3
35	0.018–0.450	22	25	10	NP	300 (Cl. 3 only)	400	NFA-8	...
36	0.018–0.450	22	31	23	NP	200 (Cl. 3 only)	400	NFA-8	W4
37	0.018–0.450	22	34	26	NP	200 (Cl. 3 only)	400	NFA-8	W4

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
1	16.3	16.3	16.3	12.6	*9.5*	*6.0*	*4.2*	...	...	...	...	...	...	...	...	...	...
2	17.1	17.1	17.1	13.2	*10.0*	*6.3*	*4.4*	...	...	...	...	...	...	...	...	...	...
3	18.6	18.6	18.6	14.3	*10.8*	*6.8*	*4.7*	...	...	...	...	...	...	...	...	...	...
4	19.4	19.4	19.4	15.0	*11.3*	*7.1*	*5.0*	...	...	...	...	...	...	...	...	...	...
5	3.4	3.4	3.4	3.0	2.4	*1.8*	*1.4*	...	...	...	...	...	...	...	...	...	...
6	4.9	4.9	4.9	4.0	3.6	3.0	*2.4*	...	...	...	...	...	...	...	...	...	...
7	3.8	3.8	3.7	3.2	2.4	*1.8*	*1.4*	...	...	...	...	...	...	...	...	...	...
8	3.6	3.6	3.5	3.2	2.4	*1.8*	*1.4*	...	...	...	...	...	...	...	...	...	...
9	4.9	4.9	4.9	4.0	3.6	3.0	*2.4*	...	...	...	...	...	...	...	...	...	...
10	5.7	5.7	5.7	4.9	4.3	3.0	*2.4*	...	...	...	...	...	...	...	...	...	...
11	3.4	3.4	3.4	3.0	2.4	*1.8*	*1.4*	...	...	...	...	...	...	...	...	...	...
12	3.4	3.4	3.4	3.0	2.4	*1.8*	*1.4*	...	...	...	...	...	...	...	...	...	...
13	4.9	4.9	4.9	4.0	3.6	3.0	*2.4*	...	...	...	...	...	...	...	...	...	...
14	5.7	5.7	5.7	4.9	4.3	3.0	*2.4*	...	...	...	...	...	...	...	...	...	...
15	7.8	7.8	7.7	6.3	5.4	3.5	*2.5*	...	...	...	...	...	...	...	...	...	...
16	3.4	3.4	3.4	3.0	2.4	*1.8*	*1.4*	...	...	...	...	...	...	...	...	...	...
17	3.4	3.4	3.4	3.0	2.4	*1.8*	*1.4*	...	...	...	...	...	...	...	...	...	...
18	5.7	5.7	5.7	4.9	4.3	3.0	*2.4*	...	...	...	...	...	...	...	...	...	...
19	6.3	6.3	6.3	5.3	4.3	3.0	*2.4*	...	...	...	...	...	...	...	...	...	...
20	3.4	3.4	3.4	3.0	2.4	*1.8*	*1.4*	...	...	...	...	...	...	...	...	...	...
21	3.4	3.4	3.4	3.0	2.4	*1.8*	*1.4*	...	...	...	...	...	...	...	...	...	...
22	3.4	3.4	3.4	3.0	2.4	*1.8*	*1.4*	...	...	...	...	...	...	...	...	...	...
23	7.8	7.8	7.7	6.3	5.4	3.5	*2.5*	...	...	...	...	...	...	...	...	...	...
24	3.4	3.4	3.4	3.0	2.4	*1.8*	*1.4*	...	...	...	...	...	...	...	...	...	...
25	3.4	3.4	3.4	3.0	2.4	*1.8*	*1.4*	...	...	...	...	...	...	...	...	...	...
26	5.7	5.7	5.7	5.5	5.0	3.8	2.4	...	...	...	...	...	...	...	...	...	...
27	6.0	6.0	6.0	5.8	5.1	3.8	2.4	...	...	...	...	...	...	...	...	...	...
28	8.0	8.0	8.0	7.0	5.8	3.8	2.4	...	...	...	...	...	...	...	...	...	...
29	9.1	9.1	9.1	8.0	5.8	3.8	2.4	...	...	...	...	...	...	...	...	...	...
30	6.3	6.3	6.3	6.3	5.6	4.1	2.4	...	...	...	...	...	...	...	...	...	...
31	8.0	8.0	8.0	7.0	6.2	4.1	2.4	...	...	...	...	...	...	...	...	...	...
32	6.3	6.3	6.3	6.3	6.0	4.1	2.4	...	...	...	...	...	...	...	...	...	...
33	8.9	8.9	8.9	7.5	6.2	4.1	2.4	...	...	...	...	...	...	...	...	...	...
34	9.7	9.7	9.7	8.5	6.2	4.1	2.4	...	...	...	...	...	...	...	...	...	...
35	6.7	6.7	6.7	6.2	5.6	4.1	2.3	...	...	...	...	...	...	...	...	...	...
36	8.9	8.9	8.9	7.5	6.1	4.1	2.3	...	...	...	...	...	...	...	...	...	...
37	9.7	9.7	9.7	8.4	6.1	4.1	2.3	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
1	...	Cond. & heat exch. tubes	SB-234	...	A95052	H32
2	...	Cond. & heat exch. tubes	SB-234	...	A95052	H34
3	...	Smls. extr. tube	SB-241	...	A95052	O
4	...	Plate, sheet	SB-209	...	A95083	O
5	...	Plate, sheet	SB-209	...	A95083	O
6	...	Plate, sheet	SB-209	...	A95083	O
7	...	Plate, sheet	SB-209	...	A95083	O
8	...	Plate, sheet	SB-209	...	A95083	O
9	...	Plate, sheet	SB-209	...	A95083	H112
10	...	Plate, sheet	SB-209	...	A95083	H112
11	...	Plate, sheet	SB-209	...	A95083	H321
12	...	Plate, sheet	SB-209	...	A95083	H321
13	...	Bar, rod, shapes	SB-221	...	A95083	O
14	...	Bar, rod, shapes	SB-221	...	A95083	H111
15	...	Bar, rod, shapes	SB-221	...	A95083	H112
16	...	Smls. extr. tube	SB-241	...	A95083	O
17	...	Smls. extr. tube	SB-241	...	A95083	H111
18	...	Smls. extr. tube	SB-241	...	A95083	H112
19	...	Die & hand forgings	SB-247	...	A95083	H111
20	...	Die & hand forgings	SB-247	...	A95083	H112
21	...	Die & hand forgings	SB-247	...	A95083	H111 wld.
22	...	Die & hand forgings	SB-247	...	A95083	H112 wld.
23	...	Plate, sheet	SB-209	...	A95086	O
24	...	Plate, sheet	SB-209	...	A95086	H112
25	...	Plate, sheet	SB-209	...	A95086	H112
26	...	Plate, sheet	SB-209	...	A95086	H112
27	...	Plate, sheet	SB-209	...	A95086	H112
28	...	Plate, sheet	SB-209	...	A95086	H116
29	...	Plate, sheet	SB-209	...	A95086	H32
30	...	Plate, sheet	SB-209	...	A95086	H34
31	...	Bar, rod, shapes	SB-221	...	A95086	H112
32	...	Smls. extr. tube	SB-241	...	A95086	O
33	...	Smls. extr. tube	SB-241	...	A95086	H111
34	...	Smls. extr. tube	SB-241	...	A95086	H112

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only)			External Pressure Chart No.	Notes
					I	III	VIII-1		
1	0.010–0.200	22	31	23	NP	200 (Cl. 3 only)	400	NFA-8	W4
2	0.010–0.200	22	34	26	NP	200 (Cl. 3 only)	400	NFA-8	W4
3	...	22	25	10	NP	250 (Cl. 3 only)	400	NFA-8	...
4	0.051–1.500	25	40	18	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19
5	1.501–3.000	25	39	17	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19
6	3.001–5.000	25	38	16	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19
7	5.001–7.000	25	37	15	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19
8	7.001–8.000	25	36	14	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19
9	0.250–1.500	25	40	18	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19, W3
10	1.501–3.000	25	39	17	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19, W3
11	0.188–1.500	25	44	31	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19, W3
12	1.501–3.000	25	41	29	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19, W3
13	≤ 5.000	25	39	16	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19
14	≤ 5.000	25	40	24	NP	150 (Cl. 3 only)	150	...	G18, G19, W3
15	≤ 5.000	25	39	16	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19, W3
16	≤ 5.000	25	39	16	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19
17	≤ 5.000	25	40	24	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19, W3
18	≤ 5.000	25	39	16	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19, W3
19	≤ 4.000	25	39	20	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19, W4
20	≤ 4.000	25	39	16	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19, W4
21	≤ 4.000	25	38	...	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19, W7
22	≤ 4.000	25	38	...	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19, W7
23	0.051–2.000	25	35	14	NP	150 (Cl. 3 only)	150	NFA-9	G18, G19
24	0.188–0.499	25	36	18	NP	150 (Cl. 3 only)	150	NFA-9	G18, G19, W3
25	0.500–1.000	25	35	16	NP	150 (Cl. 3 only)	150	NFA-9	G18, G19, W3
26	1.001–2.000	25	35	14	NP	150 (Cl. 3 only)	150	NFA-9	G18, G19, W3
27	2.001–3.000	25	34	14	NP	150 (Cl. 3 only)	150	NFA-9	G18, G19
28	0.063–2.000	25	40	28	NP	NP	150	NFA-11	G18, G19, W3
29	0.051–2.000	25	40	28	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19, W3
30	0.051–1.000	25	44	34	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19, W3
31	≤ 5.000	25	35	14	NP	150 (Cl. 3 only)	150	NFA-9	G18, G19, W4
32	≤ 5.000	25	35	14	NP	150 (Cl. 3 only)	150	NFA-9	G18, G19
33	≤ 5.000	25	36	21	NP	150 (Cl. 3 only)	150	NFA-9	G18, G19, W3
34	≤ 5.000	25	35	14	NP	150 (Cl. 3 only)	150	NFA-9	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
1	8.9	8.9	8.9	7.5	6.2	4.1	2.4	...	...	...	...	...	...	...	...	...	...
2	9.7	9.7	9.7	8.5	6.2	4.1	2.4	...	...	...	...	...	...	...	...	...	...
3	6.7	6.7	6.7	6.3	5.6	4.1	2.3	...	...	...	...	...	...	...	...	...	...
4	11.4	11.4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	11.1	11.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	10.7	10.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	10.0	10.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	9.3	9.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	11.4	11.4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	11.1	11.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	12.6	12.6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	11.7	11.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	10.7	10.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	11.4	11.4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	10.7	10.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	10.7	10.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	11.4	11.4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	10.7	10.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	11.1	11.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	10.7	10.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	10.9	10.9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	10.9	10.9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	9.3	9.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	10.3	10.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	10.0	10.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	9.3	9.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	9.3	9.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	11.4	11.4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	11.4	11.4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	12.6	12.6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	9.3	9.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	9.3	9.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	10.3	10.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	9.3	9.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	1	...	Plate, sheet	SB-209	...	A95154	0
	2	...	Plate, sheet	SB-209	...	A95154	H112
	3	...	Plate, sheet	SB-209	...	A95154	H112
	4	...	Plate, sheet	SB-209	...	A95154	H32
	5	...	Plate, sheet	SB-209	...	A95154	H34
01	6	...	Drawn smls. tube	SB-210	...	A95154	0
01	7	...	Drawn smls. tube	SB-210	...	A95154	H34
	8	...	Bar, rod, shapes	SB-221	...	A95154	0
	9	...	Bar, rod, shapes	SB-221	...	A95154	H112
	10	...	Plate, sheet	SB-209	...	A95254	0
	11	...	Plate, sheet	SB-209	...	A95254	H112
	12	...	Plate, sheet	SB-209	...	A95254	H112
	13	...	Plate, sheet	SB-209	...	A95254	H32
	14	...	Plate, sheet	SB-209	...	A95254	H34
	15	...	Plate, sheet	SB-209	...	A95454	0
	16	...	Plate, sheet	SB-209	...	A95454	H112
	17	...	Plate, sheet	SB-209	...	A95454	H112
	18	...	Plate, sheet	SB-209	...	A95454	H32
	19	...	Plate, sheet	SB-209	...	A95454	H34
	20	...	Bar, rod, shapes	SB-221	...	A95454	0
	21	...	Bar, rod, shapes	SB-221	...	A95454	H111
	22	...	Bar, rod, shapes	SB-221	...	A95454	H112
	23	...	Cond. & heat exch. tubes	SB-234	...	A95454	H32
	24	...	Cond. & heat exch. tubes	SB-234	...	A95454	H34
	25	...	Smls. extr. tube	SB-241	...	A95454	0
	26	...	Smls. extr. tube	SB-241	...	A95454	H111
	27	...	Smls. extr. tube	SB-241	...	A95454	H112
	28	...	Plate, sheet	SB-209	...	A95456	0
	29	...	Plate, sheet	SB-209	...	A95456	0
	30	...	Plate, sheet	SB-209	...	A95456	0
	31	...	Plate, sheet	SB-209	...	A95456	0
	32	...	Plate, sheet	SB-209	...	A95456	0
	33	...	Plate, sheet	SB-209	...	A95456	H112
	34	...	Plate, sheet	SB-209	...	A95456	H112
	35	...	Plate, sheet	SB-209	...	A95456	H321
	36	...	Plate, sheet	SB-209	...	A95456	H321
	37	...	Plate, sheet	SB-209	...	A95456	H321

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	0.051–3.000	22	30	11	NP	150 (Cl. 3 only)	150	NFA-5	G18, G19	
2	0.250–0.499	22	32	18	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19, W3	
3	0.500–3.000	22	30	11	NP	150 (Cl. 3 only)	150	NFA-5	G18, G19, W3	
4	0.051–2.000	22	36	26	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19, W3	
5	0.051–1.000	22	39	29	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19, W3	
6	0.010–0.450	22	30	11	NP	150 (Cl. 3 only)	150	NFA-5	G18, G19	**01**
7	0.010–0.450	22	39	29	NP	150 (Cl. 3 only)	150	NFA-5	G18, G19, W3	**01**
8	...	22	30	11	NP	150 (Cl. 3 only)	150	NFA-5	G18, G19	
9	...	22	30	11	NP	150 (Cl. 3 only)	150	NFA-5	G18, G19, W3	
10	0.051–3.000	22	30	11	NP	150 (Cl. 3 only)	150	NFA-5	G18, G19	
11	0.250–0.499	22	32	18	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19, W3	
12	0.500–3.000	22	30	11	NP	150 (Cl. 3 only)	150	NFA-5	G18, G19, W3	
13	0.051–2.000	22	36	26	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19, W3	
14	0.051–1.000	22	39	29	NP	150 (Cl. 3 only)	150	NFA-11	G18, G19, W3	
15	0.051–3.000	22	31	12	NP	250 (Cl. 3 only)	400	NFA-14	T1	
16	0.250–0.499	22	32	18	NP	250 (Cl. 3 only)	400	NFA-14	T1, W3	
17	0.500–3.000	22	31	12	NP	250 (Cl. 3 only)	400	NFA-14	T1, W3	
18	0.051–2.000	22	36	26	NP	250 (Cl. 3 only)	400	NFA-14	T1, W3	
19	0.051–1.000	22	39	29	NP	250 (Cl. 3 only)	400	NFA-14	T1, W3	
20	≤ 5.000	22	31	12	NP	250 (Cl. 3 only)	400	NFA-14	T1	
21	≤ 5.000	22	33	19	NP	250 (Cl. 3 only)	400	...	T1, W3	
22	≤ 5.000	22	31	12	NP	250 (Cl. 3 only)	400	NFA-14	T1, W3	
23	0.010–0.250	22	36	26	NP	250 (Cl. 3 only)	400	NFA-14	T1, W4	
24	0.010–0.250	22	39	29	NP	250 (Cl. 3 only)	400	NFA-14	T1, W4	
25	≤ 5.000	22	31	12	NP	250 (Cl. 3 only)	400	NFA-14	T1	
26	≤ 5.000	22	33	19	NP	250 (Cl. 3 only)	400	NFA-14	T1, W3	
27	≤ 5.000	22	31	12	NP	250 (Cl. 3 only)	400	NFA-14	T1, W3	
28	0.051–1.500	25	42	19	NP	150 (Cl. 3 only)	150	NFA-10	G18, G19	
29	1.501–3.000	25	41	18	NP	150 (Cl. 3 only)	150	NFA-10	G18, G19	
30	3.001–5.000	25	40	17	NP	150 (Cl. 3 only)	150	NFA-10	G18, G19	
31	5.001–7.000	25	39	16	NP	150 (Cl. 3 only)	150	NFA-10	G18, G19	
32	7.001–8.000	25	38	15	NP	150 (Cl. 3 only)	150	NFA-10	G18, G19	
33	0.250–1.500	25	42	19	NP	150 (Cl. 3 only)	150	NFA-10	G18, G19, W3	
34	1.501–3.000	25	41	18	NP	150 (Cl. 3 only)	150	NFA-10	G18, G19, W3	
35	0.188–0.499	25	46	33	NP	150 (Cl. 3 only)	150	NFA-10	G18, G19, W3	
36	0.500–1.500	25	44	31	NP	150 (Cl. 3 only)	150	NFA-10	G18, G19, W3	
37	1.501–3.000	25	41	29	NP	150 (Cl. 3 only)	150	NFA-10	G18, G19, W3	

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
		–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
	1	7.3	7.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	2	9.1	9.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	3	7.3	7.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	4	10.3	10.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	5	11.1	11.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
01	6	7.3	7.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
01	7	11.1	11.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	8	7.3	7.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	9	7.3	7.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	10	7.3	7.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	11	9.1	9.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	12	7.3	7.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	13	10.3	10.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	14	11.1	11.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	15	8.0	8.0	8.0	*7.5*	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...
	16	9.1	9.1	9.1	*7.5*	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...
	17	8.0	8.0	8.0	*7.5*	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...
	18	10.3	10.3	10.3	*7.5*	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...
	19	11.1	11.1	11.1	*7.5*	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...
	20	8.0	8.0	8.0	*7.5*	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...
	21	9.4	9.4	9.4	*7.5*	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...
	22	8.0	8.0	8.0	*7.5*	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...
	23	10.3	10.3	10.3	*7.5*	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...
	24	11.1	11.1	11.1	*7.5*	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...
	25	8.0	8.0	8.0	*7.5*	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...
	26	9.4	9.4	9.4	*7.5*	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...
	27	8.0	8.0	8.0	*7.5*	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...
	28	12.0	12.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	29	11.7	11.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	30	11.3	11.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	31	10.7	10.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	32	10.0	10.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	33	12.0	12.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	34	11.7	11.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	35	13.1	13.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	36	12.6	12.6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	37	11.7	11.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
1	...	Bar, rod, shapes	SB-221	...	A95456	0
2	...	Bar, rod, shapes	SB-221	...	A95456	H111
3	...	Bar, rod, shapes	SB-221	...	A95456	H112
4	...	Smls. extr. tube	SB-241	...	A95456	0
5	...	Smls. extr. tube	SB-241	...	A95456	H111
6	...	Smls. extr. tube	SB-241	...	A95456	H112
7	...	Plate, sheet	SB-209	...	A95652	0
8	...	Plate, sheet	SB-209	...	A95652	H112
9	...	Plate, sheet	SB-209	...	A95652	H112
10	...	Plate, sheet	SB-209	...	A95652	H32
11	...	Plate, sheet	SB-209	...	A95652	H34
12	...	Plate, sheet	SB-209	...	A96061	T4
13	...	Plate, sheet	SB-209	...	A96061	T451
14	...	Plate, sheet	SB-209	...	A96061	T6
15	...	Plate, sheet	SB-209	...	A96061	T651
16	...	Plate, sheet	SB-209	...	A96061	T651
17	...	Plate, sheet	SB-209	...	A96061	T4 wld.
18	...	Plate, sheet	SB-209	...	A96061	T451 wld.
19	...	Plate, sheet	SB-209	...	A96061	T6 wld.
20	...	Plate, sheet	SB-209	...	A96061	T651 wld.
21	...	Drawn smls. tube	SB-210	...	A96061	T4
22	...	Drawn smls. tube	SB-210	...	A96061	T6
23	...	Drawn smls. tube	SB-210	...	A96061	T4 wld.
24	...	Drawn smls. tube	SB-210	...	A96061	T6 wld.
25	...	Bar, rod, wire	SB-211	...	A96061	T6
26	...	Bar, rod, wire	SB-211	...	A96061	T651
27	...	Bar, rod, wire	SB-211	...	A96061	T6 wld.
28	...	Bar, rod, wire	SB-211	...	A96061	T651 wld.
29	...	Bar, rod, shapes	SB-221	...	A96061	T4
30	...	Bar, rod, shapes	SB-221	...	A96061	T6
31	...	Bar, rod, shapes	SB-221	...	A96061	T4 wld.
32	...	Bar, rod, shapes	SB-221	...	A96061	T6 wld.
33	...	Cond. & heat exch. tubes	SB-234	...	A96061	T4
34	...	Cond. & heat exch. tubes	SB-234	...	A96061	T6
35	...	Cond. & heat exch. tubes	SB-234	...	A96061	T4 wld.
36	...	Cond. & heat exch. tubes	SB-234	...	A96061	T6 wld.

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	≤ 5.000	25	41	19	NP	150 (Cl. 3 only)	150	NFA-10	G18, G19
2	≤ 5.000	25	42	26	NP	150 (Cl. 3 only)	150	...	G18, G19, W3
3	≤ 5.000	25	41	19	NP	150 (Cl. 3 only)	150	...	G18, G19, W3
4	≤ 5.000	25	41	19	NP	150 (Cl. 3 only)	150	NFA-10	G18, G19
5	≤ 5.000	25	42	26	NP	150 (Cl. 3 only)	150	NFA-10	G18, G19, W3
6	≤ 5.000	25	41	19	NP	150 (Cl. 3 only)	150	NFA-10	G18, G19, W3
7	0.051–3.000	22	25	9.5	NP	250 (Cl. 3 only)	400	NFA-8	T2
8	0.250–0.499	22	28	16	NP	250 (Cl. 3 only)	400	NFA-8	T1, W3
9	0.500–3.000	22	25	9.5	NP	250 (Cl. 3 only)	400	NFA-8	T2, W3
10	0.051–2.000	22	31	23	NP	200 (Cl. 3 only)	400	NFA-3	T1, W3
11	0.051–1.000	22	34	26	NP	200 (Cl. 3 only)	400	NFA-4	T1, W3
12	0.051–0.249	23	30	16	NP	400 (Cl. 3 only)	400	NFA-12	G24, T3, W4
13	0.250–3.000	23	30	16	NP	400 (Cl. 3 only)	400	NFA-12	G24, T3, W4
14	0.051–0.249	23	42	35	NP	400 (Cl. 3 only)	400	NFA-12	G24, T3, W4
15	0.250–4.000	23	42	35	NP	400 (Cl. 3 only)	400	NFA-12	G24, T3, W4
16	4.001–6.000	23	40	35	NP	400 (Cl. 3 only)	400	NFA-12	G24, T3, W4
17	0.051–0.249	23	24	...	NP	400 (Cl. 3 only)	400	NFA-12	G24, T3, W7
18	0.250–3.000	23	24	...	NP	NP	400	NFA-12	G24, T3, W7
19	0.051–0.249	23	24	...	NP	400 (Cl. 3 only)	400	NFA-12	G24, T3, W7
20	0.250–6.000	23	24	...	NP	NP	400	NFA-12,13	G24, T3, W7
21	0.025–0.500	23	30	16	NP	400 (Cl. 3 only)	400	NFA-12	T3, W4
22	0.025–0.500	23	42	35	NP	400 (Cl. 3 only)	400	NFA-12	T3, W4
23	0.025–0.500	23	24	...	NP	400 (Cl. 3 only)	400	NFA-12,13	T3, W7
24	0.025–0.500	23	24	...	NP	400 (Cl. 3 only)	400	NFA-12,13	T3, W7
25	0.125–0.249	23	42	35	NP	400 (Cl. 3 only)	400	...	G24, T3, W4
26	0.250–8.000	23	42	35	NP	400 (Cl. 3 only)	400	...	G24, T3, W4
27	0.125–0.249	23	24	...	NP	400 (Cl. 3 only)	400	NFA-12,13	G13, G24, T3, W7
28	0.250–8.000	23	24	...	NP	400 (Cl. 3 only)	400	NFA-12,13	G13, G24, T3, W7
29	...	23	26	16	NP	400 (Cl. 3 only)	400	...	G24, T3, W4
30	...	23	38	35	NP	400 (Cl. 3 only)	400	...	G24, T3, W4
31	...	23	24	...	NP	400 (Cl. 3 only)	400	...	G24, T3, W7
32	...	23	24	...	NP	400 (Cl. 3 only)	400	NFA-12,13	G13, G24, T3, W7
33	0.025–0.200	23	30	16	NP	400 (Cl. 3 only)	400	NFA-12	T3, W4
34	0.025–0.200	23	42	35	NP	400 (Cl. 3 only)	400	NFA-12	T3, W4
35	0.025–0.200	23	24	...	NP	400 (Cl. 3 only)	400	NFA-12,13	T3, W7
36	0.025–0.200	23	24	...	NP	400 (Cl. 3 only)	400	NFA-12,13	T3, W7

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
1	11.7	11.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	12.0	12.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	11.7	11.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	11.7	11.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	12.0	12.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	11.7	11.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	6.3	6.3	6.3	6.3	*6.1*	*4.1*	*2.4*	...	...	...	...	...	...	...	...	...	...
8	8.0	8.0	8.0	*7.5*	*6.1*	*4.1*	*2.4*	...	...	...	...	...	...	...	...	...	...
9	6.3	6.3	6.3	6.3	*6.1*	*4.1*	*2.4*	...	...	...	...	...	...	...	...	...	...
10	8.9	8.9	8.9	*7.5*	*6.1*	*4.1*	*2.4*	...	...	...	...	...	...	...	...	...	...
11	9.7	9.7	9.7	*7.5*	*6.1*	*4.1*	*2.4*	...	...	...	...	...	...	...	...	...	...
12	8.6	8.6	8.6	7.4	6.9	*6.3*	*4.5*	...	...	...	...	...	...	...	...	...	...
13	8.6	8.6	8.6	7.4	6.9	*6.3*	*4.5*	...	...	...	...	...	...	...	...	...	...
14	12.0	12.0	12.0	9.9	8.4	*6.3*	*4.5*	...	...	...	...	...	...	...	...	...	...
15	12.0	12.0	12.0	9.9	8.4	*6.3*	*4.5*	...	...	...	...	...	...	...	...	...	...
16	11.4	11.4	11.4	9.6	8.2	*6.3*	*4.4*	...	...	...	...	...	...	...	...	...	...
17	6.0	6.0	6.0	5.9	5.5	*4.6*	*3.5*	...	...	...	...	...	...	...	...	...	...
18	6.0	6.0	6.0	5.9	5.5	*4.6*	*3.5*	...	...	...	...	...	...	...	...	...	...
19	6.0	6.0	6.0	5.9	5.5	*4.6*	*3.5*	...	...	...	...	...	...	...	...	...	...
20	6.0	6.0	6.0	5.9	5.5	*4.6*	*3.5*	...	...	...	...	...	...	...	...	...	...
21	8.6	8.6	8.6	7.4	6.9	*6.3*	*4.5*	...	...	...	...	...	...	...	...	...	...
22	12.0	12.0	12.0	9.9	8.4	*6.3*	*4.5*	...	...	...	...	...	...	...	...	...	...
23	6.0	6.0	6.0	5.9	5.5	*4.6*	*3.5*	...	...	...	...	...	...	...	...	...	...
24	6.0	6.0	6.0	5.9	5.5	*4.6*	*3.5*	...	...	...	...	...	...	...	...	...	...
25	12.0	12.0	12.0	9.9	8.4	*6.3*	*4.5*	...	...	...	...	...	...	...	...	...	...
26	12.0	12.0	12.0	9.9	8.4	*6.4*	*4.5*	...	...	...	...	...	...	...	...	...	...
27	6.0	6.0	6.0	5.9	5.5	*4.6*	*3.5*	...	...	...	...	...	...	...	...	...	...
28	6.0	6.0	6.0	5.9	5.5	*4.6*	*3.5*	...	...	...	...	...	...	...	...	...	...
29	7.4	7.4	7.4	6.4	6.0	*5.8*	*4.5*	...	...	...	...	...	...	...	...	...	...
30	10.9	10.9	10.9	9.1	7.9	*6.3*	*4.5*	...	...	...	...	...	...	...	...	...	...
31	6.0	6.0	6.0	5.9	5.5	*4.6*	*3.5*	...	...	...	...	...	...	...	...	...	...
32	6.0	6.0	6.0	5.9	5.5	*4.6*	*3.5*	...	...	...	...	...	...	...	...	...	...
33	8.6	8.6	8.6	7.4	6.9	*6.3*	*4.5*	...	...	...	...	...	...	...	...	...	...
34	12.0	12.0	12.0	9.9	8.4	*6.3*	*4.5*	...	...	...	...	...	...	...	...	...	...
35	6.0	6.0	6.0	5.9	5.5	*4.6*	*3.5*	...	...	...	...	...	...	...	...	...	...
36	6.0	6.0	6.0	5.9	5.5	*4.6*	*3.5*	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
1	...	Smls. extr. tube	SB-241	...	A96061	T4
2	...	Smls. extr. tube	SB-241	...	A96061	T6
3	...	Smls. extr. tube	SB-241	...	A96061	T4 wld.
4	...	Smls. extr. tube	SB-241	...	A96061	T6 wld.
5	...	Smls. pipe	SB-241	...	A96061	T6
6	...	Smls. pipe	SB-241	...	A96061	T6
7	...	Smls. pipe	SB-241	...	A96061	T6 wld.
8	...	Die forgings	SB-247	...	A96061	T6
9	...	Hand forgings	SB-247	...	A96061	T6
10	...	Hand forgings	SB-247	...	A96061	T6
11	...	Die & hand forgings	SB-247	...	A96061	T6 wld.
12	...	Shapes	SB-308	...	A96061	T6
13	...	Shapes	SB-308	...	A96061	T6 wld.
14	...	Drawn smls. tube	SB-210	...	A96063	T6
15	...	Drawn smls. tube	SB-210	...	A96063	T6 wld.
16	...	Bar, rod, shapes	SB-221	...	A96063	T1
17	...	Bar, rod, shapes	SB-221	...	A96063	T1
18	...	Bar, rod, shapes	SB-221	...	A96063	T5
19	...	Bar, rod, shapes	SB-221	...	A96063	T5
20	...	Bar, rod, shapes	SB-221	...	A96063	T6
21	...	Bar, rod, shapes	SB-221	...	A96063	T5 wld.
22	...	Bar, rod, shapes	SB-221	...	A96063	T6 wld.
23	...	Smls. extr. tube	SB-241	...	A96063	T1
24	...	Smls. extr. tube	SB-241	...	A96063	T1
25	...	Smls. extr. tube	SB-241	...	A96063	T5
26	...	Smls. extr. tube	SB-241	...	A96063	T5
27	...	Smls. extr. tube	SB-241	...	A96063	T6
28	...	Smls. extr. tube	SB-241	...	A96063	T5 wld.
29	...	Smls. extr. tube	SB-241	...	A96063	T6 wld.
30	...	Smls. pipe	SB-241	...	A96063	T6
31	...	Smls. pipe	SB-241	...	A96063	T6 wld.
32	...	Smls. tube	SB-75	...	C10200	O60
33	...	Smls. pipe	SB-42	...	C10200	O61
34	...	Plate, sheet, strip	SB-152	...	C10200	O25
35	...	Rod	SB-187	...	C10200	O60

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	...	23	26	16	NP	400 (Cl. 3 only)	400	NFA-12	G24, T3, W4
2	...	23	38	35	NP	400 (Cl. 3 only)	400	NFA-12	G24, T3, W4
3	...	23	24	...	NP	400 (Cl. 3 only)	400	NFA-12,13	G24, T3, W7
4	...	23	24	...	NP	400 (Cl. 3 only)	400	NFA-12,13	G24, T3, W7
5	< 1.000	23	42	35	NP	400 (Cl. 3 only)	400	NFA-12	T3, W4
6	≥ 1.000	23	38	35	NP	400 (Cl. 3 only)	400	NFA-12	T3, W4
7	...	23	24	...	NP	400 (Cl. 3 only)	400	NFA-12,13	T3, W7
8	≤ 4.000	23	38	35	NP	400 (Cl. 3 only)	400	NFA-12	T3, W4
9	≤ 4.000	23	37	33	NP	400 (Cl. 3 only)	400	NFA-12	T3, W4
10	4.001–8.000	23	35	32	NP	400 (Cl. 3 only)	400	NFA-12	T3, W4
11	≤ 8.000	23	24	...	NP	400 (Cl. 3 only)	400	NFA-12,13	T3, W7
12	...	23	38	35	NP	400 (Cl. 3 only)	400	...	T3, W4
13	...	23	24	...	NP	400 (Cl. 3 only)	400	NFA-12,13	G13, T3, W7
14	0.025–0.500	23	33	28	NP	400 (Cl. 3 only)	400	NFA-1	T3, W4
15	0.025–0.500	23	17	...	NP	400 (Cl. 3 only)	400	NFA-1	T3, W7
16	≤ 0.500	23	17	9	NP	350 (Cl. 3 only)	400	...	T3, W4
17	0.501–1.000	23	16	8	NP	350 (Cl. 3 only)	400	...	T3, W4
18	≤ 0.500	23	22	16	NP	400 (Cl. 3 only)	400	...	T3, W4
19	0.501–1.000	23	21	15	NP	400 (Cl. 3 only)	400	...	T3, W4
20	≤ 1.000	23	30	25	NP	400 (Cl. 3 only)	400	...	T3, W4
21	≤ 1.000	23	17	...	NP	400 (Cl. 3 only)	400	...	T3, W7
22	≤ 1.000	23	17	...	NP	400 (Cl. 3 only)	400	...	T3, W7
23	≤ 0.500	23	17	9	NP	350 (Cl. 3 only)	NP	...	T3, W4
24	0.501–1.000	23	16	8	NP	350 (Cl. 3 only)	NP	...	T3, W4
25	≤ 0.500	23	22	16	NP	350 (Cl. 3 only)	400	NFA-1	T3, W4
26	0.501–1.000	23	21	15	NP	350 (Cl. 3 only)	400	NFA-1	T3, W4
27	≤ 1.000	23	30	25	NP	350 (Cl. 3 only)	400	NFA-1	T3, W4
28	≤ 1.000	23	17	...	NP	350 (Cl. 3 only)	400	NFA-1	T3, W7
29	≤ 1.000	23	17	...	NP	350 (Cl. 3 only)	400	NFA-1	T3, W7
30	...	23	30	25	NP	400 (Cl. 3 only)	400	NFA-1	T3, W4
31	...	23	17	...	NP	400 (Cl. 3 only)	400	NFA-1	T3, W7
32	...	31	30	9	400	300 (Cl. 3 only)	400	NFC-1	G1, G4, T3, W10
33	1/8 < NPS ≤ 2	31	30	9	400	300	400	NFC-1	G1, G4, T3, W10
34	...	31	30	10	NP	300 (Cl. 3 only)	400	NFC-1	T2
35	...	31	30	10	NP	300	400	...	T2

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
1	7.4	7.4	7.4	6.4	6.0	*5.8*	*4.5*	...	...	...	...	...	...	...	...	...	...
2	10.9	10.9	10.9	9.1	7.9	*6.3*	*4.5*	...	...	...	...	...	...	...	...	...	...
3	6.0	6.0	6.0	5.9	5.5	*4.6*	*3.5*	...	...	...	...	...	...	...	...	...	...
4	6.0	6.0	6.0	5.9	5.5	*4.6*	*3.5*	...	...	...	...	...	...	...	...	...	...
5	12.0	12.0	12.0	9.9	8.4	*6.3*	*4.5*	...	...	...	...	...	...	...	...	...	...
6	10.9	10.9	10.9	9.1	7.9	*6.3*	*4.5*	...	...	...	...	...	...	...	...	...	...
7	6.0	6.0	6.0	5.9	5.5	*4.6*	*3.5*	...	...	...	...	...	...	...	...	...	...
8	10.9	10.9	10.9	9.1	7.9	*6.3*	*4.5*	...	...	...	...	...	...	...	...	...	...
9	10.6	10.6	10.6	8.8	7.7	*6.3*	*4.5*	...	...	...	...	...	...	...	...	...	...
10	10.0	10.0	10.0	8.4	7.4	*6.1*	*4.5*	...	...	...	...	...	...	...	...	...	...
11	6.0	6.0	6.0	5.9	5.5	*4.6*	*3.5*	...	...	...	...	...	...	...	...	...	...
12	10.9	10.9	10.9	8.5	7.2	*5.6*	*4.0*	...	...	...	...	...	...	...	...	...	...
13	6.0	5.9	5.7	5.4	5.0	*4.2*	*3.2*	...	...	...	...	...	...	...	...	...	...
14	9.4	9.4	9.4	7.4	5.5	*3.4*	*2.0*	...	...	...	...	...	...	...	...	...	...
15	4.3	4.3	4.3	4.2	3.9	*3.0*	*2.0*	...	...	...	...	...	...	...	...	...	...
16	4.9	4.9	4.9	4.2	4.2	*3.4*	*2.0*	...	...	...	...	...	...	...	...	...	...
17	4.6	4.6	4.6	4.0	4.0	*3.4*	*2.0*	...	...	...	...	...	...	...	...	...	...
18	6.3	6.3	6.3	5.1	4.6	*3.4*	*2.0*	...	...	...	...	...	...	...	...	...	...
19	6.0	6.0	6.0	4.9	4.3	*3.4*	*2.0*	...	...	...	...	...	...	...	...	...	...
20	8.6	8.6	8.6	6.8	5.0	*3.4*	*2.0*	...	...	...	...	...	...	...	...	...	...
21	4.3	4.3	4.3	4.2	3.9	*3.0*	*2.0*	...	...	...	...	...	...	...	...	...	...
22	4.3	4.3	4.3	4.2	3.9	*3.0*	*2.0*	...	...	...	...	...	...	...	...	...	...
23	4.9	4.9	4.9	4.2	4.2	*3.4*	...	...	...	...	...	...	...	...	...	...	...
24	4.6	4.6	4.6	4.0	4.0	*3.4*	...	...	...	...	...	...	...	...	...	...	...
25	6.3	6.3	6.3	5.1	4.6	*3.4*	*2.0*	...	...	...	...	...	...	...	...	...	...
26	6.0	6.0	6.0	4.9	4.4	*3.4*	*2.0*	...	...	...	...	...	...	...	...	...	...
27	8.6	8.6	8.6	6.8	5.0	*3.4*	*2.0*	...	...	...	...	...	...	...	...	...	...
28	4.3	4.3	4.3	4.2	3.9	*3.0*	*2.0*	...	...	...	...	...	...	...	...	...	...
29	4.3	4.3	4.3	4.2	3.9	*3.0*	*2.0*	...	...	...	...	...	...	...	...	...	...
30	8.6	8.6	8.6	6.8	5.0	*3.4*	*2.0*	...	...	...	...	...	...	...	...	...	...
31	4.3	4.3	4.3	4.2	3.9	*3.0*	*2.0*	...	...	...	...	...	...	...	...	...	...
32	6.0	5.1	4.9	4.8	4.7	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...
33	6.0	5.1	4.9	4.8	4.7	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...
34	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...
35	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
1	...	Smls. pipe	SB-42	...	C10200	H55
2	...	Smls. tube	SB-75	...	C10200	H55
3	...	Smls. cond. tube	SB-111	...	C10200	H55
4	...	Smls. U-bend tube	SB-395	...	C10200	H55
5	...	Smls. pipe	SB-42	...	C10200	H80
6	...	Smls. tube	SB-75	...	C10200	H80
7	...	Smls. cond. tube	SB-111	...	C10200	H80
8	...	Plate, sheet, strip	SB-152	...	C10400	O25
9	...	Plate, sheet, strip	SB-152	...	C10500	O25
10	...	Plate, sheet, strip	SB-152	...	C10700	O25
11	...	Plate, sheet, strip, bar	SB-152	...	C11000	O25
12	...	Bar, rod	SB-187	...	C11000	O60
13	...	Smls. tube	SB-75	...	C12000	O50
14	...	Smls. tube	SB-75	...	C12000	O60
15	...	Smls. pipe	SB-42	...	C12000	O61
16	...	Smls. pipe	SB-42	...	C12000	H55
17	...	Smls. tube	SB-75	...	C12000	H55
18	...	Smls. cond. tube	SB-111	...	C12000	H55
19	...	Smls. U-bend tube	SB-395	...	C12000	H55
20	...	Smls. pipe	SB-42	...	C12000	H80
21	...	Smls. tube	SB-75	...	C12000	H80
22	...	Smls. cond. tube	SB-111	...	C12000	H80
23	...	Smls. tube	SB-75	...	C12200	O50
24	...	Smls. tube	SB-75	...	C12200	O60
25	...	Smls. pipe	SB-42	...	C12200	O61
26	...	Finned tube	SB-359	...	C12200	O61
27	...	Wld. cond. tube	SB-543	...	C12200	Annealed
28	...	Plate, sheet, strip	SB-152	...	C12200	O25
29	...	Wld. cond. tube	SB-543	...	C12200	Light cold worked
30	...	Smls. pipe	SB-42	...	C12200	H55
31	...	Smls. tube	SB-75	...	C12200	H55
32	...	Smls. cond. tube	SB-111	...	C12200	H55
33	...	Smls. U-bend tube	SB-395	...	C12200	H55
34	...	Smls. pipe	SB-42	...	C12200	H80
35	...	Smls. cond. tube	SB-75	...	C12200	H80
36	...	Smls. tube	SB-111	...	C12200	H80
37	...	Plate, sheet, strip, bar	SB-152	...	C12300	O25
38	...	Plate, sheet	SB-152	...	C12500	O25

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	2 < NPS ≤ 12	31	36	30	400	400	400	NFC-6	G1, W9, W10
2	...	31	36	30	400	400 (Cl. 3 only)	400	NFC-6	G1, G8, W9, W10
3	< 3	31	36	30	NP	400	400	NFC-6	G8, W9
4	...	31	36	30	NP	400 (Cl. 3 only)	400	NFC-6	W9
5	1/8 < NPS ≤ 2	31	45	40	400	300	400	NFC-6	G1, G5, G6, T4, W9, W10
6	< 4	31	45	40	400	350	400	NFC-6	G1, G9, T4, W9, W10
7	< 3	31	45	40	NP	300	400	NFC-6	G9, T4, W9
8	...	31	30	10	NP	300	400	NFC-1	T2
9	...	31	30	10	NP	300	400	NFC-1	T2
10	...	31	30	10	NP	300	400	NFC-1	T2
11	≤ 2	31	30	10	NP	NP	400	NFC-1	T2
12	...	31	30	10	NP	300	400	...	T2
13	...	31	30	9	NP	300 (Cl. 3 only)	NP	NFC-1	...
14	...	31	30	9	400	300 (Cl. 3 only)	400	NFC-1	G1, G4, T3, W10
15	1/8 < NPS ≤ 2	31	30	9	400	300	400	NFC-1	G1, G4, T3, W10
16	2 < NPS ≤ 12	31	36	30	400	400	400	NFC-6	G1, W9, W10
17	...	31	36	30	400	400 (Cl. 3 only)	400	NFC-6	G1, G8, W9, W10
18	< 3	31	36	30	NP	400	400	NFC-6	G8, W9
19	< 2	31	36	30	NP	400 (Cl. 3 only)	400	NFC-6	W9
20	1/8 < NPS ≤ 2	31	45	40	400	300	400	NFC-6	G1, G6, T4, W9, W10
21	...	31	45	40	400	350 (Cl. 3 only)	400	NFC-6	G1, G9, T4, W9, W10
22	< 3	31	45	40	NP	300	400	NFC-6	G9, T4, W9
23	...	31	30	9	NP	300	400	NFC-1	T3
24	...	31	30	9	400	300	NP	NFC-1	G1, G4, T3, W10
25	1/8 < *t* ≤ 2	31	30	9	400	300	400	NFC-1	G1, G4, T3, W10
26	...	31	30	9	NP	300 (Cl. 3 only)	NP	NFC-1	...
27	...	31	30	9	NP	300 (Cl. 3 only)	400	NFC-1	G14, W11
28	...	31	30	10	NP	300	400	NFC-1	T2
29	...	31	32	15	NP	300 (Cl. 3 only)	400	NFC-1	G14, W3
30	2 < *t* ≤ 12	31	36	30	400	400	400	NFC-6	G1, W9, W10
31	...	31	36	30	400	400 (Cl. 3 only)	400	NFC-6	G1, G8, W9, W10
32	< 3	31	36	30	NP	400	400	NFC-6	G8, W9
33	< 2	31	36	30	NP	400 (Cl. 3 only)	400	NFC-6	W9
34	1/8 < *t* ≤ 2	31	45	40	400	300	400	NFC-6	G1, G6, T4, W9, W10
35	< 4	31	45	40	400	350 (Cl. 3 only)	400	NFC-6	G1, G9, T4, W9, W10
36	< 3	31	45	40	NP	300	400	NFC-6	G9, T4, W9
37	...	31	30	10	NP	300	400	NFC-1	T2
38	≤ 2	31	30	10	NP	300 (Cl. 3 only)	NP	...	T2

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
1	10.3	10.3	10.3	10.3	10.0	9.7	9.4	...	...	...	...	...	...	...	...	...	...
2	10.3	10.3	10.3	10.3	10.0	9.7	9.4	...	...	...	...	...	...	...	...	...	...
3	10.3	10.3	10.3	10.3	10.0	9.7	9.4	...	...	...	...	...	...	...	...	...	...
4	10.3	10.3	10.3	10.3	10.0	9.7	9.4	...	...	...	...	...	...	...	...	...	...
5	12.9	12.9	12.9	12.9	12.5	11.8	*4.3*	...	...	...	...	...	...	...	...	...	...
6	12.9	12.9	12.9	12.9	12.5	11.8	*4.3*	...	...	...	...	...	...	...	...	...	...
7	12.9	12.9	12.9	12.9	12.5	11.8	*4.3*	...	...	...	...	...	...	...	...	...	...
8	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...
9	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...
10	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...
11	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...
12	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...
13	6.0	5.1	4.9	4.8	4.7	...	...	...	...	...	...	...	...	...	...	...	...
14	6.0	5.1	4.9	4.8	4.7	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...
15	6.0	5.1	4.9	4.8	4.7	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...
16	10.3	10.3	10.3	10.3	10.0	9.7	9.4	...	...	...	...	...	...	...	...	...	...
17	10.3	10.3	10.3	10.3	10.0	9.7	9.4	...	...	...	...	...	...	...	...	...	...
18	10.3	10.3	10.3	10.3	10.0	9.7	9.4	...	...	...	...	...	...	...	...	...	...
19	10.3	10.3	10.3	10.3	10.0	9.7	9.4	...	...	...	...	...	...	...	...	...	...
20	12.9	12.9	12.9	12.9	12.5	11.8	*4.3*	...	...	...	...	...	...	...	...	...	...
21	12.9	12.9	12.9	12.9	12.5	11.8	*4.3*	...	...	...	...	...	...	...	...	...	...
22	12.9	12.9	12.9	12.9	12.5	11.8	*4.3*	...	...	...	...	...	...	...	...	...	...
23	6.0	5.1	4.9	4.8	4.7	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...
24	6.0	5.1	4.9	4.8	4.7	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...
25	6.0	5.1	4.9	4.8	4.7	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...
26	6.0	5.1	4.9	4.8	4.7	...	...	...	...	...	...	...	...	...	...	...	...
27	5.1	4.3	4.1	4.1	4.0	3.4	2.6	...	...	...	...	...	...	...	...	...	...
28	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...
29	7.8	7.8	7.8	7.8	7.5	7.3	2.6	...	...	...	...	...	...	...	...	...	...
30	10.3	10.3	10.3	10.3	10.0	9.7	9.4	...	...	...	...	...	...	...	...	...	...
31	10.3	10.3	10.3	10.3	10.0	9.7	9.4	...	...	...	...	...	...	...	...	...	...
32	10.3	10.3	10.3	10.3	10.0	9.7	9.4	...	...	...	...	...	...	...	...	...	...
33	10.3	10.3	10.3	10.3	10.0	9.7	9.4	...	...	...	...	...	...	...	...	...	...
34	12.9	12.9	12.9	12.9	12.5	11.8	*4.3*	...	...	...	...	...	...	...	...	...	...
35	12.9	12.9	12.9	12.9	12.5	11.8	*4.3*	...	...	...	...	...	...	...	...	...	...
36	12.9	12.9	12.9	12.9	12.5	11.8	*4.3*	...	...	...	...	...	...	...	...	...	...
37	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...
38	6.7	5.6	5.4	5.3	*5.0*	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
1	...	Plate, sheet, strip	SB-152	...	C14200	O25
2	...	Smls. cond. tube	SB-111	...	C14200	H55
3	...	Smls. U-bend tube	SB-395	...	C14200	H55
4	...	Smls. cond. tube	SB-111	...	C14200	H80
5	...	Smls. cond. tube	SB-111	...	C19200	O61
6	...	Smls. U-bend tube	SB-395	...	C19200	O61
7	...	Wld. cond. tube	SB-543	...	C19400	Annealed
8	...	Wld. cond. tube	SB-543	...	C19400	Light cold worked
9	...	Wld. cond. tube	SB-543	...	C23000	Annealed
10	...	Smls. tube	SB-135	...	C23000	O50
11	...	Smls. red brass tube	SB-135	...	C23000	O60
12	...	Smls. pipe	SB-43	...	C23000	O61
13	...	Smls. cond. tube	SB-111	...	C23000	O61
14	...	Smls. tube	SB-395	...	C23000	O61
15	...	Wld. cond. tube	SB-543	...	C23000	Light cold worked
16	...	Smls. tube	SB-111	...	C28000	O61
17	...	Plate	SB-171	...	C36500	O25
18	...	Plate	SB-171	...	C36500	O25
19	...	Plate	SB-171	...	C36500	O25
20	...	Forgings, brass	SB-283	...	C37700	M10
21	...	Forgings, brass	SB-283	...	C37700	M10
22	...	Plate	SB-171	...	C44300	O25
23	...	Smls. cond. tube	SB-111	...	C44300	O61
24	...	Finned tube	SB-359	...	C44300	O61
25	...	Smls. U-bend tube	SB-395	...	C44300	O61
26	...	Wld. cond. tube	SB-543	...	C44300	Annealed
27	...	Plate	SB-171	...	C44400	O25
28	...	Smls. cond. tube	SB-111	...	C44400	O61
29	...	Finned tube	SB-359	...	C44400	O61
30	...	Smls. U-bend tube	SB-395	...	C44400	O61
31	...	Wld. cond. tube	SB-543	...	C44400	O61
32	...	Plate	SB-171	...	C44500	O25
33	...	Smls. cond. tube	SB-111	...	C44500	O61
34	...	Finned tube	SB-359	...	C44500	O61
35	...	Smls. U-bend tube	SB-395	...	C44500	O61
36	...	Wld. cond. tube	SB-543	...	C44500	O61

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	...	31	30	10	NP	300 (Cl. 3 only)	NP	...	T2
2	< 3	31	36	30	NP	400	400	NFC-6	G8, W9
3	...	31	36	30	NP	400 (Cl. 3 only)	400	NFC-6	W9
4	< 3	31	45	40	NP	300	400	NFC-6	G9, T4, W9
5	< 3	31	38	12	NP	NP	300	NFC-1	...
6	...	31	38	12	NP	NP	300	NFC-1	...
7	...	31	45	15	NP	NP	400	NFC-5	G15
8	...	31	45	22	NP	300 (Cl. 3 only)	400	NFC-5	G15
9	...	32	40	12	NP	300 (Cl. 3 only)	450	NFC-1	G15, T3
10	...	32	40	12	NP	300 (Cl. 3 only)	NP	...	...
11	...	32	40	12	NP	300 (Cl. 3 only)	450	NFC-2	G7, T3
12	...	32	40	12	450	300 (Cl. 3 only)	450	NFC-2	G1, G4, G7, T3, W10
13	< 3	32	40	12	NP	300 (Cl. 3 only)	450	NFC-2	G7, T3
14	...	32	40	12	NP	300 (Cl. 3 only)	450	NFC-2	G7, T3
15	...	32	42	20	NP	300 (Cl. 3 only)	450	NFC-1	G15, T3
16	...	32	50	20	400	350 (Cl. 3 only)	400	NFC-3	G1, G6, T3, W10
17	$3.5 < t \leq 5$	32	40	12	NP	350 (Cl. 3 only)	400	NFC-2	G7, T4
18	$2 < t \leq 3.5$	32	45	15	NP	350 (Cl. 3 only)	400	NFC-2	T4
19	≤ 2	32	50	20	NP	350 (Cl. 3 only)	400	NFC-2	T3
20	> 1½	...	46	15	NP	NP	200	NFC-2	W14
21	≤ 1½	...	50	18	NP	NP	200	NFC-2	W14
22	≤ 4	32	45	15	NP	350 (Cl. 3 only)	450	NFC-2	T3
23	< 3	32	45	15	450	350 (Cl. 3 only)	450	NFC-3	G1, G6, T3, W10
24	...	32	45	15	NP	350 (Cl. 3 only)	NP	...	T3
25	...	32	45	15	NP	350 (Cl. 3 only)	450	NFC-2	T3
26	...	32	45	15	NP	NP	450	NFC-2	G7, G15, T3
27	≤ 4	32	45	15	NP	350 (Cl. 3 only)	450	NFC-2	T3
28	< 3	32	45	15	450	350 (Cl. 3 only)	450	NFC-3	G1, G6, T3, W10
29	...	32	45	15	NP	350 (Cl. 3 only)	NP	...	T3
30	...	32	45	15	NP	350 (Cl. 3 only)	450	NFC-2	T3
31	...	32	45	15	NP	NP	450	NFC-2	G7, G15, T3
32	≤ 4	32	45	15	NP	350 (Cl. 3 only)	450	NFC-2	T3
33	< 3	32	45	15	450	350 (Cl. 3 only)	450	NFC-3	G1, G6, T3, W10
34	...	32	45	15	NP	350 (Cl. 3 only)	NP	...	T3
35	...	32	45	15	NP	350 (Cl. 3 only)	450	NFC-2	T3
36	...	32	45	15	NP	NP	450	NFC-2	G7, G15, T3

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
1	6.7	5.6	5.4	5.3	*5.0*	...	...	...	...	...	...	...	...	...	...	...	...
2	10.3	10.3	10.3	10.3	10.0	9.7	9.4	...	...	...	...	...	...	...	...	...	...
3	10.3	10.3	10.3	10.3	10.0	9.7	9.4	...	...	...	...	...	...	...	...	...	...
4	12.9	12.9	12.9	12.9	12.5	11.8	*4.3*	...	...	...	...	...	...	...	...	...	...
5	8.0	7.1	6.7	6.4	6.2	...	...	...	...	...	...	...	...	...	...	...	...
6	8.0	7.1	6.7	6.4	6.2	...	...	...	...	...	...	...	...	...	...	...	...
7	8.5	8.4	8.3	8.1	7.8	7.6	6.0	...	...	...	...	...	...	...	...	...	...
8	10.9	10.9	10.9	10.6	10.1	7.7	6.0	...	...	...	...	...	...	...	...	...	...
9	6.8	6.8	6.8	6.8	6.8	*6.0*	*4.3*	*1.7*	...	...	...	...	...	...	...	...	...
10	8.0	8.0	8.0	8.0	8.0	...	...	...	...	...	...	...	...	...	...	...	...
11	8.0	8.0	8.0	8.0	8.0	*7.0*	*5.0*	*2.0*	...	...	...	...	...	...	...	...	...
12	8.0	8.0	8.0	8.0	8.0	*7.0*	*5.0*	*2.0*	...	...	...	...	...	...	...	...	...
13	8.0	8.0	8.0	8.0	8.0	*7.0*	*5.0*	*2.0*	...	...	...	...	...	...	...	...	...
14	8.0	8.0	8.0	8.0	8.0	*7.0*	*5.0*	*2.0*	...	...	...	...	...	...	...	...	...
15	6.8	6.8	6.8	6.8	6.8	*6.0*	*4.3*	*1.7*	...	...	...	...	...	...	...	...	...
16	13.3	13.3	13.3	13.3	13.3	*10.8*	*5.3*	...	...	...	...	...	...	...	...	...	...
17	8.0	8.0	8.0	8.0	8.0	8.0	*5.3*	...	...	...	...	...	...	...	...	...	...
18	10.0	10.0	10.0	10.0	10.0	10.0	*5.3*	...	...	...	...	...	...	...	...	...	...
19	13.3	13.3	13.3	13.3	13.3	*10.8*	*5.3*	...	...	...	...	...	...	...	...	...	...
20	10.0	9.4	9.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	12.0	11.3	10.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...
23	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...
24	10.0	10.0	10.0	10.0	10.0	*9.8*	...	...	...	...	...	...	...	...	...	...	...
25	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...
26	8.5	8.5	8.5	8.5	8.5	*8.3*	*3.0*	*1.7*	...	...	...	...	...	...	...	...	...
27	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...
28	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...
29	10.0	10.0	10.0	10.0	10.0	*9.8*	...	...	...	...	...	...	...	...	...	...	...
30	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...
31	8.5	8.5	8.5	8.5	8.5	*8.3*	*3.0*	*1.7*	...	...	...	...	...	...	...	...	...
32	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...
33	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...
34	10.0	10.0	10.0	10.0	10.0	*9.8*	...	...	...	...	...	...	...	...	...	...	...
35	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...
36	8.5	8.5	8.5	8.5	8.5	*8.3*	*3.0*	*1.7*	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
1	...	Plate	SB-171	...	C46400	O25
2	...	Plate	SB-171	...	C46400	O25
3	...	Plate	SB-171	...	C46500	O25
4	...	Plate	SB-171	...	C46500	O25
5	...	Smls. cond. tube	SB-111	...	C60800	O61
6	...	Smls. U-bend tube	SB-395	...	C60800	O61
7	...	Plate	SB-171	...	C61400	O25
8	...	Plate, sheet	SB-169	...	C61400	O25 or O60
9	...	Plate	SB-171	...	C61400	O25
10	...	Plate, sheet	SB-169	...	C61400	O25 or O60
11	...	Plate, sheet	SB-169	...	C61400	O25 or O60
12	...	Plate	SB-171	...	C63000	O25
13	...	Plate	SB-171	...	C63000	O25
14	...	Plate	SB-171	...	C63000	O25
15	...	Forgings	SB-283	...	C64200	M10
16	...	Forgings	SB-283	...	C64200	M10
17	...	Bar, rod	SB-98	...	C65100	O60
18	...	Bar, rod	SB-98	...	C65100	H02
19	...	Smls. pipe & tube	SB-315	...	C65500	O61
20	...	Plate, sheet	SB-96	...	C65500	O61
21	...	Bar, rod	SB-98	...	C65500	O60
22	...	Bar, rod	SB-98	...	C65500	H02
23	...	Bar, rod	SB-98	...	C66100	O60
24	...	Bar, rod	SB-98	...	C66100	H02
25	...	Smls. cond. tube	SB-111	...	C68700	O61
26	...	Smls. U-bend tube	SB-395	...	C68700	O61
27	...	Wld. cond. tube	SB-543	...	C68700	Annealed
28	...	Wld. tube	SB-543	...	C70400	Annealed
29	...	Smls. cond. tube	SB-111	...	C70400	O61
30	...	Smls. cond. tube	SB-111	...	C70400	H55
31	...	Smls. pipe & tube	SB-466	...	C70600	O60
32	...	Wld. pipe	SB-467	...	C70600	WO61
33	...	Bar, rod	SB-151	...	C70600	O60
34	...	Plate	SB-171	...	C70600	O25
35	...	Plate, sheet	SB-171	...	C70600	O25
36	...	Plate	SB-171	...	C70600	O25

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	$3 < t \le 5$	32	50	18	NP	300 (Cl. 3 only)	400	NFC-2	T3
2	≤ 3	32	50	20	NP	300 (Cl. 3 only)	400	NFC-2	T3
3	$3 < t \le 5$	32	50	18	NP	300 (Cl. 3 only)	400	NFC-2	T3
4	≤ 3	32	50	20	NP	300 (Cl. 3 only)	400	NFC-2	T3
5	...	35	50	19	NP	300 (Cl. 3 only)	500	NFC-3	G6, T4
6	...	35	50	19	NP	300 (Cl. 3 only)	500	NFC-2	T4
7	$2 < t \le 5$	35	65	28	NP	500 (Cl. 3 only)	500	NFA-6	...
8	$2 < t \le 5$	35	65	28	NP	500 (Cl. 3 only)	500	NFA-6	...
9	≤ 2	35	70	30	NP	500 (Cl. 3 only)	500	NFA-6	...
10	$\frac{1}{2} < t \le 2$	35	70	30	NP	500 (Cl. 3 only)	500	NFA-6	...
11	$\le \frac{1}{2}$	35	72	32	NP	450 (Cl. 3 only)	500	NFA-6	...
12	$3.5 < t \le 5$	35	80	30	NP	500 (Cl. 3 only)	700	NFA-6	T6
13	$2 < t \le 3.5$	35	85	33	NP	500 (Cl. 3 only)	700	NFA-6	T6
14	≤ 2	35	90	36	NP	500 (Cl. 3 only)	700	NFA-6	T6
15	$> 1\frac{1}{2}$	...	68	23	NP	NP	500	NFC-3	G10, W14
16	$\le 1\frac{1}{2}$	...	70	25	NP	NP	500	NFC-3	W14
17	...	33	40	12	NP	300	350	...	G17
18	...	33	55	20	NP	300	350	...	G17, W9
19	...	33	50	15	NP	300 (Cl. 3 only)	400	NFC-2	G17
20	≤ 2	33	50	18	NP	300 (Cl. 3 only)	350	NFC-2	G17
21	...	33	52	15	NP	300	350	...	G17
22	...	33	70	38	NP	300	350	...	G17
23	...	33	52	15	NP	300	350	...	G17
24	...	33	70	38	NP	300	350	...	G17, W9
25	< 3	32	50	18	NP	300 (Cl. 3 only)	450	NFC-2	...
26	...	32	50	18	NP	300 (Cl. 3 only)	450	NFC-2	...
27	...	32	50	18	NP	NP	450	NFC-2	G15
28	...	34	38	12	NP	NP	150	NFC-2	G15
29	< 3	34	38	12	NP	150 (Cl. 3 only)	150	NFC-2	...
30	< 3	34	40	30	NP	150 (Cl. 3 only)	150	NFC-2	G7, W9
31	...	34	38	13	NP	400	600	NFC-3	T6
32	$> 4\frac{1}{2}$	34	38	13	NP	450 (Cl. 3 only)	600	NFC-3	G14, G15
33	...	34	38	15	NP	200	NP	...	...
34	...	34	40	15	NP	400	NP	NFC-3	...
35	≤ 2.5	34	40	15	NP	450 (Cl. 3 only)	NP	NFC-3	...
36	...	34	40	15	NP	NP	600	NFC-3	T5

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
1	12.0	12.0	12.0	12.0	12.0	*6.3*	*2.5*	...	...	...	...	...	...	...	...	...	...
2	13.3	13.3	13.3	13.3	13.3	*6.3*	*2.5*	...	...	...	...	...	...	...	...	...	...
3	12.0	12.0	12.0	12.0	12.0	*6.3*	*2.5*	...	...	...	...	...	...	...	...	...	...
4	13.3	13.3	13.3	13.3	13.3	*6.3*	*2.5*	...	...	...	...	...	...	...	...	...	...
5	12.7	12.2	12.2	12.2	12.0	10.0	*6.0*	*4.0*	*2.0*	...	...	...	...	...	...	...	...
6	12.7	12.2	12.2	12.2	12.0	10.0	*6.0*	*4.0*	*2.0*	...	...	...	...	...	...	...	...
7	18.6	18.6	18.5	18.3	18.2	18.1	17.9	17.5	17.0	...	...	...	...	...	...	...	...
8	18.6	18.6	18.5	18.3	18.2	18.1	17.9	17.5	17.0	...	...	...	...	...	...	...	...
9	20.0	19.9	19.8	19.7	19.5	19.4	19.2	18.9	18.3	...	...	...	...	...	...	...	...
10	20.0	19.9	19.8	19.7	19.5	19.4	19.2	18.9	18.3	...	...	...	...	...	...	...	...
11	20.6	20.6	20.6	20.6	20.6	20.6	20.2	19.4	18.8	...	...	...	...	...	...	...	...
12	20.0	19.8	19.6	19.3	19.1	19.0	18.8	18.4	17.6	*16.0*	*12.0*	*8.6*	*6.0*	...	...	...	...
13	22.0	21.8	21.5	21.2	21.0	20.9	20.7	20.2	19.4	*16.0*	*12.0*	*8.6*	*6.0*	...	...	...	...
14	24.0	23.8	23.5	23.2	22.9	22.8	22.5	22.1	21.1	*16.0*	*12.0*	*8.6*	*6.0*	...	...	...	...
15	15.3	13.5	13.0	12.5	12.5	12.0	11.0	7.5	5.2	...	...	...	...	...	...	...	...
16	16.7	14.5	14.0	13.5	13.5	13.0	11.0	7.5	5.2	...	...	...	...	...	...	...	...
17	8.0	8.0	8.0	8.0	7.0	5.0	...	...	...	...	...	...	...	...	...	...	...
18	13.3	13.3	13.3	12.8	10.0	8.0	...	...	...	...	...	...	...	...	...	...	...
19	10.0	10.0	10.0	10.0	9.9	5.0	5.0	...	...	...	...	...	...	...	...	...	...
20	12.0	11.9	11.7	11.7	10.0	5.0	...	...	...	...	...	...	...	...	...	...	...
21	10.0	10.0	10.0	...	9.9	5.0	...	...	...	...	...	...	...	...	...	...	...
22	20.0	20.0	20.0	20.0	20.0	10.0	...	...	...	...	...	...	...	...	...	...	...
23	10.0	10.0	10.0	10.0	10.0	5.0	...	...	...	...	...	...	...	...	...	...	...
24	20.0	20.0	20.0	20.0	20.0	10.0	...	...	...	...	...	...	...	...	...	...	...
25	12.0	11.9	11.8	11.7	11.7	6.5	3.3	1.8	...	...	...	...	...	...	...	...	...
26	12.0	11.9	11.8	11.7	11.7	6.5	3.3	1.8	...	...	...	...	...	...	...	...	...
27	10.2	10.1	10.0	9.9	9.9	5.5	2.7	1.4	...	...	...	...	...	...	...	...	...
28	6.8	6.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	8.0	8.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	10.0	10.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	8.7	8.4	8.2	8.0	7.8	7.7	7.5	7.4	7.3	*7.0*	*6.0*	...	...	...	...	...	...
32	7.4	7.2	7.0	6.8	6.7	6.5	6.4	6.3	6.2	5.7	4.3	...	...	...	...	...	...
33	10.0	...	9.5	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	10.0	...	9.5	...	9.0	...	8.7	...	...	...	...	...	...	...	...	...	...
35	10.0	9.7	9.5	9.3	9.0	8.8	8.7	8.5	...	...	...	...	...	...	...	...	...
36	10.0	9.7	9.5	9.3	9.0	8.8	8.7	8.5	*8.0*	*7.0*	*6.0*	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
1	...	Smls. cond. tube	SB-111	...	C70600	O61
2	...	Smls. cond. tube	SB-111	...	C70600	O61
3	...	Finned tube	SB-359	...	C70600	O61
4	...	Smls. U-bend tube	SB-395	...	C70600	O61
5	...	Wld. pipe	SB-467	...	C70600	WO61
6	...	Wld. tube	SB-543	...	C70600	WO61
7	...	Wld. pipe	SB-467	...	C70600	WO61
8	...	Wld. tube	SB-543	...	C70600	Light cold worked
9	...	Smls. tube	SB-111	...	C70600	H55
10	...	Wld. pipe	SB-467	...	C70600	Wld. fr. cold rld. strip
11	...	Smls. tube	SB-466	...	C71000	O60
12	...	Smls. cond. tube	SB-111	...	C71000	O61
13	...	Smls. tube	SB-359	...	C71000	O61
14	...	Smls. tube	SB-395	...	C71000	O61
15	...	Wld. pipe	SB-467	...	C71500	WO61
16	...	Plate, sheet	SB-171	...	C71500	O25
17	...	Smls. pipe & tube	SB-466	...	C71500	O60
18	...	Plate, sheet	SB-171	...	C71500	O25
19	...	Wld. pipe	SB-467	...	C71500	WO61
20	...	Smls. cond. tube	SB-111	...	C71500	O61
21	...	Smls. tube	SB-359	...	C71500	O61
22	...	Smls. U-bend tube	SB-395	...	C71500	O61
23	...	Wld. cond. tube	SB-543	...	C71500	Annealed
24	...	Smls. cond. tube	SB-111	...	C71500	HR50
25	...	Smls. U-bend tube	SB-395	...	C71500	HR58
26	...	Smls. cond. tube	SB-111	...	C72200	O61
27	...	Castings	SB-62	...	C83600	M01
28	...	Castings	SB-61	...	C92200	M01
29	...	Castings	SB-584	...	C92200	M01
30	...	Castings	SB-584	...	C93700	M01
31	...	Castings	SB-148	...	C95200	M01
32	...	Castings	SB-271	...	C95200	M02
33	...	Castings	SB-505	...	C95200	M07
34	...	Castings	SB-148	...	C95400	M01
35	...	Castings	SB-271	...	C95400	M02
36	...	Castings	SB-369	...	C96200	M01
37	...	Castings	SB-584	...	C97600	M01

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	...	34	40	15	600	400	NP	NFC-3	G1, T5, W10
2	...	34	40	15	NP	450 (Cl. 3 only)	600	NFC-3	T5
3	...	34	40	15	NP	450 (Cl. 3 only)	NP	NFC-3	G14
4	...	34	40	15	NP	450 (Cl. 3 only)	600	NFC-3	T5
5	$\leq 4\frac{1}{2}$	34	40	15	NP	450 (Cl. 3 only)	600	NFC-3	G14, G15
6	$2\frac{1}{2} < t \leq 5$	34	40	15	NP	450 (Cl. 3 only)	600	NFC-3	G14, G15
7	$\leq 4\frac{1}{2}$	34	45	30	NP	NP	600	NFC-3	G14
8	...	34	45	35	NP	450 (Cl. 3 only)	600	NFC-3	G14, G15
9	...	34	45	35	NP	450 (Cl. 3 only)	600	NFC-3	T5
10	$\leq 4\frac{1}{2}$	34	54	45	NP	NP	600	NFC-3	G14
11	...	34	45	16	NP	700 (Cl. 3 only)	700	NFC-3	T7
12	...	34	45	16	700	700 (Cl. 3 only)	700	NFC-3	G1, T7, W10
13	...	34	45	16	NP	700 (Cl. 3 only)	NP	...	T7
14	...	34	45	16	NP	700 (Cl. 3 only)	700	NFC-3	T7
15	$> 4\frac{1}{2}$	34	45	15	NP	600 (Cl. 3 only)	NP	NFC-4	G14
16	$2.5 < t \leq 5$	34	45	18	NP	700	700	NFC-4	...
17	...	34	50	18	NP	700	700	NFC-4	...
18	≤ 2.5	34	50	20	NP	700	700	NFC-4	...
19	$\leq 4\frac{1}{2}$	34	50	20	NP	600 (Cl. 3 only)	NP	NFC-4	G14
20	...	34	52	18	700	700	700	NFC-4	G1, W10
21	...	34	52	18	NP	700 (Cl. 3 only)	NP	NFC-4	...
22	...	34	52	18	NP	700 (Cl. 3 only)	700	NFC-4	...
23	...	34	52	18	NP	600 (Cl. 3 only)	600	NFC-4	G14, G15
24	$\leq 3\frac{1}{8}$	34	72	50	NP	700	800	NFC-4	T9, W9
25	...	34	72	50	NP	700	800	NFA-6	T9, W9
26	≤ 2	34	45	16	NP	NP	150	NFC-3	...
27	...	...	30	14	450	450 (Cl. 3 only)	450	NFC-1	G1, G3, G4, G15, W10, W14
28	...	...	34	16	550	500 (Cl. 3 only)	550	NFN-1	G1, G3, G4, G15, W10, W14
29	...	...	34	16	NP	500 (Cl. 3 only)	550	NFN-1	G15
30	...	...	30	12	NP	400 (SPT)	400	NFC-1	G15, W15
31	...	35	65	25	NP	500 (Cl. 3 only)	600	NFC-4	G15
32	...	35	65	25	NP	500 (Cl. 3 only)	600	NFC-4	G15
33	...	35	68	26	NP	500 (Cl. 3 only)	NP	...	...
34	...	35	75	30	NP	450 (Cl. 3 only)	600	NFC-4	G15, W8
35	...	35	75	30	NP	450 (Cl. 3 only)	NP	...	W8
36	...	34	45	25	NP	200 (Cl. 3 only)	NP	...	...
37	...	...	40	17	NP	NP	300	NFC-1	G15, W15

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
1	10.0	9.7	9.5	9.3	9.0	8.8	8.7	8.5	*8.0*	*7.0*	*6.0*	...	...	...	...	...	...
2	10.0	9.7	9.5	9.3	9.0	8.8	8.7	8.5	*8.0*	*7.0*	*6.0*	...	...	...	...	...	...
3	8.5	8.3	8.1	7.9	7.7	7.5	7.4	7.2	...	...	...	...	...	...	...	...	...
4	10.0	9.7	9.5	9.3	9.0	8.8	8.7	8.5	*8.0*	*7.0*	*6.0*	...	...	...	...	...	...
5	8.5	8.3	8.1	7.9	7.7	7.5	7.4	7.2	6.3	5.7	4.3	...	...	...	...	...	...
6	8.5	8.3	8.1	7.9	7.7	7.5	7.4	7.2	6.3	5.7	4.3	...	...	...	...	...	...
7	8.5	8.3	8.1	7.9	7.7	7.5	7.4	7.2	6.3	5.7	4.3	...	...	...	...	...	...
8	8.5	8.3	8.1	7.9	7.7	7.5	7.4	7.2	6.3	5.7	4.3	...	...	...	...	...	...
9	10.0	9.7	9.5	9.3	9.0	8.8	8.7	8.5	*8.0*	*7.0*	*6.0*	...	...	...	...	...	...
10	8.5	8.3	8.1	7.9	7.7	7.5	7.4	7.2	6.3	5.7	4.3	...	...	...	...	...	...
11	10.7	10.6	10.5	10.4	10.2	10.1	9.9	9.6	9.3	8.9	*8.4*	*7.7*	*7.0*	...	...	...	...
12	10.7	10.6	10.5	10.4	10.2	10.1	9.9	9.6	9.3	8.9	*8.4*	*7.7*	*7.0*	...	...	...	...
13	10.7	10.6	10.5	10.4	10.2	10.1	9.9	9.6	9.3	8.9	*8.4*	*7.7*	*7.0*	...	...	...	...
14	10.7	10.6	10.5	10.4	10.2	10.1	9.9	9.6	9.3	8.9	*8.4*	*7.7*	*7.0*	...	...	...	...
15	8.5	8.2	8.0	7.8	7.6	7.5	7.3	7.2	7.0	6.9	6.8	...	...	...	...	...	...
16	12.0	11.6	11.3	11.0	10.8	10.5	10.3	10.1	9.9	9.8	9.6	9.5	9.4	...	...	...	...
17	12.0	11.6	11.3	11.0	10.8	10.5	10.3	10.1	9.9	9.8	9.6	9.5	9.4	...	...	...	...
18	13.3	12.9	12.6	12.3	12.0	11.7	11.5	11.2	11.0	10.8	10.7	10.6	10.4	...	...	...	...
19	11.3	10.9	10.7	10.4	10.2	10.0	9.7	9.6	9.4	9.2	9.1	...	...	...	...	...	...
20	12.0	11.6	11.3	11.0	10.8	10.5	10.3	10.1	9.9	9.8	9.6	9.5	9.4	...	...	...	...
21	12.0	11.6	11.3	11.0	10.8	10.5	10.3	10.1	9.9	9.8	9.6	9.5	9.4	...	...	...	...
22	12.0	11.6	11.3	11.0	10.8	10.5	10.3	10.1	9.9	9.8	9.6	9.5	9.4	...	...	...	...
23	10.2	9.8	9.6	9.4	9.2	9.0	8.8	8.6	8.4	8.3	8.2	...	...	...	...	...	...
24	20.6	20.6	20.6	20.6	20.6	20.2	19.7	19.2	18.9	18.6	18.5	18.3	17.9	17.2	*8.5*	...	...
25	20.6	20.6	20.6	20.6	20.6	20.2	19.7	19.2	18.9	18.6	18.5	18.3	17.9	17.2	*8.5*	...	...
26	10.7	10.4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	8.6	8.6	8.6	8.6	8.3	8.1	6.9	6.8	...	...	...	...	...	...	...	...	...
28	9.7	9.7	9.7	9.7	9.7	9.7	8.2	7.7	7.2	5.0	...	...	...	...	...	...	...
29	9.7	9.7	9.7	9.7	9.7	9.7	8.2	7.7	7.2	5.0	...	...	...	...	...	...	...
30	8.6	8.6	7.3	6.8	6.6	6.5	6.4	...	...	...	...	...	...	...	...	...	...
31	16.7	15.7	15.2	14.8	14.5	14.3	14.2	14.2	14.2	11.7	7.4	...	...	...	...	...	...
32	16.7	15.7	15.2	14.8	14.5	14.3	14.2	14.2	14.2	11.7	7.4	...	...	...	...	...	...
33	17.3	16.3	15.8	15.4	15.1	14.9	14.8	14.7	14.7	...	...	...	...	...	...	...	...
34	20.0	19.0	18.7	18.5	18.5	18.5	18.5	16.0	13.9	11.0	8.5	...	...	...	...	...	...
35	20.0	19.0	18.7	18.5	18.5	18.5	18.5	16.0	...	...	...	...	...	...	...	...	...
36	9.5	9.5	9.2	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	7.5	7.2	7.0	6.9	6.7	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
1	99Ni	Smls. pipe & tube	SB-161	...	N02200	Annealed
2	99Ni	Smls. & wld. fittings	SB-366	...	N02200	Annealed
3	99Ni	Bar, rod	SB-160	...	N02200	Annealed
4	99Ni	Smls. pipe & tube	SB-161	...	N02200	Annealed
5	99Ni	Plate, sheet, strip	SB-162	...	N02200	Annealed
6	99Ni	Smls. tube	SB-163	...	N02200	Annealed
7	99Ni	Plate, sheet, strip	SB-162	...	N02200	As rolled
8	99Ni	Bar, rod	SB-160	...	N02200	Hot rolled
9	99Ni	Smls. pipe & tube	SB-161	...	N02200	Stress rel.
10	99Ni	Smls. tube	SB-163	...	N02200	Stress rel.
11	99Ni–Low C	Smls. pipe & tube	SB-161	...	N02201	Annealed
12	99Ni–Low C	Smls. & wld. fittings	SB-366	...	N02201	Annealed
13	99Ni–Low C	Bar, rod	SB-160	...	N02201	Hot rolled/ann.
14	99Ni–Low C	Smls. pipe & tube	SB-161	...	N02201	Annealed
15	99Ni–Low C	Smls. tube	SB-163	...	N02201	Annealed
16	99Ni–Low C	Plate, sheet, strip	SB-162	...	N02201	Hot rolled/ann.
17	99Ni–Low C	Smls. pipe & tube	SB-161	...	N02201	Stress rel.
18	99Ni–Low C	Smls. pipe & tube	SB-163	...	N02201	Stress rel.
19	67Ni–30Cu	Bar	SB-164	...	N04400	Annealed
20	67Ni–30Cu	Smls. pipe & tube	SB-165	...	N04400	Annealed
21	67Ni–30Cu	Forgings	SB-564	...	N04400	Annealed
22	67Ni–30Cu	Plate	SB-127	...	N04400	Annealed
23	67Ni–30Cu	Smls. tube	SB-163	...	N04400	Annealed
24	67Ni–30Cu	Smls. pipe & tube	SB-165	...	N04400	Annealed
25	67Ni–30Cu	Smls. & wld. fittings	SB-366	...	N04400	Annealed
26	67Ni–30Cu	Bar	SB-164	...	N04400	Hot worked
27	67Ni–30Cu	Plate	SB-127	...	N04400	As rolled
28	67Ni–30Cu	Bar, rod	SB-164	...	N04400	Hot worked
29	67Ni–30Cu	Bar, rod	SB-164	...	N04400	Hot worked
30	67Ni–30Cu	Smls. tube	SB-163	...	N04400	Stress rel.
31	67Ni–30Cu	Smls. pipe & tube	SB-165	...	N04400	Stress rel.
32	67Ni–30Cu–S	Bar	SB-164	...	N04405	Annealed
33	67Ni–30Cu–S	Bar	SB-164	...	N04405	Hot worked
34	47Ni–22Cr–9Mo–18Fe	Plate	SB-435	...	N06002	Annealed
35	47Ni–22Cr–9Mo–18Fe	Plate	SB-435	...	N06002	Annealed
36	47Ni–22Cr–9Mo–18Fe	Sheet	SB-435	...	N06002	Solution ann.
37	47Ni–22Cr–9Mo–18Fe	Rod	SB-572	...	N06002	Annealed
38	47Ni–22Cr–9Mo–18Fe	Rod	SB-572	...	N06002	Annealed

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	> 5 O.D.	41	55	12	NP	600 (Cl. 3 only)	600	NFN-2	...
2	...	41	55	12	NP	NP	600	NFN-2	W12
3	...	41	55	15	NP	600 (Cl. 3 only)	600	NFN-2	...
4	≤ 5 O.D.	41	55	15	NP	600 (Cl. 3 only)	600	NFN-2	...
5	...	41	55	15	NP	600 (Cl. 3 only)	600	NFN-2	...
6	...	41	55	15	NP	600 (Cl. 3 only)	600	NFN-2	...
7	...	41	55	20	NP	600 (Cl. 3 only)	600	NFN-2	G20
8	...	41	60	15	NP	600 (Cl. 3 only)	600	NFN-2	...
9	...	41	65	40	NP	600 (Cl. 3 only)	600	NFN-2	...
10	...	41	65	40	NP	600 (Cl. 3 only)	600	NFN-2	...
11	> 5 O.D.	41	50	10	NP	800 (Cl. 3 only)	1200	NFN-1	T10
12	...	41	50	10	NP	NP	1150	NFN-1	T10, W12
13	...	41	50	10	NP	800 (Cl. 3 only)	1200	NFN-1	T10
14	≤ 5 O.D.	41	50	12	NP	800 (Cl. 3 only)	1200	NFN-1	T9
15	...	41	50	12	NP	800 (Cl. 3 only)	1200	NFN-1	T9
16	...	41	50	12	NP	800 (Cl. 3 only)	1200	NFN-1	T9
17	...	41	60	30	NP	600 (Cl. 3 only)	600	NFN-1	...
18	...	41	60	30	NP	800 (Cl. 3 only)	900	NFN-1	...
19	...	42	70	25	NP	800	900	NFN-3	T10
20	> 5 O.D.	42	70	25	NP	800	900	NFN-3	T10
21	...	42	70	25	NP	800	900	NFN-3	T10
22	...	42	70	28	NP	800	900	NFN-3	T10
23	≤ 3	42	70	28	NP	800	900	NFN-3	T10
24	≤ 5 O.D.	42	70	28	NP	800	900	NFN-3	T10
25	...	42	70	28	NP	NP	900	NFN-3	T10, W12
26	...	42	75	30	NP	800	900	NFN-3	T9
27	...	42	75	40	NP	800	900	NFN-3	G12, G20, T9
28	...	42	75	40	NP	NP	900	NFN-3	T9
29	...	42	80	40	NP	800 (Cl. 3 only)	900	NFN-3	T9
30	...	42	85	55	NP	800	800	NFN-3	G11, T8
31	...	42	85	55	NP	800	500	NFN-3	G5, G21, T8
32	...	42	70	25	NP	800	900	NFN-3	T10
33	...	42	75	35	NP	800	900	NFN-3	T10
34	> $^{3}/_{16}$	43	95	35	NP	800	1650	NFN-15	G5, G29, T15
35	> $^{3}/_{16}$	43	95	35	NP	NP	1650	NFN-15	G29, T16
36	≤ $^{3}/_{16}$	43	95	35	NP	800	NP	...	G5
37	...	43	95	35	NP	800	1650	NFN-15	G5, G13, G29, T15
38	...	43	95	35	NP	NP	1650	NFN-15	G13, G29, T16

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
1	8.0	...	8.0	...	8.0	...	8.0	...	8.0	...	8.0	...	...	...	...	...	...
2	8.0	...	8.0	...	8.0	...	8.0	...	8.0	...	8.0	...	...	...	...	...	...
3	10.0	...	10.0	...	10.0	...	10.0	...	10.0	...	10.0	...	...	...	...	...	...
4	10.0	...	10.0	...	10.0	...	10.0	...	10.0	...	10.0	...	...	...	...	...	...
5	10.0	...	10.0	...	10.0	...	10.0	...	10.0	...	10.0	...	...	...	...	...	...
6	10.0	...	10.0	...	10.0	...	10.0	...	10.0	...	10.0	...	...	...	...	...	...
7	13.3	...	13.3	...	13.3	...	13.3	...	12.6	...	11.5	...	...	...	...	...	...
8	10.0	...	10.0	...	10.0	...	10.0	...	10.0	...	10.0	...	...	...	...	...	...
9	18.6	...	18.6	...	18.6	...	18.6	...	18.3	...	17.7	...	...	...	...	...	...
10	18.6	...	18.6	...	18.6	...	18.6	...	18.3	...	17.7	...	...	...	...	...	...
11	6.7	...	6.4	...	6.3	...	6.2	...	6.2	...	6.2	6.2	6.2	6.1	6.0	*5.8*	*4.5*
12	6.7	...	6.4	...	6.3	...	6.2	...	6.2	...	6.2	6.2	6.2	6.1	6.0	*5.8*	*4.5*
13	6.7	...	6.4	...	6.3	...	6.2	...	6.2	...	6.2	6.2	6.2	6.1	6.0	*5.8*	*4.5*
14	8.0	...	7.7	...	7.5	...	7.5	...	7.5	...	7.5	7.5	7.4	7.4	*7.2*	*5.8*	*4.5*
15	8.0	...	7.7	...	7.5	...	7.5	...	7.5	...	7.5	7.5	7.4	7.4	*7.2*	*5.8*	*4.5*
16	8.0	...	7.7	...	7.5	...	7.5	...	7.5	...	7.5	7.5	7.4	7.4	*7.2*	*5.8*	*4.5*
17	17.1	...	17.1	...	17.0	...	17.0	...	16.8	...	16.3	...	...	...	...	...	...
18	17.1	...	17.1	...	17.0	...	17.0	...	16.8	...	16.3	14.0	13.4	12.8	12.1	11.7	11.1
19	16.7	...	14.6	...	13.6	...	13.2	...	13.1	...	13.1	13.1	13.0	12.9	12.7	*11.0*	*8.0*
20	16.7	...	14.6	...	13.6	...	13.2	...	13.1	...	13.1	13.1	13.0	12.9	12.7	*11.0*	*8.0*
21	16.7	...	14.6	...	13.6	...	13.2	...	13.1	...	13.1	13.1	13.0	12.9	12.7	*11.0*	*8.0*
22	18.7	...	16.4	...	15.2	...	14.7	...	14.7	...	14.7	14.7	14.6	14.5	14.3	*11.0*	*8.0*
23	18.7	...	16.4	...	15.2	...	14.7	...	14.7	...	14.7	14.7	14.6	14.5	14.3	*11.0*	*8.0*
24	18.7	...	16.4	...	15.2	...	14.7	...	14.7	...	14.7	14.7	14.6	14.5	14.3	*11.0*	*8.0*
25	18.7	...	16.4	...	15.2	...	14.7	...	14.7	...	14.7	14.7	14.6	14.5	14.3	*11.0*	*8.0*
26	20.0	...	19.4	...	18.6	...	17.9	...	17.6	...	17.3	17.2	17.0	16.8	*14.5*	*8.5*	*4.0*
27	21.4	...	21.4	...	21.4	...	21.4	...	21.4	...	21.4	21.4	20.7	18.5	*14.5*	*8.5*	*4.0*
28	21.4	...	21.4	...	21.4	...	21.4	...	21.4	...	21.4	21.4	20.7	18.5	*14.5*	*8.5*	*4.0*
29	22.9	...	22.9	...	22.9	...	22.9	...	22.9	...	22.9	22.8	22.0	18.5	*14.5*	*8.5*	*4.0*
30	24.3	...	24.3	...	24.3	...	24.3	...	24.3	...	23.9	23.5	22.8	*18.0*	*12.7*	...	...
31	24.3	...	24.3	...	24.3	...	24.3	...	24.3	...	23.9	23.5	22.8	*18.0*	*12.7*	...	...
32	16.7	...	14.6	...	13.6	...	13.2	...	13.1	...	13.1	13.1	13.0	12.9	12.7	*11.0*	*8.0*
33	21.4	...	21.4	...	21.4	...	20.9	...	20.5	...	20.2	20.1	19.8	18.5	14.5	*8.5*	*4.0*
34	23.3	...	23.3	...	23.3	...	23.3	...	22.3	...	21.2	20.7	20.3	20.1	19.9	19.7	19.6
35	23.3	...	21.0	...	19.2	...	17.7	...	16.5	...	15.7	15.3	15.1	14.9	14.7	14.6	14.5
36	23.3	...	23.3	...	23.3	...	23.3	...	22.3	...	21.2	20.7	20.3	20.1	19.9	...	...
37	23.3	...	23.3	...	23.3	...	23.3	...	22.3	...	21.2	20.7	20.3	20.1	19.9	19.7	19.6
38	23.3	...	21.0	...	19.2	...	17.7	...	16.5	...	15.7	15.3	15.1	14.9	14.7	14.6	14.5

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	*3.7*	*3.0*	*2.4*	*2.0*	*1.5*	*1.2*	...	...	...	...	...	...	...	...	...
12	*3.7*	*3.0*	*2.4*	*2.0*	*1.5*	...	...	...	...	...	...	...	...	...	...
13	*3.7*	*3.0*	*2.4*	*2.0*	*1.5*	*1.2*	...	...	...	...	...	...	...	...	...
14	*3.7*	*3.0*	*2.4*	*2.0*	*1.5*	*1.2*	...	...	...	...	...	...	...	...	...
15	*3.7*	*3.0*	*2.4*	*2.0*	*1.5*	*1.2*	...	...	...	...	...	...	...	...	...
16	*3.7*	*3.0*	*2.4*	*2.0*	*1.5*	*1.2*	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	19.5	19.4	19.3	*17.5*	*14.1*	*11.3*	*9.3*	*7.7*	*6.1*	*4.8*	*3.8*	*3.0*	*2.3*	*1.7*	*1.2*
35	14.4	14.3	14.3	14.2	*14.1*	*11.3*	*9.3*	*7.7*	*6.1*	*4.8*	*3.8*	*3.0*	*2.3*	*1.7*	*1.2*
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	19.5	19.4	19.3	*17.5*	*14.1*	*11.3*	*9.3*	*7.7*	*6.1*	*4.8*	*3.8*	*3.0*	*2.3*	*1.7*	*1.2*
38	14.4	14.3	14.3	14.2	*14.1*	*11.3*	*9.3*	*7.7*	*6.1*	*4.8*	*3.8*	*3.0*	*2.3*	*1.7*	*1.2*

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
1	47Ni–22Cr–9Mo–18Fe	Smls. & wld. fittings	SB-366	...	N06002	Annealed
2	47Ni–22Cr–9Mo–18Fe	Sheet	SB-435	...	N06002	Annealed
3	47Ni–22Cr–9Mo–18Fe	Sheet	SB-435	...	N06002	Annealed
4	47Ni–22Cr–9Mo–18Fe	Wld. pipe	SB-619	...	N06002	Solution ann.
5	47Ni–22Cr–9Mo–18Fe	Wld. pipe	SB-619	...	N06002	Solution ann.
6	47Ni–22Cr–9Mo–18Fe	Smls. pipe & tube	SB-622	...	N06002	Solution ann.
7	47Ni–22Cr–9Mo–18Fe	Smls. pipe & tube	SB-622	...	N06002	Solution ann.
8	47Ni–22Cr–9Mo–18Fe	Wld. tube	SB-626	...	N06002	Solution ann.
9	47Ni–22Cr–9Mo–18Fe	Wld. tube	SB-626	...	N06002	Solution ann.
10	47Ni–22Cr–19Fe–6Mo	Rod	SB-581	...	N06007	Solution ann.
11	47Ni–22Cr–19Fe–6Mo	Rod	SB-581	...	N06007	Solution ann.
12	47Ni–22Cr–19Fe–6Mo	Plate, sheet, strip	SB-582	...	N06007	Solution ann.
13	47Ni–22Cr–19Fe–6Mo	Plate, sheet, strip	SB-582	...	N06007	Solution ann.
14	47Ni–22Cr–19Fe–6Mo	Smls. & wld. fittings	SB-366	...	N06007	Annealed
15	47Ni–22Cr–19Fe–6Mo	Rod	SB-581	...	N06007	Solution ann.
16	47Ni–22Cr–19Fe–6Mo	Rod	SB-581	...	N06007	Solution ann.
17	47Ni–22Cr–19Fe–6Mo	Plate, sheet, strip	SB-582	...	N06007	Solution ann.
18	47Ni–22Cr–19Fe–6Mo	Plate, sheet, strip	SB-582	...	N06007	Solution ann.
19	47Ni–22Cr–19Fe–6Mo	Wld. pipe	SB-619	...	N06007	Solution ann.
20	47Ni–22Cr–19Fe–6Mo	Wld. pipe	SB-619	...	N06007	Solution ann.
21	47Ni–22Cr–19Fe–6Mo	Smls. pipe & tube	SB-622	...	N06007	Solution ann.
22	47Ni–22Cr–19Fe–6Mo	Smls. pipe & tube	SB-622	...	N06007	Solution ann.
23	47Ni–22Cr–19Fe–6Mo	Wld. tube	SB-626	...	N06007	Solution ann.
24	47Ni–22Cr–19Fe–6Mo	Wld. tube	SB-626	...	N06007	Solution ann.
25	55Ni–21Cr–13.5Mo	Smls. & wld. fittings	SB-366	...	N06022	Solution ann.
26	55Ni–21Cr–13.5Mo	Forgings	SB-564	...	N06022	Solution ann.
27	55Ni–21Cr–13.5Mo	Forgings	SB-564	...	N06022	Solution ann.
28	55Ni–21Cr–13.5Mo	Rod	SB-574	...	N06022	Solution ann.
29	55Ni–21Cr–13.5Mo	Rod	SB-574	...	N06022	Solution ann.
30	55Ni–21Cr–13.5Mo	Plate, sheet, strip	SB-575	...	N06022	Solution ann.
31	55Ni–21Cr–13.5Mo	Plate, sheet, strip	SB-575	...	N06022	Solution ann.
32	55Ni–21Cr–13.5Mo	Wld. pipe	SB-619	...	N06022	Solution ann.
33	55Ni–21Cr–13.5Mo	Wld. pipe	SB-619	...	N06022	Solution ann.
34	55Ni–21Cr–13.5Mo	Smls. pipe & tube	SB-622	...	N06022	Solution ann.
35	55Ni–21Cr–13.5Mo	Smls. pipe & tube	SB-622	...	N06022	Solution ann.
36	55Ni–21Cr–13.5Mo	Wld. tube	SB-626	...	N06022	Solution ann.
37	55Ni–21Cr–13.5Mo	Wld. tube	SB-626	...	N06022	Solution ann.

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	...	43	100	40	NP	NP	1650	NFA-2	G5, G29, T15, W12
2	$1/16 < t \le 3/16$	43	100	40	NP	NP	1650	NFN-15	G29, T16
3	$1/16 < t \le 3/16$	43	100	40	NP	NP	1650	NFN-15	G5, G29, T15
4	...	43	100	40	NP	800	1650	NFN-15	G5, G14, G29, T14, W5
5	...	43	100	40	NP	NP	1650	NFN-15	G14, G29, T16
6	...	43	100	40	NP	800	1650	NFN-15	G5, G29, T14
7	...	43	100	40	NP	NP	1650	NFN-15	G29, T16
8	...	43	100	40	NP	800	1650	NFN-15	G5, G14, G29, T14, W5
9	...	43	100	40	NP	NP	1650	NFN-15	G14, G29, T16
10	$> 3/4$	45	85	30	NP	NP	1000	NFN-11	...
11	$> 3/4$	45	85	30	NP	NP	1000	NFN-11	G5
12	$> 3/4$	45	85	30	NP	NP	1000	NFN-11	...
13	$> 3/4$	45	85	30	NP	NP	1000	NFN-11	G5
14	...	45	90	35	NP	NP	1000	NFN-11	G5, W12
15	$\le 3/4$	45	90	35	NP	NP	1000	NFN-11	...
16	$\le 3/4$	45	90	35	NP	NP	1000	NFN-11	G5
17	$\le 3/4$	45	90	35	NP	NP	1000	NFN-11	...
18	$\le 3/4$	45	90	35	NP	NP	1000	NFN-11	G5
19	...	45	90	35	NP	NP	1000	NFN-11	G14
20	...	45	90	35	NP	NP	1000	NFN-11	G5, G14
21	...	45	90	35	NP	NP	1000	NFN-11	...
22	...	45	90	35	NP	NP	1000	NFN-11	G5
23	...	45	90	35	NP	NP	1000	NFN-11	G14
24	...	45	90	35	NP	NP	1000	NFN-11	G5, G14
25	...	44	100	45	NP	NP	1250	NFN-10	G5, G27, G28, T15, W12
26	...	44	100	45	NP	800	1250	NFN-10	G5, G27, G28, T15
27	...	44	100	45	NP	NP	1250	NFN-10	G27, G28, T15
28	...	44	100	45	NP	800	1250	NFN-10	G5, G27, G28, T15
29	...	44	100	45	NP	NP	1250	NFN-10	G27, G28, T15
30	...	44	100	45	NP	800	1250	NFN-10	G5, G27, G28, T15
31	...	44	100	45	NP	NP	1250	NFN-10	G27, G28, T15
32	...	44	100	45	NP	800	1250	NFN-10	G5, G14, G27, G28, T15, W6
33	...	44	100	45	NP	NP	1250	NFN-10	G14, G27, G28, T15
34	...	44	100	45	NP	800	1250	NFN-10	G5, G27, G28, T15
35	...	44	100	45	NP	NP	1250	NFN-10	G27, G28, T15
36	...	44	100	45	NP	800	1250	NFN-10	G5, G14, G27, G28, T15, W6
37	...	44	100	45	NP	NP	1250	NFN-10	G14, G27, G28, T15

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
1	26.7	...	26.7	...	26.7	...	26.7	...	25.5	...	24.2	...	23.3	...	22.7	...	22.4
2	26.7	...	24.0	...	22.0	...	20.3	...	18.9	...	17.9	17.5	17.2	17.0	16.8	16.7	16.6
3	26.7	...	26.7	...	26.7	...	26.7	...	25.5	...	24.2	23.7	23.3	22.9	22.7	22.5	22.4
4	22.7	...	22.7	...	22.7	...	22.7	...	21.7	...	20.5	20.1	19.8	19.5	19.3	19.1	19.0
5	22.7	...	20.4	...	18.7	...	17.2	...	16.1	...	15.2	14.9	14.6	14.4	14.3	14.2	14.1
6	26.7	...	26.7	...	26.7	...	26.7	...	25.5	...	24.2	23.7	23.3	22.9	22.7	22.5	22.4
7	26.7	...	24.0	...	22.0	...	20.3	...	18.9	...	17.9	17.5	17.2	17.0	16.8	16.7	16.6
8	22.7	...	22.7	...	22.7	...	22.7	...	21.7	...	20.5	20.1	19.8	19.5	19.3	19.1	19.0
9	22.7	...	20.4	...	18.7	...	17.2	...	16.1	...	15.2	14.9	14.6	14.4	14.3	14.2	14.1
10	20.0	...	18.0	...	16.7	...	15.7	...	14.9	...	14.4	14.2	14.1	14.0	13.9	13.8	13.7
11	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	19.5	19.2	19.0	18.8	18.7	18.6	18.5
12	20.0	...	18.0	...	16.7	...	15.7	...	14.9	...	14.4	14.2	14.1	14.0	13.9	13.8	13.7
13	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	19.5	19.2	19.0	18.8	18.7	18.6	18.5
14	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	22.7	...	22.2	...	21.8	...	21.6
15	23.3	...	21.0	...	19.5	...	18.3	...	17.4	...	16.8	16.6	16.4	16.3	16.2	16.1	16.0
16	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	22.7	22.4	22.2	22.0	21.8	21.7	21.6
17	23.3	...	21.0	...	19.5	...	18.3	...	17.4	...	16.8	16.6	16.4	16.3	16.2	16.1	16.0
18	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	22.7	22.4	22.2	22.0	21.8	21.7	21.6
19	19.8	...	17.8	...	16.5	...	15.5	...	14.8	...	14.3	14.1	14.0	13.8	13.7	13.7	13.6
20	19.8	...	19.8	...	19.8	...	19.8	...	19.8	...	19.3	19.1	18.8	18.7	18.5	18.4	18.3
21	23.3	...	21.0	...	19.5	...	18.3	...	17.4	...	16.8	16.6	16.4	16.3	16.2	16.1	16.0
22	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	22.7	22.4	22.2	22.0	21.8	21.7	21.6
23	19.8	...	17.8	...	16.5	...	15.5	...	14.8	...	14.3	14.1	14.0	13.8	13.7	13.7	13.6
24	19.8	...	19.8	...	19.8	...	19.8	...	19.8	...	19.3	19.1	18.8	18.7	18.5	18.4	18.3
25	28.6	...	28.6	...	28.2	...	27.2	...	26.5	...	26.0	25.8	25.6	25.4	25.3	25.1	24.9
26	28.6	...	28.6	...	28.2	...	27.2	...	26.5	...	26.0	25.8	25.6	25.4	25.3	25.1	24.9
27	28.6	...	26.7	...	24.6	...	22.9	...	21.5	...	20.4	20.0	19.6	19.3	19.0	18.8	18.6
28	28.6	...	28.6	...	28.2	...	27.2	...	26.5	...	26.0	25.8	25.6	25.4	25.3	25.1	24.9
29	28.6	...	26.7	...	24.6	...	22.9	...	21.5	...	20.4	20.0	19.6	19.3	19.0	18.8	18.6
30	28.6	...	28.6	...	28.2	...	27.2	...	26.5	...	26.0	25.8	25.6	25.4	25.3	25.1	24.9
31	28.6	...	26.7	...	24.6	...	22.9	...	21.5	...	20.4	20.0	19.6	19.3	19.0	18.8	18.6
32	24.3	...	24.3	...	23.9	...	23.1	...	22.6	...	22.1	21.9	21.8	21.6	21.5	21.3	21.1
33	24.3	...	22.7	...	20.9	...	19.4	...	18.3	...	17.4	17.0	16.7	16.4	16.2	16.0	15.8
34	28.6	...	28.6	...	28.2	...	27.2	...	26.5	...	26.0	25.8	25.6	25.4	25.3	25.1	24.9
35	28.6	...	26.7	...	24.6	...	22.9	...	21.5	...	20.4	20.0	19.6	19.3	19.0	18.8	18.6
36	24.3	...	24.3	...	23.9	...	23.1	...	22.6	...	22.1	21.9	21.8	21.6	21.5	21.3	21.1
37	24.3	...	22.7	...	20.9	...	19.4	...	18.3	...	17.4	17.0	16.7	16.4	16.2	16.0	15.8

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	22.1	...	*17.5*	...	*11.3*	...	*7.7*	...	*4.8*	...	*3.0*	...	*1.7*	*1.2*
2	16.5	16.4	16.3	16.2	*14.1*	*11.3*	*9.3*	*7.7*	*6.1*	*4.8*	*3.8*	*3.0*	*2.3*	*1.7*	*1.2*
3	22.2	22.1	21.7	*17.5*	*14.1*	*11.3*	*9.3*	*7.7*	*6.1*	*4.8*	*3.8*	*3.0*	*2.3*	*1.7*	*1.2*
4	18.9	18.8	*18.5*	*14.9*	*12.0*	*9.6*	*7.9*	*6.5*	*5.2*	*4.1*	*3.2*	*2.6*	*2.0*	*1.4*	*1.0*
5	14.0	13.9	13.9	13.8	*12.0*	*9.6*	*7.9*	*6.5*	*5.2*	*4.1*	*3.2*	*2.6*	*2.0*	*1.4*	*1.0*
6	22.2	22.1	*21.7*	*17.5*	*14.1*	*11.3*	*9.3*	*7.7*	*6.1*	*4.8*	*3.8*	*3.0*	*2.3*	*1.7*	*1.2*
7	16.5	16.4	16.3	16.2	*14.1*	*11.3*	*9.3*	*7.7*	*6.1*	*4.8*	*3.8*	*3.0*	*2.3*	*1.7*	*1.2*
8	18.9	18.8	*18.5*	*14.9*	*12.0*	*9.6*	*7.9*	*6.5*	*5.2*	*4.1*	*3.2*	*2.6*	*2.0*	*1.4*	*1.0*
9	14.0	13.9	13.9	13.8	*12.0*	*9.6*	*7.9*	*6.5*	*5.2*	*4.1*	*3.2*	*2.6*	*2.0*	*1.4*	*1.0*
10	13.6	13.6	...	...	...	...	...	...	...	...	...	...	...	...	...
11	18.4	18.3	...	...	...	...	...	...	...	...	...	...	...	...	...
12	13.6	13.6	...	...	...	...	...	...	...	...	...	...	...	...	...
13	18.4	18.3	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	21.4	...	...	...	...	...	...	...	...	...	...	...	...	...
15	15.9	15.8	...	...	...	...	...	...	...	...	...	...	...	...	...
16	21.5	21.4	...	...	...	...	...	...	...	...	...	...	...	...	...
17	15.9	15.8	...	...	...	...	...	...	...	...	...	...	...	...	...
18	21.5	21.4	...	...	...	...	...	...	...	...	...	...	...	...	...
19	13.5	13.5	...	...	...	...	...	...	...	...	...	...	...	...	...
20	18.3	18.2	...	...	...	...	...	...	...	...	...	...	...	...	...
21	15.9	15.8	...	...	...	...	...	...	...	...	...	...	...	...	...
22	21.5	21.4	...	...	...	...	...	...	...	...	...	...	...	...	...
23	13.5	13.5	...	...	...	...	...	...	...	...	...	...	...	...	...
24	18.3	18.2	...	...	...	...	...	...	...	...	...	...	...	...	...
25	24.7	24.4	23.0	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...
26	24.7	24.4	23.0	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...
27	18.5	18.3	18.2	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...
28	24.7	24.4	23.0	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...
29	18.5	18.3	18.2	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...
30	24.7	24.4	23.0	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...
31	18.5	18.3	18.2	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...
32	21.0	20.7	19.6	*14.9*	*10.8*	*8.2*	*6.5*	...	...	...	...	...	...	...	...
33	15.7	15.6	15.5	*14.9*	*10.8*	*8.2*	*6.5*	...	...	...	...	...	...	...	...
34	24.7	24.4	23.0	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...
35	18.5	18.3	18.2	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...
36	21.0	20.7	19.6	*14.9*	*10.8*	*8.2*	*6.5*	...	...	...	...	...	...	...	...
37	15.7	15.6	15.5	*14.9*	*10.8*	*8.2*	*6.5*	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	1	40Ni–29Cr–15Fe–5Mo	Smls. & wld. fittings	SB-366	...	N06030	Solution ann.
	2	40Ni–29Cr–15Fe–5Mo	Rod	SB-581	...	N06030	Solution ann.
	3	40Ni–29Cr–15Fe–5Mo	Rod	SB-581	...	N06030	Solution ann.
	4	40Ni–29Cr–15Fe–5Mo	Plate, sheet, strip	SB-582	...	N06030	Solution ann.
	5	40Ni–29Cr–15Fe–5Mo	Plate, sheet, strip	SB-582	...	N06030	Solution ann.
	6	40Ni–29Cr–15Fe–5Mo	Wld. pipe	SB-619	...	N06030	Solution ann.
	7	40Ni–29Cr–15Fe–5Mo	Wld. pipe	SB-619	...	N06030	Solution ann.
	8	40Ni–29Cr–15Fe–5Mo	Smls. pipe & tube	SB-622	...	N06030	Solution ann.
	9	40Ni–29Cr–15Fe–5Mo	Smls. pipe & tube	SB-622	...	N06030	Solution ann.
	10	40Ni–29Cr–15Fe–5Mo	Wld. tube	SB-626	...	N06030	Solution ann.
	11	40Ni–29Cr–15Fe–5Mo	Wld. tube	SB-626	...	N06030	Solution ann.
01	12	46Ni–27Cr–23Fe–2.75Si	Rod	SB-166	...	N06045	Solution ann.
01	13	46Ni–27Cr–23Fe–2.75Si	Rod	SB-166	...	N06045	Solution ann.
01	14	46Ni–27Cr–23Fe–2.75Si	Smls. pipe & tube	SB-167	...	N06045	Solution ann.
01	15	46Ni–27Cr–23Fe–2.75Si	Smls. pipe & tube	SB-167	...	N06045	Solution ann.
01	16	46Ni–27Cr–23Fe–2.75Si	Plate, sheet, strip	SB-168	...	N06045	Solution ann.
01	17	46Ni–27Cr–23Fe–2.75Si	Plate, sheet, strip	SB-168	...	N06045	Solution ann.
01	18	46Ni–27Cr–23Fe–2.75Si	Smls. & wld. fittings	SB-366	...	N06045	Solution ann.
01	19	46Ni–27Cr–23Fe–2.75Si	Wld. tube	SB-516	...	N06045	Solution ann.
01	20	46Ni–27Cr–23Fe–2.75Si	Wld. tube	SB-516	...	N06045	Solution ann.
01	21	46Ni–27Cr–23Fe–2.75Si	Wld. pipe	SB-517	...	N06045	Solution ann.
01	22	46Ni–27Cr–23Fe–2.75Si	Wld. pipe	SB-517	...	N06045	Solution ann.
01	23	46Ni–27Cr–23Fe–2.75Si	Forgings	SB-564	...	N06045	Solution ann.
01	24	46Ni–27Cr–23Fe–2.75Si	Forgings	SB-564	...	N06045	Solution ann.
01	25	59Ni–23Cr–16Mo	Fittings	SB-366	CR5923	N06059	Annealed
01	26	59Ni–23Cr–16Mo	Fittings	SB-366	WP5923	N06059	Annealed
01	27	59Ni–23Cr–16Mo	Wld. fittings	SB-366	WP5923W	N06059	Annealed
01	28	59Ni–23Cr–16Mo	Fittings	SB-366	WP5923WX	N06059	Annealed
01	29	59Ni–23Cr–16Mo	Forgings	SB-564	...	N06059	Solution ann.
01	30	59Ni–23Cr–16Mo	Forgings	SB-564	...	N06059	Solution ann.
01	31	59Ni–23Cr–16Mo	Rod	SB-574	...	N06059	Solution ann.
01	32	59Ni–23Cr–16Mo	Rod	SB-574	...	N06059	Solution ann.
01	33	59Ni–23Cr–16Mo	Plate, sheet, strip	SB-575	...	N06059	Solution ann.
01	34	59Ni–23Cr–16Mo	Plate, sheet, strip	SB-575	...	N06059	Solution ann.
01	35	59Ni–23Cr–16Mo	Wld. pipe	SB-619	...	N06059	Solution ann.
01	36	59Ni–23Cr–16Mo	Wld. pipe	SB-619	...	N06059	Solution ann.

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	...	45	85	35	NP	NP	800	NFN-19	G5, W12	
2	...	45	85	35	NP	800	800	NFN-19	G5	
3	...	45	85	35	NP	NP	800	NFN-19	...	
4	...	45	85	35	NP	800	800	NFN-19	G5	
5	...	45	85	35	NP	NP	800	NFN-19	...	
6	...	45	85	35	NP	800	800	NFN-19	G5, G14, W6	
7	...	45	85	35	NP	NP	800	NFN-19	G14	
8	...	45	85	35	NP	800	800	NFN-19	G5	
9	...	45	85	35	NP	NP	800	NFN-19	...	
10	...	45	85	35	NP	800	800	NFN-19	G5, G14, W6	
11	...	45	85	35	NP	NP	800	NFN-19	G14	
12	...	46	90	35	1500	NP	1500	NFN-8	G5, T11	**01**
13	...	46	90	35	1500	NP	1500	NFN-8	T11	**01**
14	...	46	90	35	1500	NP	1500	NFN-8	G5, T11	**01**
15	...	46	90	35	1500	NP	1500	NFN-8	T11	**01**
16	...	46	90	35	1500	NP	1500	NFN-8	G5, T11	**01**
17	...	46	90	35	1500	NP	1500	NFN-8	T11	**01**
18	...	46	90	35	1500	NP	1500	NFN-8	G5, T11, W12	**01**
19	...	46	90	35	1500	NP	1500	NFN-8	G5, G14, T11	**01**
20	...	46	90	35	1500	NP	1500	NFN-8	G14, T11	**01**
21	...	46	90	35	1500	NP	1500	NFN-8	G5, G14, T11	**01**
22	...	46	90	35	1500	NP	1500	NFN-8	G14, T11	**01**
23	...	46	90	35	1500	NP	1500	NFN-8	G5, T11	**01**
24	...	46	90	35	1500	NP	1500	NFN-8	T11	**01**
25	...	44	100	45	NP	NP	1400	NFN-14	G5, G14, G23, T16	**01**
26	...	44	100	45	NP	NP	1400	NFN-14	G5, G23, T16	**01**
27	...	44	100	45	NP	NP	1400	NFN-14	G5, G14, G23, T16	**01**
28	...	44	100	45	NP	NP	1400	NFN-14	G5, G23, T16	**01**
29	...	44	100	45	NP	NP	1400	NFN-14	G23, T16	**01**
30	...	44	100	45	NP	NP	1400	NFN-14	G5, G23, T16	**01**
31	...	44	100	45	NP	NP	1400	NFN-14	G23, T16	**01**
32	...	44	100	45	NP	NP	1400	NFN-14	G5, G23, T16	**01**
33	...	44	100	45	NP	NP	1400	NFN-14	G23, T16	**01**
34	...	44	100	45	NP	NP	1400	NFN-14	G5, G23, T16	**01**
35	...	44	100	45	NP	NP	1400	NFN-14	G14, G23, T16	**01**
36	...	44	100	45	NP	NP	1400	NFN-14	G5, G14, G23, T16	**01**

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SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
		–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
	1	23.3	...	23.3	...	23.3	...	22.5	...	21.9	...	21.3	20.9	20.5	20.1	19.7	...	...
	2	23.3	...	23.3	...	23.3	...	22.5	...	21.9	...	21.3	20.9	20.5	20.1	19.7	...	...
	3	23.3	...	20.0	...	18.3	...	17.2	...	16.4	...	15.8	15.5	15.2	14.9	14.6	...	...
	4	23.3	...	23.3	...	23.3	...	22.5	...	21.9	...	21.3	20.9	20.5	20.1	19.7	...	...
	5	23.3	...	20.0	...	18.3	...	17.2	...	16.4	...	15.8	15.5	15.2	14.9	14.6	...	...
	6	19.8	...	19.8	...	19.8	...	19.1	...	18.6	...	18.1	17.7	17.4	17.1	16.8	...	...
	7	19.8	...	17.0	...	15.6	...	14.6	...	13.9	...	13.4	13.1	12.9	12.7	12.4	...	...
	8	23.3	...	23.3	...	23.3	...	22.5	...	21.9	...	21.3	20.9	20.5	20.1	19.7	...	...
	9	23.3	...	20.0	...	18.3	...	17.2	...	16.4	...	15.8	15.5	15.2	14.9	14.6	...	...
	10	19.8	...	19.8	...	19.8	...	19.1	...	18.6	...	18.1	17.7	17.4	17.1	16.8	...	...
	11	19.8	...	17.0	...	15.6	...	14.6	...	13.9	...	13.4	13.1	12.9	12.7	12.4	...	...
01	12	23.3	...	23.3	...	23.3	...	23.3	...	22.6	...	22.1	21.9	21.7	21.6	21.4	21.1	*16.0*
01	13	23.3	...	20.9	...	19.3	...	18.1	...	17.4	...	17.0	16.8	16.8	16.7	16.6	16.5	*16.0*
01	14	23.3	...	23.3	...	23.3	...	23.3	...	22.6	...	22.1	21.9	21.7	21.6	21.4	21.1	*16.0*
01	15	23.3	...	20.9	...	19.3	...	18.1	...	17.4	...	17.0	16.8	16.8	16.7	16.6	16.5	*16.0*
01	16	23.3	...	23.3	...	23.3	...	23.3	...	22.6	...	22.1	21.9	21.7	21.6	21.4	21.1	*16.0*
01	17	23.3	...	20.9	...	19.3	...	18.1	...	17.4	...	17.0	16.8	16.8	16.7	16.6	16.5	*16.0*
01	18	23.3	...	23.3	...	23.3	...	23.3	...	22.6	...	22.1	21.9	21.7	21.6	21.4	21.1	*16.0*
01	19	19.8	...	19.8	...	19.8	...	19.8	...	19.2	...	18.8	18.6	18.4	18.4	18.2	17.9	*13.6*
01	20	19.8	...	17.8	...	16.4	...	15.4	...	14.8	...	14.5	14.3	14.3	14.2	14.1	14.0	*13.6*
01	21	19.8	...	19.8	...	19.8	...	19.8	...	19.2	...	18.8	18.6	18.4	18.4	18.2	17.9	*13.6*
01	22	19.8	...	17.8	...	16.4	...	15.4	...	14.8	...	14.5	14.3	14.3	14.2	14.1	14.0	*13.6*
01	23	23.3	...	23.3	...	23.3	...	23.3	...	22.6	...	22.1	21.9	21.7	21.6	21.4	21.1	*16.0*
01	24	23.3	...	20.9	...	19.3	...	18.1	...	17.4	...	17.0	16.8	16.8	16.7	16.6	16.5	*16.0*
01	25	24.3	...	24.3	...	24.3	...	23.8	...	23.0	...	22.1	21.8	21.4	21.2	20.9	20.7	20.6
01	26	28.6	...	28.6	...	28.6	...	28.0	...	27.0	...	26.0	25.6	25.2	24.9	24.6	24.4	24.2
01	27	24.3	...	24.3	...	24.3	...	23.8	...	23.0	...	22.1	21.8	21.4	21.2	20.9	20.7	20.6
01	28	28.6	...	28.6	...	28.6	...	28.0	...	27.0	...	26.0	25.6	25.2	24.9	24.6	24.4	24.2
01	29	28.6	...	26.9	...	25.2	...	23.8	...	22.6	...	21.4	20.8	20.2	19.6	19.1	18.5	18.0
01	30	28.6	...	28.6	...	28.6	...	28.0	...	27.0	...	26.0	25.6	25.2	24.9	24.6	24.4	24.2
01	31	28.6	...	26.9	...	25.2	...	23.8	...	22.6	...	21.4	20.8	20.2	19.6	19.1	18.5	18.0
01	32	28.6	...	28.6	...	28.6	...	28.0	...	27.0	...	26.0	25.6	25.2	24.9	24.6	24.4	24.2
01	33	28.6	...	26.9	...	25.2	...	23.8	...	22.6	...	21.4	20.8	20.2	19.6	19.1	18.5	18.0
01	34	28.6	...	28.6	...	28.6	...	28.0	...	27.0	...	26.0	25.6	25.2	24.9	24.6	24.4	24.2
01	35	24.3	...	22.9	...	21.4	...	20.2	...	19.2	...	18.2	17.7	17.2	16.7	16.2	15.7	15.3
01	36	24.3	...	24.3	...	24.3	...	23.8	...	23.0	...	22.1	21.8	21.4	21.2	20.9	20.7	20.6

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TABLE 1B (CONT'D)
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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	*12.9*	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	**01**
13	*12.9*	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	**01**
14	*12.9*	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	**01**
15	*12.9*	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	**01**
16	*12.9*	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	**01**
17	*12.9*	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	**01**
18	*12.9*	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	**01**
19	*11.0*	*8.0*	*6.0*	*4.8*	*3.7*	*3.0*	*2.4*	*1.9*	*1.5*	*1.2*	*0.90*	*0.70*	...	...	...	**01**
20	*11.0*	*8.0*	*6.0*	*4.8*	*3.7*	*3.0*	*2.4*	*1.9*	*1.5*	*1.2*	*0.90*	*0.70*	...	...	...	**01**
21	*11.0*	*8.0*	*6.0*	*4.8*	*3.7*	*3.0*	*2.4*	*1.9*	*1.5*	*1.2*	*0.90*	*0.70*	...	...	...	**01**
22	*11.0*	*8.0*	*6.0*	*4.8*	*3.7*	*3.0*	*2.4*	*1.9*	*1.5*	*1.2*	*0.90*	*0.70*	...	...	...	**01**
23	*12.9*	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	**01**
24	*12.9*	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	**01**
25	20.1	19.6	19.2	16.0	*12.4*	*9.9*	*8.0*	*6.3*	*5.0*	*4.1*	...	...	...	...	...	**01**
26	23.7	23.1	22.6	18.8	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	**01**
27	20.1	19.6	19.2	16.0	*12.4*	*9.9*	*8.0*	*6.3*	*5.0*	*4.1*	...	...	...	...	...	**01**
28	23.7	23.1	22.6	18.8	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	**01**
29	17.5	17.1	16.8	16.5	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	**01**
30	23.7	23.1	22.6	18.8	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	**01**
31	17.5	17.1	16.8	16.5	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	**01**
32	23.7	23.1	22.6	18.8	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	**01**
33	17.5	17.1	16.8	16.5	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	**01**
34	23.7	23.1	22.6	18.8	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	**01**
35	14.9	14.5	14.3	14.0	*12.4*	*9.9*	*8.0*	*6.3*	*5.0*	*4.1*	...	...	...	...	...	**01**
36	20.1	19.6	19.2	16.0	*12.4*	*9.9*	*8.0*	*6.3*	*5.0*	*4.1*	...	...	...	...	...	**01**

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
01	1	59Ni–23Cr–16Mo	Smls. pipe & tube	SB-622	...	N06059	Solution ann.
01	2	59Ni–23Cr–16Mo	Smls. pipe & tube	SB-622	...	N06059	Solution ann.
01	3	59Ni–23Cr–16Mo	Wld. tube	SB-626	...	N06059	Solution ann.
01	4	59Ni–23Cr–16Mo	Wld. tube	SB-626	...	N06059	Solution ann.
	5	57Ni–22Cr–14W–2Mo–La	Smls. & wld. fittings	SB-366	...	N06230	Solution ann.
	6	57Ni–22Cr–14W–2Mo–La	Plate, sheet, strip	SB-435	...	N06230	Solution ann.
	7	57Ni–22Cr–14W–2Mo–La	Plate, sheet, strip	SB-435	...	N06230	Solution ann.
	8	57Ni–22Cr–14W–2Mo–La	Forgings	SB-564	...	N06230	Solution ann.
	9	57Ni–22Cr–14W–2Mo–La	Forgings	SB-564	...	N06230	Solution ann.
	10	57Ni–22Cr–14W–2Mo–La	Bar	SB-572	...	N06230	Solution ann.
	11	57Ni–22Cr–14W–2Mo–La	Bar	SB-572	...	N06230	Solution ann.
	12	57Ni–22Cr–14W–2Mo–La	Wld. pipe	SB-619	...	N06230	Solution ann.
	13	57Ni–22Cr–14W–2Mo–La	Wld. pipe	SB-619	...	N06230	Solution ann.
	14	57Ni–22Cr–14W–2Mo–La	Smls. pipe & tube	SB-622	...	N06230	Solution ann.
	15	57Ni–22Cr–14W–2Mo–La	Smls. pipe & tube	SB-622	...	N06230	Solution ann.
	16	57Ni–22Cr–14W–2Mo–La	Wld. tube	SB-626	...	N06230	Solution ann.
	17	57Ni–22Cr–14W–2Mo–La	Wld. tube	SB-626	...	N06230	Solution ann.
	18	61Ni–16Mo–16Cr	Smls. & wld. fittings	SB-366	...	N06455	Annealed
	19	61Ni–16Mo–16Cr	Rod	SB-574	...	N06455	Solution ann.
	20	61Ni–16Mo–16Cr	Rod	SB-574	...	N06455	Solution ann.
	21	61Ni–16Mo–16Cr	Plate, sheet, strip	SB-575	...	N06455	Solution ann.
	22	61Ni–16Mo–16Cr	Plate, sheet, strip	SB-575	...	N06455	Solution ann.
	23	61Ni–16Mo–16Cr	Wld. pipe	SB-619	...	N06455	Solution ann.
	24	61Ni–16Mo–16Cr	Wld. pipe	SB-619	...	N06455	Solution ann.
	25	61Ni–16Mo–16Cr	Wld. pipe & tube	SB-622	...	N06455	Solution ann.
	26	61Ni–16Mo–16Cr	Wld. pipe & tube	SB-622	...	N06455	Solution ann.
	27	61Ni–16Mo–16Cr	Wld. tube	SB-626	...	N06455	Solution ann.
	28	61Ni–16Mo–16Cr	Wld. tube	SB-626	...	N06455	Solution ann.
	29	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.
	30	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.
	31	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.
	32	72Ni–15Cr–8Fe	Smls. & wld. fittings	SB-366	...	N06600	Annealed
	33	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Cold drawn/ann.
	34	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Cold drawn/ann.
	35	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.
	36	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	...	44	100	45	NP	NP	1400	NFN-14	G23, T16	**01**
2	...	44	100	45	NP	NP	1400	NFN-14	G5, G23, T16	**01**
3	...	44	100	45	NP	NP	1400	NFN-14	G14, G23, T16	**01**
4	...	44	100	45	NP	NP	1400	NFN-14	G5, G14, G23, T16	**01**
5	...	47	110	45	1650	NP	1650	NFN-24	G5, G29, W12	
6	...	47	110	45	1650	NP	1650	NFN-24	G29	
7	...	47	110	45	1650	NP	1650	NFN-24	G5, G29	
8	...	47	110	45	1650	NP	1650	NFN-24	G29	
9	...	47	110	45	1650	NP	1650	NFN-24	G5, G29	
10	...	47	110	45	1650	NP	1650	NFN-24	G29	
11	...	47	110	45	1650	NP	1650	NFN-24	G5, G29	
12	...	47	110	45	1650	NP	1650	NFN-24	G14, G29	
13	...	47	110	45	1650	NP	1650	NFN-24	G5, G14, G29	
14	...	47	110	45	1650	NP	1650	NFN-24	G29	
15	...	47	110	45	1650	NP	1650	NFN-24	G5, G29	
16	...	47	110	45	1650	NP	1650	NFN-24	G14, G29	
17	...	47	110	45	1650	NP	1650	NFN-24	G5, G14, G29	
18	...	44	100	40	NP	NP	800	NFN-14	G5, W12	
19	...	44	100	40	NP	NP	800	NFN-14	...	
20	...	44	100	40	NP	NP	800	NFN-14	G5	
21	...	44	100	40	NP	NP	800	NFN-14	...	
22	...	44	100	40	NP	NP	800	NFN-14	G5	
23	...	44	100	40	NP	NP	800	NFN-14	G14	
24	...	44	100	40	NP	NP	800	NFN-14	G5, G14	
25	...	44	100	40	NP	NP	800	NFN-14	...	
26	...	44	100	40	NP	NP	800	NFN-14	G5	
27	...	44	100	40	NP	NP	800	NFN-14	G14	
28	...	44	100	40	NP	NP	800	NFN-14	G5, G14	
29	...	43	75	25	NP	800	1200	NFN-4	T12	
30	...	43	75	25	NP	800	1200	NFN-4	G5, T11	
31	...	43	80	30	NP	800	NP	NFN-4	G5	
32	...	43	80	30	NP	NP	1200	NFN-4	G5, T11, W12	
33	...	43	80	30	NP	800 (Cl. 3 only)	1200	NFN-4	T12	
34	...	43	80	30	NP	800 (Cl. 3 only)	1200	NFN-4	G5, T11	
35	...	43	80	30	NP	800 (Cl. 3 only)	1200	NFN-4	G5, T11	
36	...	43	80	30	NP	NP	1200	NFN-4	T12	

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
		–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
01	1	28.6	...	26.9	...	25.2	...	23.8	...	22.6	...	21.4	20.8	20.2	19.6	19.1	18.5	18.0
01	2	28.6	...	28.6	...	28.6	...	28.0	...	27.0	...	26.0	25.6	25.2	24.9	24.6	24.4	24.2
01	3	24.3	...	22.9	...	21.4	...	20.2	...	19.2	...	18.2	17.7	17.2	16.7	16.2	15.7	15.3
01	4	24.3	...	24.3	...	24.3	...	23.8	...	23.0	...	22.1	21.8	21.4	21.2	20.9	20.7	20.6
	5	30.0	...	30.0	...	30.0	...	30.0	...	30.0	...	29.4	29.1	28.7	28.4	28.2	28.2	28.2
	6	30.0	...	28.2	...	26.4	...	24.7	...	23.1	...	22.0	21.5	21.2	21.0	20.9	20.9	20.9
	7	30.0	...	30.0	...	30.0	...	30.0	...	30.0	...	29.4	29.1	28.7	28.4	28.2	28.2	28.2
	8	30.0	...	28.2	...	26.4	...	24.7	...	23.1	...	22.0	21.5	21.2	21.0	20.9	20.9	20.9
	9	30.0	...	30.0	...	30.0	...	30.0	...	30.0	...	29.4	29.1	28.7	28.4	28.2	28.2	28.2
	10	30.0	...	28.2	...	26.4	...	24.7	...	23.1	...	22.0	21.5	21.2	21.0	20.9	20.9	20.9
	11	30.0	...	30.0	...	30.0	...	30.0	...	30.0	...	29.4	29.1	28.7	28.4	28.2	28.2	28.2
	12	25.5	...	24.0	...	22.4	...	21.0	...	19.6	...	18.7	18.3	18.0	17.9	17.8	17.8	17.8
	13	25.5	...	25.5	...	25.5	...	25.5	...	25.5	...	25.0	24.7	24.4	24.1	24.0	24.0	24.0
	14	30.0	...	28.2	...	26.4	...	24.7	...	23.1	...	22.0	21.5	21.2	21.0	20.9	20.9	20.9
	15	30.0	...	30.0	...	30.0	...	30.0	...	30.0	...	29.4	29.1	28.7	28.4	28.2	28.2	28.2
	16	25.5	...	24.0	...	22.4	...	21.0	...	19.6	...	18.7	18.3	18.0	17.9	17.8	17.8	17.8
	17	25.5	...	25.5	...	25.5	...	25.5	...	25.5	...	25.0	24.7	24.4	24.1	24.0	24.0	24.0
	18	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.5	...	25.8	...	...
	19	26.7	...	24.6	...	23.0	...	21.7	...	20.8	...	20.1	19.9	19.6	19.4	19.1	...	...
	20	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.7	26.7	26.5	26.1	25.8	...	...
	21	26.7	...	24.6	...	23.0	...	21.7	...	20.8	...	20.1	19.9	19.6	19.4	19.1	...	...
	22	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.7	26.7	26.5	26.1	25.8	...	...
	23	22.7	...	20.9	...	19.5	...	18.5	...	17.7	...	17.1	16.9	16.7	16.5	16.2	...	...
	24	22.7	...	22.7	...	22.7	...	22.7	...	22.7	...	22.7	22.7	22.5	22.2	21.9	...	...
	25	26.7	...	24.6	...	23.0	...	21.7	...	20.8	...	20.1	19.9	19.6	19.4	19.1	...	...
	26	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.7	26.7	26.5	26.1	25.8	...	...
	27	22.7	...	20.9	...	19.5	...	18.5	...	17.7	...	17.1	16.9	16.7	16.5	16.2	...	...
	28	22.7	...	22.7	...	22.7	...	22.7	...	22.7	...	22.7	22.7	22.5	22.2	21.9	...	...
	29	16.7	...	15.9	...	15.2	...	14.6	...	14.0	...	13.5	13.3	13.1	12.9	12.7	12.5	12.4
	30	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.7	16.7	16.7	16.7	16.7	16.7	*16.0*
	31	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	...	...
	32	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	*16.0*
	33	20.0	...	19.1	...	18.3	...	17.5	...	16.8	...	16.2	15.9	15.7	15.5	15.2	15.1	14.9
	34	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	*16.0*
	35	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	*16.0*
	36	20.0	...	19.1	...	18.3	...	17.5	...	16.8	...	16.2	15.9	15.7	15.5	15.2	15.1	14.9

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SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	17.5	17.1	16.8	16.5	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	**01**
2	23.7	23.1	22.6	18.8	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	**01**
3	14.9	14.5	14.3	14.0	*12.4*	*9.9*	*8.0*	*6.3*	*5.0*	*4.1*	...	...	...	...	...	**01**
4	20.1	19.6	19.2	16.0	*12.4*	*9.9*	*8.0*	*6.3*	*5.0*	*4.1*	...	...	...	...	...	**01**
5	28.2	28.2	28.2	23.2	19.0	15.6	12.9	10.6	8.5	6.7	5.3	4.1	2.7	1.8	1.2	
6	20.9	20.9	20.9	20.9	19.0	15.6	12.9	10.6	8.5	6.7	5.3	4.1	2.7	1.8	1.2	
7	28.2	28.2	28.2	23.2	19.0	15.6	12.9	10.6	8.5	6.7	5.3	4.1	2.7	1.8	1.2	
8	20.9	20.9	20.9	20.9	19.0	15.6	12.9	10.6	8.5	6.7	5.3	4.1	2.7	1.8	1.2	
9	28.2	28.2	28.2	23.2	19.0	15.6	12.9	10.6	8.5	6.7	5.3	4.1	2.7	1.8	1.2	
10	20.9	20.9	20.9	20.9	19.0	15.6	12.9	10.6	8.5	6.7	5.3	4.1	2.7	1.8	1.2	
11	28.2	28.2	28.2	23.2	19.0	15.6	12.9	10.6	8.5	6.7	5.3	4.1	2.7	1.8	1.2	
12	17.8	17.8	17.8	17.8	16.2	13.3	11.0	9.0	7.2	5.7	4.5	3.5	2.3	1.5	1.0	
13	24.0	24.0	24.0	19.7	16.2	13.3	11.0	9.0	7.2	5.7	4.5	3.5	2.3	1.5	1.0	
14	20.9	20.9	20.9	20.9	19.0	15.6	12.9	10.6	8.5	6.7	5.3	4.1	2.7	1.8	1.2	
15	28.2	28.2	28.2	23.2	19.0	15.6	12.9	10.6	8.5	6.7	5.3	4.1	2.7	1.8	1.2	
16	17.8	17.8	17.8	17.8	16.2	13.3	11.0	9.0	7.2	5.7	4.5	3.5	2.3	1.5	1.0	
17	24.0	24.0	24.0	19.7	16.2	13.3	11.0	9.0	7.2	5.7	4.5	3.5	2.3	1.5	1.0	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	*10.6*	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...	
30	*10.6*	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	*10.6*	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...	
33	*10.6*	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...	
34	*10.6*	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...	
35	*10.6*	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...	
36	*10.6*	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...	

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
1	72Ni–15Cr–8Fe	Smls. tube	SB-163	...	N06600	Annealed
2	72Ni–15Cr–8Fe	Smls. tube	SB-163	...	N06600	Annealed
3	72Ni–15Cr–8Fe	Bar	SB-166	...	N06600	Annealed
4	72Ni–15Cr–8Fe	Bar	SB-166	...	N06600	Annealed
5	72Ni–15Cr–8Fe	Plate	SB-168	...	N06600	Annealed
6	72Ni–15Cr–8Fe	Plate, sheet, strip	SB-168	...	N06600	Annealed
7	72Ni–15Cr–8Fe	Wld. tube	SB-516	...	N06600	Annealed
8	72Ni–15Cr–8Fe	Wld. tube	SB-516	...	N06600	Annealed
9	72Ni–15Cr–8Fe	Forgings	SB-564	...	N06600	...
10	72Ni–15Cr–8Fe	Forgings	SB-564	...	N06600	Annealed
11	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Cold drawn/ann.
12	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Cold drawn/ann.
13	72Ni–15Cr–8Fe	Wld. pipe	SB-517	...	N06600	Cold drawn/ann.
14	72Ni–15Cr–8Fe	Wld. pipe	SB-517	...	N06600	Cold drawn/ann.
15	72Ni–15Cr–8Fe	Bar, rod	SB-166	...	N06600	Hot fin.
16	72Ni–15Cr–8Fe	Bar, rod	SB-166	...	N06600	Hot fin.
17	72Ni–15Cr–8Fe	Plate, sheet, strip	SB-168	...	N06600	Hot rolled
18	72Ni–15Cr–8Fe	Plate, sheet, strip	SB-168	...	N06600	Hot rolled
19	60Ni–22Cr–9Mo–3.5Cb	Plate, sheet, strip	SB-443	2	N06625	Solution ann.
20	60Ni–22Cr–9Mo–3.5Cb	Smls. pipe & tube	SB-444	2	N06625	Solution ann.
21	60Ni–22Cr–9Mo–3.5Cb	Bar	SB-446	2	N06625	Solution ann.
22	60Ni–22Cr–9Mo–3.5Cb	Smls. & wld. fittings	SB-366	...	N06625	Annealed
23	60Ni–22Cr–9Mo–3.5Cb	Bar	SB-446	1	N06625	Annealed
24	60Ni–22Cr–9Mo–3.5Cb	Forgings	SB-564	1	N06625	Annealed
25	60Ni–22Cr–9Mo–3.5Cb	Plate	SB-443	...	N06625	Annealed
26	60Ni–22Cr–9Mo–3.5Cb	Plate, sheet, strip	SB-443	1	N06625	Annealed
27	60Ni–22Cr–9Mo–3.5Cb	Plate, sheet, strip	SB-443	1	N06625	Annealed
28	60Ni–22Cr–9Mo–3.5Cb	Smls. pipe	SB-444	1	N06625	Annealed
29	60Ni–22Cr–9Mo–3.5Cb	Bar	SB-446	1	N06625	Annealed
30	60Ni–22Cr–9Mo–3.5Cb	Forgings	SB-564	...	N06625	Hot fin.
31	60Ni–22Cr–9Mo–3.5Cb	Forgings	SB-564	1	N06625	Annealed
32	60Ni–22Cr–9Mo–3.5Cb	Wld. tube	SB-704	...	N06625	Annealed
33	60Ni–22Cr–9Mo–3.5Cb	Wld. pipe	SB-705	...	N06625	Annealed
34	58Ni–29Cr–9Fe	Bar, rod	SB-166	...	N06690	Annealed
35	58Ni–29Cr–9Fe	Bar, rod	SB-166	...	N06690	Annealed
36	58Ni–29Cr–9Fe	Smls. pipe & tube	SB-167	...	N06690	Annealed
37	58Ni–29Cr–9Fe	Smls. pipe & tube	SB-167	...	N06690	Annealed
38	58Ni–29Cr–9Fe	Plate, sheet, strip	SB-168	...	N06690	Annealed
39	58Ni–29Cr–9Fe	Plate, sheet, strip	SB-168	...	N06690	Annealed

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	≤ 3	43	80	35	NP	800	1200	NFN-4	G5, T11
2	≤ 3	43	80	35	NP	NP	1200	NFN-4	T11
3	...	43	80	35	NP	800	1200	NFN-4	G5, T11
4	...	43	80	35	NP	NP	1200	NFN-4	T11
5	...	43	80	35	NP	800	1200	NFN-4	G5, T11
6	...	43	80	35	NP	NP	1200	NFN-4	T11
7	...	43	80	35	NP	NP	1200	NFN-4	G14, T11
8	...	43	80	35	NP	NP	1200	NFN-4	G5, G14, T11
9	...	43	80	35	NP	800	NP	NFN-4	G5
10	...	43	80	35	NP	NP	1200	NFN-4	T11
11	...	43	80	35	NP	800 (Cl. 3 only)	1200	NFN-4	T11
12	...	43	80	35	NP	800	1200	NFN-4	G5, T11
13	...	43	80	35	NP	NP	1200	NFN-4	G14, T11
14	...	43	80	35	NP	NP	1200	NFN-4	G5, G14, T11
15	...	43	85	35	NP	800 (Cl. 3 only)	1200	NFN-4	T13
16	...	43	85	35	NP	800 (Cl. 3 only)	1200	NFN-4	G5, T12
17	...	43	85	35	NP	800 (Cl. 3 only)	1200	NFN-4	G20, T13
18	...	43	85	35	NP	800 (Cl. 3 only)	1200	NFN-4	G5, G20, T12
19	...	43	100	40	NP	NP	1600	NFN-22	G23, G29, T18, W13
20	...	43	100	40	NP	NP	1600	NFN-22	G23, G29, T18, W13
21	...	43	100	40	NP	NP	1600	NFN-22	G23, G29, T18, W13
22	...	43	110	50	NP	NP	1200	NFN-17	G23, T16, W12
23	> 4	43	110	50	NP	800	1200	NFN-17	G5, G23, T16
24	> 4	43	110	50	NP	800	1200	NFN-17	G5, G23, T16
25	...	43	110	55	NP	800	NP	...	G5
26	...	43	110	55	NP	NP	1200	NFN-17	G23, T16
27	...	43	120	60	NP	NP	1200	NFN-17	G22, G23, T16
28	...	43	120	60	NP	800	1200	NFN-17	G5, G23, T16
29	≤ 4	43	120	60	NP	800	1200	NFN-17	G5, G22, G23, T16
30	≤ 4	43	120	60	NP	800	NP	...	G5
31	≤ 4	43	120	60	NP	NP	1200	NFN-17	G22, G23, T16
32	...	43	120	60	NP	800	1200	NFN-17	G14, G23, T16
33	...	43	120	60	NP	NP	1200	NFN-17	G14, G23, T16
34	...	43	85	35	NP	NP	850	NFN-4	...
35	...	43	85	35	NP	NP	850	NFN-4	G5
36	...	43	85	35	NP	NP	850	NFN-4	...
37	...	43	85	35	NP	NP	850	NFN-4	G5
38	...	43	85	35	NP	NP	850	NFN-4	...
39	...	43	85	35	NP	NP	850	NFN-4	G5

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
1	22.9	...	22.9	...	22.9	...	22.9	...	22.9	...	22.9	22.9	22.9	22.9	22.9	22.4	*16.0*
2	22.9	...	21.3	...	20.8	...	20.5	...	20.2	...	19.9	19.8	19.6	19.4	19.1	18.7	*16.0*
3	22.9	...	22.9	...	22.9	...	22.9	...	22.9	...	22.9	22.9	22.9	22.9	22.9	22.4	*16.0*
4	22.9	...	21.3	...	20.8	...	20.5	...	20.2	...	19.9	19.8	19.6	19.4	19.1	18.7	*16.0*
5	22.9	...	22.9	...	22.9	...	22.9	...	22.9	...	22.9	22.9	22.9	22.9	22.9	22.4	*16.0*
6	22.9	...	21.3	...	20.8	...	20.5	...	20.2	...	19.9	19.8	19.6	19.4	19.1	18.7	*16.0*
7	19.4	...	18.1	...	17.7	...	17.4	...	17.2	...	16.9	16.8	16.7	16.5	16.2	15.9	*13.6*
8	19.4	...	19.4	...	19.4	...	19.4	...	19.4	...	19.4	19.4	19.4	19.4	19.4	19.0	*13.6*
9	22.9	...	22.9	...	22.9	...	22.9	...	22.9	...	22.9	22.9	22.9	22.9	22.9	...	...
10	22.9	...	21.3	...	20.8	...	20.5	...	20.2	...	19.9	19.8	19.6	19.4	19.1	18.7	*16.0*
11	22.9	...	21.3	...	20.8	...	20.5	...	20.2	...	19.9	19.8	19.6	19.4	19.1	18.7	*16.0*
12	22.9	...	22.9	...	22.9	...	22.9	...	22.9	...	22.9	22.9	22.9	22.9	22.9	22.4	*16.0*
13	19.4	...	18.1	...	17.7	...	17.4	...	17.2	...	16.9	16.8	16.7	16.5	16.2	15.9	*13.6*
14	19.4	...	19.4	...	19.4	...	19.4	...	19.4	...	19.4	19.4	19.4	19.4	19.4	19.0	*13.6*
15	23.3	...	22.1	...	21.5	...	21.3	...	21.3	...	21.2	21.1	21.0	20.8	20.5	20.1	19.7
16	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	23.3	23.3	23.3	23.3	23.3	23.3	23.3
17	23.3	...	22.1	...	21.5	...	21.3	...	21.3	...	21.2	21.1	21.0	20.8	20.5	20.1	19.7
18	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	23.3	23.3	23.3	23.3	23.3	23.3	23.3
19	26.7	...	24.9	...	23.6	...	22.6	...	21.8	...	21.1	20.8	20.6	20.3	20.1	20.0	19.8
20	26.7	...	24.9	...	23.6	...	22.6	...	21.8	...	21.1	20.8	20.6	20.3	20.1	20.0	19.8
21	26.7	...	24.9	...	23.6	...	22.6	...	21.8	...	21.1	20.8	20.6	20.3	20.1	20.0	19.8
22	31.4	...	31.4	...	31.2	...	30.3	...	29.4	...	28.6	28.3	27.9	27.6	27.4	27.1	26.9
23	31.4	...	31.4	...	31.4	...	30.8	...	30.2	...	29.7	29.4	29.1	28.9	28.6	28.3	28.0
24	31.4	...	31.4	...	31.4	...	30.8	...	30.2	...	29.7	29.4	29.1	28.9	28.6	28.3	28.0
25	31.4	...	31.4	...	31.4	...	30.8	...	30.2	...	29.7	29.4	29.1	28.9	28.6	...	...
26	31.4	...	31.4	...	31.4	...	30.8	...	30.2	...	29.7	29.4	29.1	28.9	28.6	28.3	28.0
27	34.3	...	34.3	...	34.3	...	33.6	...	32.9	...	32.4	32.1	31.8	31.5	31.2	30.9	30.6
28	34.3	...	34.3	...	34.3	...	33.6	...	32.9	...	32.4	32.1	31.8	31.5	31.2	30.9	30.6
29	34.3	...	34.3	...	34.3	...	33.6	...	32.9	...	32.4	32.1	31.8	31.5	31.2	30.9	30.6
30	34.3	...	34.3	...	34.3	...	33.6	...	32.9	...	32.4	32.1	31.8	31.5	31.2	...	...
31	34.3	...	34.3	...	34.3	...	33.6	...	32.9	...	32.4	32.1	31.8	31.5	31.2	30.9	30.6
32	29.1	...	29.1	...	29.1	...	28.5	...	28.0	...	27.5	27.3	27.0	26.8	26.5	26.3	26.0
33	29.1	...	29.1	...	29.1	...	28.5	...	28.0	...	27.5	27.3	27.0	26.8	26.5	26.3	26.0
34	23.3	...	21.1	...	19.9	...	19.1	...	18.6	...	18.4	18.4	18.4	18.4	18.4	18.4	...
35	23.3	...	23.3	...	23.3	...	23.3	...	23.1	...	22.9	22.9	22.8	22.7	22.6	22.5	...
36	23.3	...	21.1	...	19.9	...	19.1	...	18.6	...	18.4	18.4	18.4	18.4	18.4	18.4	...
37	23.3	...	23.3	...	23.3	...	23.3	...	23.1	...	22.9	22.9	22.8	22.7	22.6	22.5	...
38	23.3	...	21.1	...	19.9	...	19.1	...	18.6	...	18.4	18.4	18.4	18.4	18.4	18.4	...
39	23.3	...	23.3	...	23.3	...	23.3	...	23.1	...	22.9	22.9	22.8	22.7	22.6	22.5	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	*10.6*	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...
2	*10.6*	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...
3	*10.6*	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...
4	*10.6*	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...
5	*10.6*	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...
6	*10.6*	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...
7	*9.0*	*6.0*	*3.8*	*2.6*	*1.9*	*1.7*	...	...	...	...	...	...	...	...	...
8	*9.0*	*6.0*	*3.8*	*2.6*	*1.9*	*1.7*	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	*10.6*	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...
11	*10.6*	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...
12	*10.6*	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...
13	*9.0*	*6.0*	*3.8*	*2.6*	*1.9*	*1.7*	...	...	...	...	...	...	...	...	...
14	*9.0*	*6.0*	*3.8*	*2.6*	*1.9*	*1.7*	...	...	...	...	...	...	...	...	...
15	19.3	*14.5*	*10.3*	*7.2*	*5.8*	*5.5*	...	...	...	...	...	...	...	...	...
16	*20.4*	*14.5*	*10.3*	*7.2*	*5.8*	*5.5*	...	...	...	...	...	...	...	...	...
17	19.3	*14.5*	*10.3*	*7.2*	*5.8*	*5.5*	...	...	...	...	...	...	...	...	...
18	*20.4*	*14.5*	*10.3*	*7.2*	*5.8*	*5.5*	...	...	...	...	...	...	...	...	...
19	19.7	19.5	19.4	19.4	19.3	19.3	*15.0*	*11.6*	*8.5*	*6.7*	*4.9*	*3.8*	*2.6*	*1.9*	...
20	19.7	19.5	19.4	19.4	19.3	19.3	*15.0*	*11.6*	*8.5*	*6.7*	*4.9*	*3.8*	*2.6*	*1.9*	...
21	19.7	19.5	19.4	19.4	19.3	19.3	*15.0*	*11.6*	*8.5*	*6.7*	*4.9*	*3.8*	*2.6*	*1.9*	...
22	26.8	26.6	26.5	26.4	*21.0*	*13.2*	...	...	...	...	...	...	...	...	...
23	27.7	27.4	27.0	26.6	*21.0*	*13.2*	...	...	...	...	...	...	...	...	...
24	27.7	27.4	27.0	26.6	*21.0*	*13.2*	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	27.7	27.4	27.0	26.6	*21.0*	*13.2*	...	...	...	...	...	...	...	...	...
27	30.3	29.9	29.5	29.0	*21.0*	*13.2*	...	...	...	...	...	...	...	...	...
28	30.3	29.9	29.5	29.0	*21.0*	*13.2*	...	...	...	...	...	...	...	...	...
29	30.3	29.9	29.5	29.0	*21.0*	*13.2*	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	30.3	29.9	29.5	29.0	*21.0*	*13.2*	...	...	...	...	...	...	...	...	...
32	25.7	25.4	25.1	24.7	*17.9*	*11.2*	...	...	...	...	...	...	...	...	...
33	25.7	25.4	25.1	24.7	*17.9*	*11.2*	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
1	49Ni–25Cr–18Fe–6Mo	Plate, sheet, strip	SB-582	...	N06975	Solution ann.
2	49Ni–25Cr–18Fe–6Mo	Plate, sheet, strip	SB-582	...	N06975	Solution ann.
3	49Ni–25Cr–18Fe–6Mo	Wld. pipe	SB-619	...	N06975	Solution ann.
4	49Ni–25Cr–18Fe–6Mo	Wld. pipe	SB-619	...	N06975	Solution ann.
5	49Ni–25Cr–18Fe–6Mo	Smls. pipe & tube	SB-622	...	N06975	Solution ann.
6	49Ni–25Cr–18Fe–6Mo	Smls. pipe & tube	SB-622	...	N06975	Solution ann.
7	49Ni–25Cr–18Fe–6Mo	Wld. tube	SB-626	...	N06975	Solution ann.
8	49Ni–25Cr–18Fe–6Mo	Wld. tube	SB-626	...	N06975	Solution ann.
9	47Ni–22Cr–20Fe–7Mo	Rod	SB-581	...	N06985	Annealed
10	47Ni–22Cr–20Fe–7Mo	Rod	SB-581	...	N06985	Annealed
11	47Ni–22Cr–20Fe–7Mo	Plate, sheet, strip	SB-582	...	N06985	Annealed
12	47Ni–22Cr–20Fe–7Mo	Plate, sheet, strip	SB-582	...	N06985	Annealed
13	47Ni–22Cr–20Fe–7Mo	Smls. & wld. fittings	SB-366	...	N06985	Annealed
14	47Ni–22Cr–20Fe–7Mo	Rod	SB-581	...	N06985	Annealed
15	47Ni–22Cr–20Fe–7Mo	Rod	SB-581	...	N06985	Annealed
16	47Ni–22Cr–20Fe–7Mo	Plate, sheet, strip	SB-582	...	N06985	Annealed
17	47Ni–22Cr–20Fe–7Mo	Plate, sheet, strip	SB-582	...	N06985	Annealed
18	47Ni–22Cr–20Fe–7Mo	Wld. pipe	SB-619	...	N06985	Annealed
19	47Ni–22Cr–20Fe–7Mo	Wld. pipe	SB-619	...	N06985	Annealed
20	47Ni–22Cr–20Fe–7Mo	Smls. pipe & tube	SB-622	...	N06985	Annealed
21	47Ni–22Cr–20Fe–7Mo	Smls. pipe & tube	SB-622	...	N06985	Annealed
22	47Ni–22Cr–20Fe–7Mo	Wld. tube	SB-626	...	N06985	Annealed
23	47Ni–22Cr–20Fe–7Mo	Wld. tube	SB-626	...	N06985	Annealed
24	35Ni–35Fe–20Cr–Cb	Forgings	SB-462	...	N08020	Annealed
25	35Ni–35Fe–20Cr–Cb	Forgings	SB-462	...	N08020	Annealed
26	35Ni–35Fe–20Cr–Cb	Plate	SB-463	...	N08020	Annealed
27	35Ni–35Fe–20Cr–Cb	Plate	SB-463	...	N08020	Annealed
28	35Ni–35Fe–20Cr–Cb	Bar	SB-473	...	N08020	Annealed
29	35Ni–35Fe–20Cr–Cb	Bar	SB-473	...	N08020	Annealed
30	35Ni–35Fe–20Cr–Cb	Smls. pipe & tube	SB-729	...	N08020	Annealed
31	35Ni–35Fe–20Cr–Cb	Smls. pipe & tube	SB-729	...	N08020	Annealed
32	35Ni–35Fe–20Cr–Cb	Wld. pipe	SB-464	...	N08020	Wld. ann.
33	35Ni–35Fe–20Cr–Cb	Wld. pipe	SB-464	...	N08020	Wld. ann.
34	35Ni–35Fe–20Cr–Cb	Wld. pipe	SB-464	...	N08020	Wld. ann.
35	35Ni–35Fe–20Cr–Cb	Wld. tube	SB-468	...	N08020	Wld. ann.
36	35Ni–35Fe–20Cr–Cb	Wld. tube	SB-468	...	N08020	Wld. ann.
37	35Ni–35Fe–20Cr–Cb	Wld. tube	SB-468	...	N08020	Wld. ann.
38	35Ni–35Fe–20Cr–Cb	Smls. & wld. fittings	SB-366	...	N08020	Annealed

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	...	45	85	32	NP	NP	800	NFN-11	...
2	...	45	85	32	NP	NP	800	NFN-11	G5
3	...	45	85	32	NP	NP	800	NFN-11	G14
4	...	45	85	32	NP	NP	800	NFN-11	G5, G14
5	...	45	85	32	NP	NP	800	NFN-11	...
6	...	45	85	32	NP	NP	800	NFN-11	G5
7	...	45	85	32	NP	NP	800	NFN-11	G14
8	...	45	85	32	NP	NP	800	NFN-11	G5, G14
9	> 3/4	45	85	30	NP	NP	800	NFN-19	...
10	> 3/4	45	85	30	NP	NP	800	NFN-19	G5
11	> 3/4	45	85	30	NP	NP	800	NFN-19	...
12	> 3/4	45	85	30	NP	NP	800	NFN-19	G5
13	...	45	90	35	NP	NP	800	NFN-18	G5, W12
14	≤ 3/4	45	90	35	NP	NP	800	NFN-18	...
15	≤ 3/4	45	90	35	NP	NP	800	NFN-18	G5
16	≤ 3/4	45	90	35	NP	NP	800	NFN-18	...
17	≤ 3/4	45	90	35	NP	NP	800	NFN-18	G5
18	...	45	90	35	NP	NP	800	NFN-18	G14
19	...	45	90	35	NP	NP	800	NFN-18	G5, G14
20	...	45	90	35	NP	NP	800	NFN-18	...
21	...	45	90	35	NP	NP	800	NFN-18	G5
22	...	45	90	35	NP	NP	800	NFN-18	G14
23	...	45	90	35	NP	NP	800	NFN-18	G5, G14
24	...	45	80	35	NP	800	800	NFN-12	G5
25	...	45	80	35	NP	NP	800	NFN-12	...
26	...	45	80	35	NP	NP	800	NFN-12	...
27	...	45	80	35	NP	800	800	NFN-12	G5
28	...	45	80	35	NP	800	800	NFN-12	G5
29	...	45	80	35	NP	NP	800	NFN-12	...
30	...	45	80	35	NP	NP	800	NFN-12	...
31	...	45	80	35	NP	NP	800	NFN-12	G5
32	...	45	80	35	NP	800	NP	NFN-12	G5, W5
33	...	45	80	35	NP	NP	800	NFN-12	G14
34	...	45	80	35	NP	NP	800	NFN-12	G5, G14
35	...	45	80	35	NP	800	NP	NFN-12	G5, W5
36	...	45	80	35	NP	NP	800	NFN-12	G14
37	...	45	80	35	NP	NP	800	NFN-12	G5, G14
38	...	44	85	40	NP	NP	800	NFN-12	G5, W12

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
1	21.3	...	19.5	...	18.5	...	17.5	...	16.5	...	15.6	15.3	15.0	14.8	14.7	...	...
2	21.3	...	21.3	...	21.3	...	21.3	...	21.3	...	21.1	20.6	20.2	20.0	19.8	...	...
3	18.1	...	16.6	...	15.7	...	14.9	...	14.0	...	13.3	13.0	12.7	12.6	12.5	...	...
4	18.1	...	18.1	...	18.1	...	18.1	...	18.1	...	17.9	17.5	17.2	17.0	16.8	...	...
5	21.3	...	19.5	...	18.5	...	17.5	...	16.5	...	15.6	15.3	15.0	14.8	14.7	...	...
6	21.3	...	21.3	...	21.3	...	21.3	...	21.3	...	21.1	20.6	20.2	20.0	19.8	...	...
7	18.1	...	16.6	...	15.7	...	14.9	...	14.0	...	13.3	13.0	12.7	12.6	12.5	...	...
8	18.1	...	18.1	...	18.1	...	18.1	...	18.1	...	17.9	17.5	17.2	17.0	16.8	...	...
9	20.0	...	17.8	...	16.2	...	14.9	...	13.9	...	13.1	12.8	12.5	12.3	12.0	...	...
10	20.0	...	20.0	...	20.0	...	20.0	...	18.8	...	17.7	17.3	16.9	16.5	16.2	...	...
11	20.0	...	17.8	...	16.2	...	14.9	...	13.9	...	13.1	12.8	12.5	12.3	12.0	...	...
12	20.0	...	20.0	...	20.0	...	20.0	...	18.8	...	17.7	17.3	16.9	16.5	16.2	...	...
13	23.3	...	23.3	...	23.3	...	23.3	...	21.9	...	20.7	20.2	19.7	19.3	18.9	...	...
14	23.3	...	20.8	...	18.9	...	17.4	...	16.2	...	15.3	14.9	14.6	14.3	14.0	...	...
15	23.3	...	23.3	...	23.3	...	23.3	...	21.9	...	20.7	20.2	19.7	19.3	18.9	...	...
16	23.3	...	20.8	...	18.9	...	17.4	...	16.2	...	15.3	14.9	14.6	14.3	14.0	...	...
17	23.3	...	23.3	...	23.3	...	23.3	...	21.9	...	20.7	20.2	19.7	19.3	18.9	...	...
18	19.8	...	17.7	...	16.1	...	14.8	...	13.8	...	13.0	12.7	12.4	12.1	11.9	...	...
19	19.8	...	19.8	...	19.8	...	19.8	...	18.6	...	17.6	17.1	16.8	16.4	16.1	...	...
20	23.3	...	20.8	...	18.9	...	17.4	...	16.2	...	15.3	14.9	14.6	14.3	14.0	...	...
21	23.3	...	23.3	...	23.3	...	23.3	...	21.9	...	20.7	20.2	19.7	19.3	18.9	...	...
22	19.8	...	17.7	...	16.1	...	14.8	...	13.8	...	13.0	12.7	12.4	12.1	11.9	...	...
23	19.8	...	19.8	...	19.8	...	19.8	...	18.6	...	17.6	17.1	16.8	16.4	16.1	...	...
24	22.9	...	22.9	...	22.6	...	22.2	...	22.1	...	22.1	22.0	21.9	21.8	21.8	...	...
25	22.9	...	20.6	...	19.7	...	18.9	...	18.2	...	17.7	17.5	17.4	17.2	16.8	...	...
26	22.9	...	20.6	...	19.7	...	18.9	...	18.2	...	17.7	17.5	17.4	17.2	16.8	...	...
27	22.9	...	22.9	...	22.6	...	22.2	...	22.1	...	22.1	22.0	21.9	21.8	21.8	...	...
28	22.9	...	22.9	...	22.6	...	22.2	...	22.1	...	22.1	22.0	21.9	21.8	21.8	...	...
29	22.9	...	20.6	...	19.7	...	18.9	...	18.2	...	17.7	17.5	17.4	17.2	16.8	...	...
30	22.9	...	20.6	...	19.7	...	18.9	...	18.2	...	17.7	17.5	17.4	17.2	16.8	...	...
31	22.9	...	22.9	...	22.6	...	22.2	...	22.1	...	22.1	22.0	21.9	21.8	21.8	...	...
32	22.9	...	22.9	...	22.6	...	22.2	...	22.1	...	22.1	22.0	21.9	21.8	21.8	...	...
33	19.4	...	17.5	...	16.7	...	16.1	...	15.5	...	15.0	14.9	14.8	14.6	14.3	...	...
34	19.4	...	19.4	...	19.2	...	18.8	...	18.8	...	18.8	18.7	18.6	18.5	18.5	...	...
35	22.9	...	22.9	...	22.6	...	22.2	...	22.1	...	22.1	22.0	21.9	21.8	21.8	...	...
36	19.4	...	17.5	...	16.7	...	16.1	...	15.5	...	15.0	14.9	14.8	14.6	14.3	...	...
37	19.4	...	19.4	...	19.2	...	18.8	...	18.8	...	18.8	18.7	18.6	18.5	18.5	...	...
38	22.9	...	22.9	...	22.6	...	22.2	...	22.1	...	22.1	22.0	21.9	21.8	21.8	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	1	37Ni–33Fe–23Cr–4Mo–Cu	Plate, sheet, strip	SB-463	...	N08024	Annealed
	2	37Ni–33Fe–23Cr–4Mo–Cu	Plate, sheet, strip	SB-463	...	N08024	Annealed
	3	37Ni–33Fe–23Cr–4Mo–Cu	Wld. pipe	SB-464	...	N08024	Wld. ann.
	4	37Ni–33Fe–23Cr–4Mo–Cu	Wld. pipe	SB-464	...	N08024	Wld. ann.
	5	37Ni–33Fe–23Cr–4Mo–Cu	Wld. tube	SB-468	...	N08024	Wld. ann.
	6	37Ni–33Fe–23Cr–4Mo–Cu	Wld. tube	SB-468	...	N08024	Wld. ann.
	7	35Ni–30Fe–24Cr–6Mo–Cu	Plate, sheet, strip	SB-463	...	N08026	Annealed
	8	35Ni–30Fe–24Cr–6Mo–Cu	Plate, sheet, strip	SB-463	...	N08026	Annealed
	9	35Ni–30Fe–24Cr–6Mo–Cu	Wld. pipe	SB-464	...	N08026	Wld. ann.
	10	35Ni–30Fe–24Cr–6Mo–Cu	Wld. pipe	SB-464	...	N08026	Wld. ann.
	11	35Ni–30Fe–24Cr–6Mo–Cu	Wld. tube	SB-468	...	N08026	Wld. ann.
	12	35Ni–30Fe–24Cr–6Mo–Cu	Wld. tube	SB-468	...	N08026	Wld. ann.
	13	31Ni–31Fe–29Cr–Mo	Smls. tube	SB-668	...	N08028	Annealed
	14	31Ni–31Fe–29Cr–Mo	Smls. tube	SB-668	...	N08028	Annealed
	15	31Ni–31Fe–29Cr–Mo	Plate, sheet, strip	SB-709	...	N08028	Annealed
	16	31Ni–31Fe–29Cr–Mo	Plate, sheet, strip	SB-709	...	N08028	Annealed
01	17	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Smls. & wld. fittings	SB-366	...	N08031	Solution ann.
01	18	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Forgings	SB-564	...	N08031	Solution ann.
01	19	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Forgings	SB-564	...	N08031	Solution ann.
01	20	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Rod	SB-581	...	N08031	Solution ann.
01	21	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Rod	SB-581	...	N08031	Solution ann.
01	22	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Wld. pipe	SB-619	...	N08031	Solution ann.
01	23	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Wld. pipe	SB-619	...	N08031	Solution ann.
01	24	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Smls. pipe & tube	SB-622	...	N08031	Solution ann.
01	25	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Smls. pipe & tube	SB-622	...	N08031	Solution ann.
01	26	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Plate, sheet, strip	SB-625	...	N08031	Solution ann.
01	27	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Plate, sheet, strip	SB-625	...	N08031	Solution ann.
01	28	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Wld. tube	SB-626	...	N08031	Solution ann.
01	29	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Wld. tube	SB-626	...	N08031	Solution ann.
	30	26Ni–43Fe–22Cr–5Mo	Wld. pipe	SB-619	...	N08320	Solution ann.
	31	26Ni–43Fe–22Cr–5Mo	Wld. pipe	SB-619	...	N08320	Solution ann.
	32	26Ni–43Fe–22Cr–5Mo	Plate, sheet, strip	SB-620	...	N08320	Solution ann.
	33	26Ni–43Fe–22Cr–5Mo	Plate, sheet, strip	SB-620	...	N08320	Solution ann.
	34	26Ni–43Fe–22Cr–5Mo	Rod	SB-621	...	N08320	Solution ann.
	35	26Ni–43Fe–22Cr–5Mo	Rod	SB-621	...	N08320	Solution ann.
	36	26Ni–43Fe–22Cr–5Mo	Smls. pipe & tube	SB-622	...	N08320	Solution ann.
	37	26Ni–43Fe–22Cr–5Mo	Smls. pipe & tube	SB-622	...	N08320	Solution ann.
	38	26Ni–43Fe–22Cr–5Mo	Wld. tube	SB-626	...	N08320	Solution ann.
	39	26Ni–43Fe–22Cr–5Mo	Wld. tube	SB-626	...	N08320	Solution ann.

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	...	45	80	35	NP	NP	800	NFN-13	...	
2	...	45	80	35	NP	NP	800	NFN-13	G5	
3	...	45	80	35	NP	NP	800	NFN-13	G14	
4	...	45	80	35	NP	NP	800	NFN-13	G5, G14	
5	...	45	80	35	NP	NP	800	NFN-13	G14	
6	...	45	80	35	NP	NP	800	NFN-13	G5, G14	
7	...	45	80	35	NP	NP	800	NFN-13	...	
8	...	45	80	35	NP	NP	800	NFN-13	G5	
9	...	45	80	35	NP	NP	800	NFN-13	G14	
10	...	45	80	35	NP	NP	800	NFN-13	G5, G14	
11	...	45	80	35	NP	NP	800	NFN-13	G14	
12	...	45	80	35	NP	NP	800	NFN-13	G5, G14	
13	...	45	73	31	NP	600	850	NFN-13	...	
14	...	45	73	31	NP	600	850	NFN-13	G5	
15	...	45	73	31	NP	NP	850	NFN-13	...	
16	...	45	73	31	NP	NP	850	NFN-13	G5	
17	...	45	94	40	NP	NP	800	NFN-11	G5, W12	**01**
18	...	45	94	40	NP	NP	800	NFN-11	...	**01**
19	...	45	94	40	NP	NP	800	NFN-11	G5	**01**
20	...	45	94	40	NP	NP	800	NFN-11	...	**01**
21	...	45	94	40	NP	NP	800	NFN-11	G5	**01**
22	...	45	94	40	NP	NP	800	NFN-11	G14	**01**
23	...	45	94	40	NP	NP	800	NFN-11	G5, G14	**01**
24	...	45	94	40	NP	NP	800	NFN-11	...	**01**
25	...	45	94	40	NP	NP	800	NFN-11	G5	**01**
26	...	45	94	40	NP	NP	800	NFN-11	...	**01**
27	...	45	94	40	NP	NP	800	NFN-11	G5	**01**
28	...	45	94	40	NP	NP	800	NFN-11	G14	**01**
29	...	45	94	40	NP	NP	800	NFN-11	G5, G14	**01**
30	...	45	75	28	NP	NP	800	NFN-13	G14	
31	...	45	75	28	NP	NP	800	NFN-13	G5, G14	
32	...	45	75	28	NP	NP	800	NFN-13	...	
33	...	45	75	28	NP	NP	800	NFN-13	G5	
34	...	45	75	28	NP	NP	800	NFN-13	...	
35	...	45	75	28	NP	NP	800	NFN-13	G5	
36	...	45	75	28	NP	NP	800	NFN-13	...	
37	...	45	75	28	NP	NP	800	NFN-13	G5	
38	...	45	75	28	NP	NP	800	NFN-13	G14	
39	...	45	75	28	NP	NP	800	NFN-13	G5, G14	

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
		–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
	1	22.9	...	20.6	...	19.2	...	18.1	...	17.0	...	16.0	15.6	15.2	14.8	14.6	...	...
	2	22.9	...	22.9	...	22.6	...	21.9	...	21.4	...	20.8	20.6	20.4	20.0	19.6	...	...
	3	19.4	...	17.5	...	16.3	...	15.4	...	14.5	...	13.6	13.2	12.9	12.6	12.4	...	...
	4	19.4	...	19.4	...	19.2	...	18.6	...	18.2	...	17.7	17.5	17.3	17.0	16.7	...	...
	5	19.4	...	17.5	...	16.3	...	15.4	...	14.5	...	13.6	13.2	12.9	12.6	12.4	...	...
	6	19.4	...	19.4	...	19.2	...	18.6	...	18.2	...	17.7	17.5	17.3	17.0	16.7	...	...
	7	22.9	...	20.7	...	19.0	...	17.5	...	16.3	...	15.3	14.9	14.5	14.2	13.9	...	...
	8	22.9	...	22.9	...	22.5	...	21.8	...	21.2	...	20.6	20.1	19.6	19.2	18.8	...	...
	9	19.4	...	17.6	...	16.1	...	14.9	...	13.8	...	13.0	12.7	12.4	12.1	11.9	...	...
	10	19.4	...	19.4	...	19.1	...	18.5	...	18.0	...	17.5	17.1	16.7	16.3	16.0	...	...
	11	19.4	...	17.6	...	16.1	...	14.9	...	13.8	...	13.0	12.7	12.4	12.1	11.9	...	...
	12	19.4	...	19.4	...	19.1	...	18.5	...	18.0	...	17.5	17.1	16.7	16.3	16.0	...	...
	13	20.7	...	18.9	...	17.7	...	16.5	...	15.4	...	14.4	14.0	13.6	13.1	12.8	12.4	...
	14	20.7	...	20.7	...	20.1	...	19.3	...	18.7	...	18.2	18.0	17.8	17.5	17.2	16.7	...
	15	20.7	...	18.9	...	17.7	...	16.5	...	15.4	...	14.4	14.0	13.6	13.1	12.8	12.4	...
	16	20.7	...	20.7	...	20.1	...	19.3	...	18.7	...	18.2	18.0	17.8	17.5	17.2	16.7	...
01	17	26.7	...	26.7	...	25.8	...	24.5	...	23.3	...	22.2	21.7	21.3	20.9	20.5	...	...
01	18	26.7	...	22.0	...	19.8	...	18.3	...	17.3	...	16.4	16.1	15.8	15.5	15.2	...	...
01	19	26.7	...	26.7	...	25.8	...	24.5	...	23.3	...	22.2	21.7	21.3	20.9	20.5	...	...
01	20	26.7	...	22.0	...	19.8	...	18.3	...	17.3	...	16.4	16.1	15.8	15.5	15.2	...	...
01	21	26.7	...	26.7	...	25.8	...	24.5	...	23.3	...	22.2	21.7	21.3	20.9	20.5	...	...
01	22	22.7	...	22.7	...	16.8	...	15.6	...	14.7	...	13.9	13.7	13.4	13.2	12.9	...	...
01	23	22.7	...	22.7	...	21.9	...	20.8	...	19.8	...	18.9	18.4	18.1	17.8	17.4	...	...
01	24	26.7	...	22.0	...	19.8	...	18.3	...	17.3	...	16.4	16.1	15.8	15.5	15.2	...	...
01	25	26.7	...	26.7	...	25.8	...	24.5	...	23.3	...	22.2	21.7	21.3	20.9	20.5	...	...
01	26	26.7	...	22.0	...	19.8	...	18.3	...	17.3	...	16.4	16.1	15.8	15.5	15.2	...	...
01	27	26.7	...	26.7	...	25.8	...	24.5	...	23.3	...	22.2	21.7	21.3	20.9	20.5	...	...
01	28	22.7	...	22.7	...	16.8	...	15.6	...	14.7	...	13.9	13.7	13.4	13.2	12.9	...	...
01	29	22.7	...	22.7	...	21.9	...	20.8	...	19.8	...	18.9	18.4	18.1	17.8	17.4	...	...
	30	15.9	...	14.7	...	13.9	...	13.1	...	12.3	...	11.7	11.4	11.2	11.0	10.8	...	...
	31	15.9	...	15.9	...	15.9	...	15.9	...	15.9	...	15.8	15.4	15.1	14.9	14.6	...	...
	32	18.7	...	17.3	...	16.3	...	15.4	...	14.5	...	13.8	13.5	13.2	13.0	12.7	...	...
	33	18.7	...	18.7	...	18.7	...	18.7	...	18.7	...	18.6	18.2	17.8	17.5	17.2	...	...
	34	18.7	...	17.3	...	16.3	...	15.4	...	14.5	...	13.8	13.5	13.2	13.0	12.7	...	...
	35	18.7	...	18.7	...	18.7	...	18.7	...	18.7	...	18.6	18.2	17.8	17.5	17.2	...	...
	36	18.7	...	17.3	...	16.3	...	15.4	...	14.5	...	13.8	13.5	13.2	13.0	12.7	...	...
	37	18.7	...	18.7	...	18.7	...	18.7	...	18.7	...	18.6	18.2	17.8	17.5	17.2	...	...
	38	15.9	...	14.7	...	13.9	...	13.1	...	12.3	...	11.7	11.4	11.2	11.0	10.8	...	...
	39	15.9	...	15.9	...	15.9	...	15.9	...	15.9	...	15.8	15.4	15.1	14.9	14.6	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
1	35Ni–19Cr–1¼Si	Bar	SB-511	...	N08330	...
2	35Ni–19Cr–1¼Si	Bar	SB-511	...	N08330	...
3	35Ni–19Cr–1¼Si	Bar	SB-511	...	N08330	...
4	35Ni–19Cr–1¼Si	Bar	SB-511	...	N08330	...
5	35Ni–19Cr–1¼Si	Pipe	SB-535	...	N08330	...
6	35Ni–19Cr–1¼Si	Pipe	SB-535	...	N08330	...
7	35Ni–19Cr–1¼Si	Plate	SB-536	...	N08330	...
8	35Ni–19Cr–1¼Si	Plate	SB-536	...	N08330	...
9	35Ni–19Cr–1¼Si	Smls. & wld. fittings	SB-366	...	N08330	Annealed
10	35Ni–19Cr–1¼Si	Smls. & wld. pipe	SB-535	...	N08330	Annealed
11	35Ni–19Cr–1¼Si	Smls. & wld. pipe	SB-535	...	N08330	Annealed
12	35Ni–19Cr–1¼Si	Plate, sheet, strip	SB-536	...	N08330	Annealed
13	35Ni–19Cr–1¼Si	Plate, sheet, strip	SB-536	...	N08330	Annealed
14	35Ni–19Cr–1¼Si	Wld. pipe	SB-710	...	N08330	Annealed
15	35Ni–19Cr–1¼Si	Wld. pipe	SB-710	...	N08330	Annealed
16	46Fe–24Ni–21Cr–6Mo	Bar, rod, wire	SB-691	...	N08366	Annealed
17	46Fe–24Ni–21Cr–6Mo	Wld. pipe	SB-675	...	N08366	Sol. treat.
18	46Fe–24Ni–21Cr–6Mo	Wld. tube	SB-676	...	N08366	Sol. treat.
19	46Fe–24Ni–21Cr–6Mo	Smls. pipe & tube	SB-690	...	N08366	Sol. treat.
20	46Fe–24Ni–21Cr–6Mo	Plate, sheet, strip	SB-688	...	N08366	Annealed
21	46Fe–24Ni–21Cr–6Mo–Cu–N	Forgings	SB-462	...	N08367	Solution ann.
22	46Fe–24Ni–21Cr–6Mo–Cu–N	Forgings	SB-462	...	N08367	Solution ann.
23	46Fe–24Ni–21Cr–6Mo–Cu–N	Forgings	SB-564	...	N08367	Solution ann.
24	46Fe–24Ni–21Cr–6Mo–Cu–N	Forgings	SB-564	...	N08367	Solution ann.
25	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. pipe	SB-675	...	N08367	Solution ann.
26	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. pipe	SB-675	...	N08367	Solution ann.
27	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. tube	SB-676	...	N08367	Solution ann.
28	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. tube	SB-676	...	N08367	Solution ann.
29	46Fe–24Ni–21Cr–6Mo–Cu–N	Plate, sheet, strip	SB-688	...	N08367	Solution ann.
30	46Fe–24Ni–21Cr–6Mo–Cu–N	Plate, sheet, strip	SB-688	...	N08367	Solution ann.
31	46Fe–24Ni–21Cr–6Mo–Cu–N	Smls. pipe & tube	SB-690	...	N08367	Solution ann.
32	46Fe–24Ni–21Cr–6Mo–Cu–N	Smls. pipe & tube	SB-690	...	N08367	Solution ann.
33	46Fe–24Ni–21Cr–6Mo–Cu–N	Bar, rod, wire	SB-691	...	N08367	Solution ann.
34	46Fe–24Ni–21Cr–6Mo–Cu–N	Bar, rod, wire	SB-691	...	N08367	Solution ann.
35	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. pipe	SB-804	...	N08367	Solution ann.
36	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. pipe	SB-804	...	N08367	Solution ann.

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	...	46	70	30	1500	NP	NP	...	G2, H2, T14
2	...	46	70	30	1500	NP	NP	...	G2, G5, H2, T12
3	...	46	70	30	NP	NP	1650	NFN-13	G29, H1, T14
4	...	46	70	30	NP	NP	1650	NFN-13	G5, G29, H1, T12
5	...	46	70	30	1500	NP	NP	...	G2, H2, T14
6	...	46	70	30	1500	NP	NP	...	G2, G5, H2, T12
7	...	46	70	30	1500	NP	NP	...	G2, H2, T14
8	...	46	70	30	1500	NP	NP	...	G2, G5, H2, T12
9	...	46	70	30	NP	NP	1650	NFN-13	G5, G29, T12, W12
10	...	46	70	30	NP	NP	1500	NFN-13	H1, T14
11	...	46	70	30	NP	NP	1500	NFN-13	G5, H1, T12
12	...	46	70	30	NP	NP	1650	NFN-13	G29, H1, T14
13	...	46	70	30	NP	NP	1650	NFN-13	G5, G29, H1, T12
14	...	46	70	30	NP	NP	1650	NFN-13	G14, G29, H1, T14
15	...	46	70	30	NP	NP	1650	NFN-13	G5, G14, G29, H1, T12
16	...	45	75	30	NP	NP	300	NFN-2	...
17	...	45	75	30	NP	NP	300	NFN-2	G14
18	...	45	75	30	NP	400	300	NFN-2	G14
19	...	45	75	30	NP	NP	300	NFN-2	...
20	...	45	75	35	NP	NP	300	NFN-2	...
21	...	45	95	45	NP	800	800	NFN-12	...
22	...	45	95	45	NP	800	800	NFN-12	G5
23	...	45	95	45	NP	800	800	NFN-12	...
24	...	45	95	45	NP	800	800	NFN-12	G5
25	> 3/16	45	95	45	NP	800	800	NFN-12	G14
26	> 3/16	45	95	45	NP	800	800	NFN-12	G5, G14
27	> 3/16	45	95	45	NP	800	800	NFN-12	G14
28	> 3/16	45	95	45	NP	800	800	NFN-12	G5, G14
29	> 3/16	45	95	45	NP	800	800	NFN-12	...
30	> 3/16	45	95	45	NP	800	800	NFN-12	G5
31	> 3/16	45	95	45	NP	800	800	NFN-12	...
32	> 3/16	45	95	45	NP	800	800	NFN-12	G5
33	...	45	95	45	NP	800	800	NFN-12	...
34	...	45	95	45	NP	800	800	NFN-12	G5
35	> 3/16	45	95	45	NP	800	800	NFN-12	G14
36	> 3/16	45	95	45	NP	800	800	NFN-12	G5, G14

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
1	20.0	...	17.7	...	16.4	...	15.5	...	14.7	...	14.0	13.7	13.4	13.1	12.9	12.6	12.4
2	20.0	...	20.0	...	20.0	...	19.6	...	19.4	...	18.9	18.5	18.1	17.7	17.4	17.0	16.7
3	20.0	...	17.7	...	16.4	...	15.5	...	14.7	...	14.0	13.7	13.4	13.1	12.9	12.6	12.4
4	20.0	...	20.0	...	20.0	...	19.6	...	19.4	...	18.9	18.5	18.1	17.7	17.4	17.0	16.7
5	20.0	...	17.7	...	16.4	...	15.5	...	14.7	...	14.0	13.7	13.4	13.1	12.9	12.6	12.4
6	20.0	...	20.0	...	20.0	...	19.6	...	19.4	...	18.9	18.5	18.1	17.7	17.4	17.0	16.7
7	20.0	...	17.7	...	16.4	...	15.5	...	14.7	...	14.0	13.7	13.4	13.1	12.9	12.6	12.4
8	20.0	...	20.0	...	20.0	...	19.6	...	19.4	...	18.9	18.5	18.1	17.7	17.4	17.0	16.7
9	20.0	...	20.0	...	20.0	...	19.6	...	19.4	...	18.9	18.5	18.1	17.7	17.4	17.0	16.7
10	20.0	...	17.7	...	16.4	...	15.5	...	14.7	...	14.0	13.7	13.4	13.1	12.9	12.6	12.4
11	20.0	...	20.0	...	20.0	...	19.6	...	19.4	...	18.9	18.5	18.1	17.7	17.4	17.0	16.7
12	20.0	...	17.7	...	16.4	...	15.5	...	14.7	...	14.0	13.7	13.4	13.1	12.9	12.6	12.4
13	20.0	...	20.0	...	20.0	...	19.6	...	19.4	...	18.9	18.5	18.1	17.7	17.4	17.0	16.7
14	17.0	...	15.0	...	14.0	...	13.2	...	12.5	...	11.9	11.7	11.4	11.2	10.9	10.7	10.5
15	17.0	...	17.0	...	17.0	...	16.7	...	16.5	...	16.1	15.7	15.4	15.1	14.8	14.5	14.2
16	20.0	...	16.5	...	14.5	...	...	...	...	...	...	...	...	...	...	...	...
17	17.0	...	14.0	...	12.3	...	...	...	...	...	...	...	...	...	...	...	...
18	17.0	...	14.0	...	12.3	...	11.0	...	...	...	...	...	...	...	...	...	...
19	20.0	...	16.5	...	14.5	...	...	...	...	...	...	...	...	...	...	...	...
20	21.4	...	19.2	...	16.9	...	...	...	...	...	...	...	...	...	...	...	...
21	27.1	...	26.2	...	23.8	...	21.9	...	20.5	...	19.4	19.0	18.6	18.3	18.0	...	...
22	27.1	...	27.1	...	25.7	...	24.6	...	23.8	...	23.3	23.1	22.9	22.8	22.6	...	...
23	27.1	...	26.2	...	23.8	...	21.9	...	20.5	...	19.4	19.0	18.6	18.3	18.0	...	...
24	27.1	...	27.1	...	25.7	...	24.6	...	23.8	...	23.3	23.1	22.9	22.8	22.6	...	...
25	23.1	...	22.2	...	20.2	...	18.7	...	17.4	...	16.5	16.1	15.8	15.5	15.3	...	...
26	23.1	...	23.1	...	21.8	...	20.9	...	20.2	...	19.8	19.6	19.5	19.4	19.2	...	...
27	23.1	...	22.2	...	20.2	...	18.7	...	17.4	...	16.5	16.1	15.8	15.5	15.3	...	...
28	23.1	...	23.1	...	21.8	...	20.9	...	20.2	...	19.8	19.6	19.5	19.4	19.2	...	...
29	27.1	...	26.2	...	23.8	...	21.9	...	20.5	...	19.4	19.0	18.6	18.3	18.0	...	...
30	27.1	...	27.1	...	25.7	...	24.6	...	23.8	...	23.3	23.1	22.9	22.8	22.6	...	...
31	27.1	...	26.2	...	23.8	...	21.9	...	20.5	...	19.4	19.0	18.6	18.3	18.0	...	...
32	27.1	...	27.1	...	25.7	...	24.6	...	23.8	...	23.3	23.1	22.9	22.8	22.6	...	...
33	27.1	...	26.2	...	23.8	...	21.9	...	20.5	...	19.4	19.0	18.6	18.3	18.0	...	...
34	27.1	...	27.1	...	25.7	...	24.6	...	23.8	...	23.3	23.1	22.9	22.8	22.6	...	...
35	23.1	...	22.2	...	20.2	...	18.7	...	17.4	...	16.5	16.1	15.8	15.5	15.3	...	...
36	23.1	...	23.1	...	21.8	...	20.9	...	20.2	...	19.8	19.6	19.5	19.4	19.2	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	12.1	11.9	*10.0*	*7.8*	*6.0*	*4.7*	*3.8*	*3.1*	*2.4*	*1.8*	*1.5*	*1.1*	...	...	...
2	*16.1*	*12.7*	*10.0*	*7.8*	*6.0*	*4.7*	*3.8*	*3.1*	*2.4*	*1.8*	*1.5*	*1.1*	...	...	...
3	12.1	11.9	*10.0*	*7.8*	*6.0*	*4.7*	*3.8*	*3.1*	*2.4*	*1.8*	*1.5*	*1.1*	*0.90*	*0.68*	*0.48*
4	*16.1*	*12.7*	*10.0*	*7.8*	*6.0*	*4.7*	*3.8*	*3.1*	*2.4*	*1.8*	*1.5*	*1.1*	*0.90*	*0.68*	*0.48*
5	12.1	11.9	*10.0*	*7.8*	*6.0*	*4.7*	*3.8*	*3.1*	*2.4*	*1.8*	*1.5*	*1.1*	...	...	...
6	*16.1*	*12.7*	*10.0*	*7.8*	*6.0*	*4.7*	*3.8*	*3.1*	*2.4*	*1.8*	*1.5*	*1.1*	...	...	...
7	12.1	11.9	*10.0*	*7.8*	*6.0*	*4.7*	*3.8*	*3.1*	*2.4*	*1.8*	*1.5*	*1.1*	...	...	...
8	*16.1*	*12.7*	*10.0*	*7.8*	*6.0*	*4.7*	*3.8*	*3.1*	*2.4*	*1.8*	*1.5*	*1.1*	...	...	...
9	*16.1*	*12.7*	*10.0*	*7.8*	*6.0*	*4.7*	*3.8*	*3.1*	*2.4*	*1.8*	*1.5*	*1.1*	*0.90*	*0.68*	*0.48*
10	12.1	11.9	*10.0*	*7.8*	*6.0*	*4.7*	*3.8*	*3.1*	*2.4*	*1.8*	*1.5*	*1.1*	...	...	...
11	*16.1*	*12.7*	*10.0*	*7.8*	*6.0*	*4.7*	*3.8*	*3.1*	*2.4*	*1.8*	*1.5*	*1.1*	...	...	...
12	12.1	11.9	*10.0*	*7.8*	*6.0*	*4.7*	*3.8*	*3.1*	*2.4*	*1.8*	*1.5*	*1.1*	*0.90*	*0.68*	*0.48*
13	*16.1*	*12.7*	*10.0*	*7.8*	*6.0*	*4.7*	*3.8*	*3.1*	*2.4*	*1.8*	*1.5*	*1.1*	*0.90*	*0.68*	*0.48*
14	10.3	10.1	*8.5*	*6.6*	*5.1*	*4.0*	*3.2*	*2.6*	*2.0*	*1.5*	*1.3*	*0.94*	*0.77*	*0.58*	*0.41*
15	*13.7*	*10.8*	*8.5*	*6.6*	*5.1*	*4.0*	*3.2*	*2.6*	*2.0*	*1.5*	*1.3*	*0.94*	*0.77*	*0.58*	*0.41*
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
1	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. pipe	SB-675	...	N08367	Solution ann.
2	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. pipe	SB-675	...	N08367	Solution ann.
3	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. tube	SB-676	...	N08367	Solution ann.
4	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. tube	SB-676	...	N08367	Solution ann.
5	46Fe–24Ni–21Cr–6Mo–Cu–N	Plate, sheet, strip	SB-688	...	N08367	Solution ann.
6	46Fe–24Ni–21Cr–6Mo–Cu–N	Plate, sheet, strip	SB-688	...	N08367	Solution ann.
7	46Fe–24Ni–21Cr–6Mo–Cu–N	Smls. pipe & tube	SB-690	...	N08367	Solution ann.
8	46Fe–24Ni–21Cr–6Mo–Cu–N	Smls. pipe & tube	SB-690	...	N08367	Solution ann.
9	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. pipe	SB-804	...	N08367	Solution ann.
10	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. pipe	SB-804	...	N08367	Solution ann.
11	46Fe–24Ni–21Cr–6Mo–Cu–N	Castings	SA-351	CN-3MN	J94651	Solution ann.
12	25Ni–47Fe–21Cr–5Mo	Plate, sheet, strip	SB-599	...	N08700	Solution ann.
13	25Ni–47Fe–21Cr–5Mo	Plate, sheet, strip	SB-599	...	N08700	Solution ann.
14	25Ni–47Fe–21Cr–5Mo	Bar, wire	SB-672	...	N08700	Solution ann.
15	32Ni–45Fe–20Cr–Cb	Castings	SA-351	CT15C	...	As cast
16	33Ni–42Fe–21Cr	Smls. tube	SB-163	...	N08800	Annealed
17	33Ni–42Fe–21Cr	Smls. tube	SB-163	...	N08800	Annealed
18	33Ni–42Fe–21Cr	Smls. & wld. fittings	SB-366	...	N08800	Annealed
19	33Ni–42Fe–21Cr	Smls. pipe & tube	SB-407	...	N08800	Annealed
20	33Ni–42Fe–21Cr	Smls. pipe & tube	SB-407	...	N08800	Annealed
21	33Ni–42Fe–21Cr	Bar	SB-408	...	N08800	Annealed
22	33Ni–42Fe–21Cr	Bar	SB-408	...	N08800	Annealed
23	33Ni–42Fe–21Cr	Plate	SB-409	...	N08800	Annealed
24	33Ni–42Fe–21Cr	Plate	SB-409	...	N08800	Annealed
25	33Ni–42Fe–21Cr	Wld. pipe	SB-514	...	N08800	Annealed
26	33Ni–42Fe–21Cr	Wld. pipe	SB-514	...	N08800	Annealed
27	33Ni–42Fe–21Cr	Wld. tube	SB-515	...	N08800	Annealed
28	33Ni–42Fe–21Cr	Wld. tube	SB-515	...	N08800	Annealed
29	33Ni–42Fe–21Cr	Forgings	SB-564	...	N08800	Annealed
30	33Ni–42Fe–21Cr	Forgings	SB-564	...	N08800	Annealed
31	33Ni–42Fe–21Cr	Smls. tube	SB-163	...	N08810	Annealed
32	33Ni–42Fe–21Cr	Smls. tube	SB-163	...	N08810	Sol. treat./ann.
33	33Ni–42Fe–21Cr	Smls. pipe & tube	SB-407	...	N08810	Annealed
34	33Ni–42Fe–21Cr	Smls. pipe & tube	SB-407	...	N08810	Hot fin./ann.

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	≤ 3/16	45	100	45	NP	800	800	NFN-12	G14
2	≤ 3/16	45	100	45	NP	800	800	NFN-12	G5, G14
3	≤ 3/16	45	100	45	NP	800	800	NFN-12	G14
4	≤ 3/16	45	100	45	NP	800	800	NFN-12	G5, G14
5	≤ 3/16	45	100	45	NP	800	800	NFN-12	...
6	≤ 3/16	45	100	45	NP	800	800	NFN-12	G5
7	≤ 3/16	45	100	45	NP	800	800	NFN-12	...
8	≤ 3/16	45	100	45	NP	800	800	NFN-12	G5
9	≤ 3/16	45	100	45	NP	800	800	NFN-12	G14
10	≤ 3/16	45	100	45	NP	800	800	NFN-12	G5, G14
11	...	45	80	38	NP	800	800	NFN-12	...
12	...	45	80	35	NP	NP	650	NFN-8	...
13	...	45	80	35	NP	NP	650	NFN-8	G5
14	...	45	80	35	NP	NP	650	NFN-13	...
15	...	45	63	25	NP	NP	1600	...	G15, G29
16	...	45	75	30	NP	800	1500	NFN-8	G5, T14
17	...	45	75	30	NP	NP	1500	NFN-8	T15
18	...	45	75	30	NP	NP	1500	NFN-8	G5, T14, W12
19	...	45	75	30	1500	800	1500	NFN-8	G5, T14
20	...	45	75	30	1500	NP	1500	NFN-8	T15
21	...	45	75	30	1500	800	1500	NFN-8	G5, T14
22	...	45	75	30	1500	NP	1500	NFN-8	T15
23	...	45	75	30	1500	800	1500	NFN-8	G5, T14
24	...	45	75	30	1500	NP	1500	NFN-8	T15
25	...	45	75	30	NP	NP	1500	NFN-8	G14, T15
26	...	45	75	30	NP	NP	1500	NFN-8	G5, G14, T14
27	...	45	75	30	1500	NP	1500	NFN-8	G5, G14, T14
28	...	45	75	30	1500	NP	1500	NFN-8	G14, T15
29	...	45	75	30	1500	800	1500	NFN-8	G5, T14
30	...	45	75	30	1500	NP	1500	NFN-8	T15
31	...	45	65	25	NP	NP	1650	NFN-9	G29, T16
32	...	45	65	25	NP	800	1650	NFN-9	G5, G29, T15
33	...	45	65	25	1500	NP	1650	NFN-9	G29, T16
34	...	45	65	25	1500	800	1650	NFN-9	G5, G29, T15

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
1	24.3	...	22.2	...	20.2	...	18.7	...	17.4	...	16.5	16.1	15.8	15.5	15.3	...	...
2	24.3	...	24.3	...	23.0	...	22.0	...	21.3	...	20.8	20.7	20.5	20.4	20.2	...	...
3	24.3	...	22.2	...	20.2	...	18.7	...	17.4	...	16.5	16.1	15.8	15.5	15.3	...	...
4	24.3	...	24.3	...	23.0	...	22.0	...	21.3	...	20.8	20.7	20.5	20.4	20.2	...	...
5	28.6	...	26.2	...	23.8	...	21.9	...	20.5	...	19.4	19.0	18.6	18.3	18.0	...	...
6	28.6	...	28.6	...	27.0	...	25.8	...	25.0	...	24.5	24.3	24.1	24.0	23.8	...	...
7	28.6	...	26.2	...	23.8	...	21.9	...	20.5	...	19.4	19.0	18.6	18.3	18.0	...	...
8	28.6	...	28.6	...	27.0	...	25.8	...	25.0	...	24.5	24.3	24.1	24.0	23.8	...	...
9	24.3	...	22.2	...	20.2	...	18.7	...	17.4	...	16.5	16.1	15.8	15.5	15.3	...	...
10	24.3	...	24.3	...	23.0	...	22.0	...	21.3	...	20.8	20.7	20.5	20.4	20.2	...	...
11	22.9	...	21.4	...	18.8	...	16.9	...	15.7	...	14.9	14.7	14.5	14.4	14.2	...	...
12	22.9	...	21.0	...	19.0	...	17.7	...	17.1	...	16.5	15.8	...	...	...	...	...
13	22.9	...	22.9	...	22.6	...	22.0	...	21.5	...	21.4	21.4	...	...	...	...	...
14	22.9	...	21.0	...	19.0	...	17.7	...	17.1	...	16.5	15.8	...	...	...	...	...
15	16.7	...	15.7	...	15.3	...	14.9	...	14.6	...	14.2	13.9	13.7	13.5	13.3	13.1	12.9
16	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0
17	20.0	...	18.5	...	17.8	...	17.2	...	16.8	...	16.3	16.1	15.9	15.7	15.5	15.3	15.1
18	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0
19	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0
20	20.0	...	18.5	...	17.8	...	17.2	...	16.8	...	16.3	16.1	15.9	15.7	15.5	15.3	15.1
21	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0
22	20.0	...	18.5	...	17.8	...	17.2	...	16.8	...	16.3	16.1	15.9	15.7	15.5	15.3	15.1
23	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0
24	20.0	...	18.5	...	17.8	...	17.2	...	16.8	...	16.3	16.1	15.9	15.7	15.5	15.3	15.1
25	17.0	...	15.7	...	15.1	...	14.6	...	14.2	...	13.9	13.7	13.5	13.3	13.2	13.0	12.8
26	17.0	...	17.0	...	17.0	...	17.0	...	17.0	...	17.0	17.0	17.0	17.0	17.0	17.0	17.0
27	17.0	...	17.0	...	17.0	...	17.0	...	17.0	...	17.0	17.0	17.0	17.0	17.0	17.0	17.0
28	17.0	...	15.7	...	15.1	...	14.6	...	14.2	...	13.9	13.7	13.5	13.3	13.2	13.0	12.8
29	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0
30	20.0	...	18.5	...	17.8	...	17.2	...	16.8	...	16.3	16.1	15.9	15.7	15.5	15.3	15.1
31	16.7	...	15.4	...	14.4	...	13.6	...	12.9	...	12.2	11.9	11.6	11.4	11.1	10.9	10.7
32	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	16.1	15.7	15.3	15.0	14.7	14.5
33	16.7	...	15.4	...	14.4	...	13.6	...	12.9	...	12.2	11.9	11.6	11.4	11.1	10.9	10.7
34	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	16.1	15.7	15.3	15.0	14.7	14.5

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	12.7	11.5	10.1	8.9	7.8	6.7	5.7	4.8	4.0	3.3	2.7	2.2	1.8	1.4	...
16	20.0	19.9	*17.0*	*13.0*	*9.8*	*6.6*	*4.2*	*2.0*	*1.6*	*1.1*	*1.0*	*0.80*	...	...	...
17	14.9	14.7	14.5	*13.0*	*9.8*	*6.6*	*4.2*	*2.0*	*1.6*	*1.1*	*1.0*	*0.80*	...	...	...
18	20.0	19.9	*17.0*	*13.0*	*9.8*	*6.6*	*4.2*	*2.0*	*1.6*	*1.1*	*1.0*	*0.80*	...	...	...
19	20.0	19.9	*17.0*	*13.0*	*9.8*	*6.6*	*4.2*	*2.0*	*1.6*	*1.1*	*1.0*	*0.80*	...	...	...
20	14.9	14.7	14.5	*13.0*	*9.8*	*6.6*	*4.2*	*2.0*	*1.6*	*1.1*	*1.0*	*0.80*	...	...	...
21	20.0	19.9	*17.0*	*13.0*	*9.8*	*6.6*	*4.2*	*2.0*	*1.6*	*1.1*	*1.0*	*0.80*	...	...	...
22	14.9	14.7	14.5	*13.0*	*9.8*	*6.6*	*4.2*	*2.0*	*1.6*	*1.1*	*1.0*	*0.80*	...	...	...
23	20.0	19.9	*17.0*	*13.0*	*9.8*	*6.6*	*4.2*	*2.0*	*1.6*	*1.1*	*1.0*	*0.80*	...	...	...
24	14.9	14.7	14.5	*13.0*	*9.8*	*6.6*	*4.2*	*2.0*	*1.6*	*1.1*	*1.0*	*0.80*	...	...	...
25	12.7	12.5	12.3	*11.1*	*8.3*	*5.6*	*3.6*	*1.7*	*1.4*	*0.94*	*0.85*	*0.68*	...	...	...
26	17.0	16.9	*14.5*	*11.1*	*8.3*	*5.6*	*3.6*	*1.7*	*1.4*	*0.94*	*0.85*	*0.68*	...	...	...
27	17.0	16.9	*14.5*	*11.1*	*8.3*	*5.6*	*3.6*	*1.7*	*1.4*	*0.94*	*0.85*	*0.68*	...	...	...
28	12.7	12.5	12.3	*11.1*	*8.3*	*5.6*	*3.6*	*1.7*	*1.4*	*0.94*	*0.85*	*0.68*	...	...	...
29	20.0	19.9	*17.0*	*13.0*	*9.8*	*6.6*	*4.2*	*2.0*	*1.6*	*1.1*	*1.0*	*0.80*	...	...	...
30	14.9	14.7	14.5	*13.0*	*9.8*	*6.6*	*4.2*	*2.0*	*1.6*	*1.1*	*1.0*	*0.80*	...	...	...
31	10.5	10.4	10.2	10.0	*9.3*	*7.4*	*5.9*	*4.7*	*3.8*	*3.0*	*2.4*	*1.9*	*1.5*	*1.2*	*0.98*
32	14.2	14.0	13.8	*11.6*	*9.3*	*7.4*	*5.9*	*4.7*	*3.8*	*3.0*	*2.4*	*1.9*	*1.5*	*1.2*	*0.98*
33	10.5	10.4	10.2	10.0	*9.3*	*7.4*	*5.9*	*4.7*	*3.8*	*3.0*	*2.4*	*1.9*	*1.5*	*1.2*	*0.98*
34	14.2	14.0	13.8	*11.6*	*9.3*	*7.4*	*5.9*	*4.7*	*3.8*	*3.0*	*2.4*	*1.9*	*1.5*	*1.2*	*0.98*

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
1	33Ni–42Fe–21Cr	Bar	SB-408	...	N08810	Annealed
2	33Ni–42Fe–21Cr	Bar	SB-408	...	N08810	Sol. treat./ann.
3	33Ni–42Fe–21Cr	Plate	SB-409	...	N08810	Annealed
4	33Ni–42Fe–21Cr	Plate	SB-409	...	N08810	Sol. treat./ann.
5	33Ni–42Fe–21Cr	Wld. pipe	SB-514	...	N08810	Annealed
6	33Ni–42Fe–21Cr	Wld. pipe	SB-514	...	N08810	Annealed
7	33Ni–42Fe–21Cr	Wld. tube	SB-515	...	N08810	Annealed
8	33Ni–42Fe–21Cr	Wld. tube	SB-515	...	N08810	Annealed
9	33Ni–42Fe–21Cr	Forgings	SB-564	...	N08810	Annealed
10	33Ni–42Fe–21Cr	Forgings	SB-564	...	N08810	Sol. treat./ann.
11	33Ni–42Fe–21Cr	Smls. tube	SB-163	...	N08811	Annealed
12	33Ni–42Fe–21Cr	Smls. tube	SB-163	...	N08811	Annealed
13	33Ni–42Fe–21Cr	Smls. pipe & tube	SB-407	...	N08811	Annealed
14	33Ni–42Fe–21Cr	Smls. pipe & tube	SB-407	...	N08811	Annealed
15	33Ni–42Fe–21Cr	Bar	SB-408	...	N08811	Annealed
16	33Ni–42Fe–21Cr	Bar	SB-408	...	N08811	Annealed
17	33Ni–42Fe–21Cr	Plate	SB-409	...	N08811	Annealed
18	33Ni–42Fe–21Cr	Plate	SB-409	...	N08811	Annealed
19	33Ni–42Fe–21Cr	Wld. tube	SB-515	...	N08811	Annealed
20	33Ni–42Fe–21Cr	Wld. tube	SB-515	...	N08811	Annealed
21	33Ni–42Fe–21Cr	Forgings	SB-564	...	N08811	Annealed
22	33Ni–42Fe–21Cr	Forgings	SB-564	...	N08811	Annealed
23	42Ni–21.5Cr–3Mo–2.3Cu	Smls. tube	SB-163	...	N08825	Annealed
24	42Ni–21.5Cr–3Mo–2.3Cu	Smls. tube	SB-163	...	N08825	Annealed
25	42Ni–21.5Cr–3Mo–2.3Cu	Smls. & wld. fittings	SB-366	...	N08825	Annealed
26	42Ni–21.5Cr–3Mo–2.3Cu	Smls. pipe & tube	SB-423	...	N08825	Cold worked/ann.
27	42Ni–21.5Cr–3Mo–2.3Cu	Smls. pipe & tube	SB-423	...	N08825	Cold worked/ann.
28	42Ni–21.5Cr–3Mo–2.3Cu	Plate	SB-424	...	N08825	Annealed
29	42Ni–21.5Cr–3Mo–2.3Cu	Plate	SB-424	...	N08825	Annealed
30	42Ni–21.5Cr–3Mo–2.3Cu	Bar, rod	SB-425	...	N08825	Annealed
31	42Ni–21.5Cr–3Mo–2.3Cu	Bar, rod	SB-425	...	N08825	Annealed
32	42Ni–21.5Cr–3Mo–2.3Cu	Wld. tube	SB-704	...	N08825	Annealed
33	42Ni–21.5Cr–3Mo–2.3Cu	Wld. tube	SB-704	...	N08825	Annealed
34	42Ni–21.5Cr–3Mo–2.3Cu	Wld. pipe	SB-705	...	N08825	Annealed
35	42Ni–21.5Cr–3Mo–2.3Cu	Wld. pipe	SB-705	...	N08825	Annealed

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	...	45	65	25	1500	NP	1650	NFN-9	G29, T16
2	...	45	65	25	1500	800	1650	NFN-9	G5, G29, T15
3	...	45	65	25	1500	NP	1650	NFN-9	G29, T16
4	...	45	65	25	1500	800	1650	NFN-9	G5, G29, T15
5	...	45	65	25	NP	NP	1650	NFN-9	G14, G29, T16
6	...	45	65	25	NP	NP	1650	NFN-9	G5, G14, G29, T15
7	...	45	65	25	1500	NP	1650	NFN-9	G14, G29, T16
8	...	45	65	25	1500	NP	1650	NFN-9	G5, G14, G29, T15
9	...	45	65	25	1500	NP	1650	NFN-9	G29, T16
10	...	45	65	25	1500	800	1650	NFN-9	G5, G29, T15
11	...	45	65	25	1500	NP	1650	NFN-9	G29, T17
12	...	45	65	25	1500	NP	1650	NFN-9	G5, G29, T15
13	...	45	65	25	1500	NP	1650	NFN-9	G29, T17
14	...	45	65	25	1500	NP	1650	NFN-9	G5, G29, T15
15	...	45	65	25	1500	NP	1650	NFN-9	G29, T17
16	...	45	65	25	1500	NP	1650	NFN-9	G5, G29, T15
17	...	45	65	25	1500	NP	1650	NFN-9	G29, T17
18	...	45	65	25	1500	NP	1650	NFN-9	G5, G29, T15
19	...	45	65	25	1500	NP	1650	NFN-9	G14, G29, T17
20	...	45	65	25	1500	NP	1650	NFN-9	G5, G14, G29, T16
21	...	45	65	25	1500	NP	1650	NFN-9	G29, T17
22	...	45	65	25	1500	NP	1650	NFN-9	G5, G29, T15
23	...	45	85	35	NP	800 (Cl. 3 only)	1000	NFN-7	...
24	...	45	85	35	NP	800 (Cl. 3 only)	1000	NFN-7	G5
25	...	45	85	35	NP	NP	1000	NFN-7	G5, W12
26	...	45	85	35	1000	800 (Cl. 3 only)	1000	NFN-7	...
27	...	45	85	35	1000	800 (Cl. 3 only)	1000	NFN-7	G5
28	...	45	85	35	1000	800 (Cl. 3 only)	1000	NFN-7	...
29	...	45	85	35	1000	800 (Cl. 3 only)	1000	NFN-7	G5
30	...	45	85	35	1000	800 (Cl. 3 only)	1000	NFN-7	...
31	...	45	85	35	1000	800 (Cl. 3 only)	1000	NFN-7	G5
32	...	45	85	35	NP	800	1000	NFN-7	G14
33	...	45	85	35	NP	NP	1000	NFN-7	G5, G14
34	...	45	85	35	NP	NP	1000	NFN-7	G14
35	...	45	85	35	NP	NP	1000	NFN-7	G5, G14

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
1	16.7	...	15.4	...	14.4	...	13.6	...	12.9	...	12.2	11.9	11.6	11.4	11.1	10.9	10.7
2	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	16.1	15.7	15.3	15.0	14.7	14.5
3	16.7	...	15.4	...	14.4	...	13.6	...	12.9	...	12.2	11.9	11.6	11.4	11.1	10.9	10.7
4	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	16.1	15.7	15.3	15.0	14.7	14.5
5	14.2	...	13.1	...	12.3	...	11.6	...	10.9	...	10.4	10.1	9.9	9.7	9.5	9.3	9.1
6	14.2	...	14.2	...	14.2	...	14.2	...	14.2	...	14.0	13.7	13.3	13.0	12.8	12.5	12.3
7	14.2	...	13.1	...	12.3	...	11.6	...	10.9	...	10.4	10.1	9.9	9.7	9.5	9.3	9.1
8	14.2	...	14.2	...	14.2	...	14.2	...	14.2	...	14.0	13.7	13.3	13.0	12.8	12.5	12.3
9	16.7	...	15.4	...	14.4	...	13.6	...	12.9	...	12.2	11.9	11.6	11.4	11.1	10.9	10.7
10	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	16.1	15.7	15.3	15.0	14.7	14.5
11	16.7	...	15.4	...	14.4	...	13.6	...	12.9	...	12.2	11.9	11.6	11.4	11.1	10.9	10.7
12	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	16.1	15.7	15.3	15.0	14.7	14.5
13	16.7	...	15.4	...	14.4	...	13.6	...	12.9	...	12.2	11.9	11.6	11.4	11.1	10.9	10.7
14	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	16.1	15.7	15.3	15.0	14.7	14.5
15	16.7	...	15.4	...	14.4	...	13.6	...	12.9	...	12.2	11.9	11.6	11.4	11.1	10.9	10.7
16	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	16.1	15.7	15.3	15.0	14.7	14.5
17	16.7	...	15.4	...	14.4	...	13.6	...	12.9	...	12.2	11.9	11.6	11.4	11.1	10.9	10.7
18	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	16.1	15.7	15.3	15.0	14.7	14.5
19	14.2	...	13.1	...	12.3	...	11.6	...	10.9	...	10.4	10.1	9.9	9.7	9.5	9.3	9.1
20	14.2	...	14.2	...	14.2	...	14.2	...	14.2	...	14.0	13.7	13.3	13.0	12.8	12.5	12.3
21	16.7	...	15.4	...	14.4	...	13.6	...	12.9	...	12.2	11.9	11.6	11.4	11.1	10.9	10.7
22	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	16.1	15.7	15.3	15.0	14.7	14.5
23	23.3	...	21.4	...	20.3	...	19.4	...	18.5	...	17.8	17.5	17.3	17.2	17.0	17.0	16.9
24	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	23.3	23.3	23.3	23.2	23.0	22.9	22.8
25	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	23.3	23.3	23.3	23.2	23.0	22.9	22.8
26	23.3	...	21.4	...	20.3	...	19.4	...	18.5	...	17.8	17.5	17.3	17.2	17.0	17.0	16.9
27	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	23.3	23.3	23.3	23.2	23.0	22.9	22.8
28	23.3	...	21.4	...	20.3	...	19.4	...	18.5	...	17.8	17.5	17.3	17.2	17.0	17.0	16.9
29	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	23.3	23.3	23.3	23.2	23.0	22.9	22.8
30	23.3	...	21.4	...	20.3	...	19.4	...	18.5	...	17.8	17.5	17.3	17.2	17.0	17.0	16.9
31	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	23.3	23.3	23.3	23.2	23.0	22.9	22.8
32	19.8	...	18.2	...	17.3	...	16.5	...	15.8	...	15.2	14.9	14.7	14.6	14.5	14.4	14.3
33	19.8	...	19.8	...	19.8	...	19.8	...	19.8	...	19.8	19.8	19.8	19.7	19.6	19.5	19.4
34	19.8	...	18.2	...	17.3	...	16.5	...	15.8	...	15.2	14.9	14.7	14.6	14.5	14.4	14.3
35	19.8	...	19.8	...	19.8	...	19.8	...	19.8	...	19.8	19.8	19.8	19.7	19.6	19.5	19.4

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	10.5	10.4	10.2	10.0	*9.3*	*7.4*	*5.9*	*4.7*	*3.8*	*3.0*	*2.4*	*1.9*	*1.5*	*1.2*	*0.98*
2	14.2	14.0	13.8	*11.6*	*9.3*	*7.4*	*5.9*	*4.7*	*3.8*	*3.0*	*2.4*	*1.9*	*1.5*	*1.2*	*0.98*
3	10.5	10.4	10.2	10.0	*9.3*	*7.4*	*5.9*	*4.7*	*3.8*	*3.0*	*2.4*	*1.9*	*1.5*	*1.2*	*0.98*
4	14.2	14.0	13.8	*11.6*	*9.3*	*7.4*	*5.9*	*4.7*	*3.8*	*3.0*	*2.4*	*1.9*	*1.5*	*1.2*	*0.98*
5	9.0	8.8	8.7	8.5	*7.9*	*6.3*	*5.0*	*4.0*	*3.2*	*2.6*	*2.0*	*1.6*	*1.3*	*1.0*	*0.83*
6	12.1	11.9	11.7	*9.9*	*7.9*	*6.3*	*5.0*	*4.0*	*3.2*	*2.6*	*2.0*	*1.6*	*1.3*	*1.0*	*0.83*
7	9.0	8.8	8.7	8.5	*7.9*	*6.3*	*5.0*	*4.0*	*3.2*	*2.6*	*2.0*	*1.6*	*1.3*	*1.0*	*0.83*
8	12.1	11.9	11.7	*9.9*	*7.9*	*6.3*	*5.0*	*4.0*	*3.2*	*2.6*	*2.0*	*1.6*	*1.3*	*1.0*	*0.83*
9	10.5	10.4	10.2	10.0	*9.3*	*7.4*	*5.9*	*4.7*	*3.8*	*3.0*	*2.4*	*1.9*	*1.5*	*1.2*	*0.98*
10	14.2	14.0	13.8	*11.6*	*9.3*	*7.4*	*5.9*	*4.7*	*3.8*	*3.0*	*2.4*	*1.9*	*1.5*	*1.2*	*0.98*
11	10.5	10.4	10.2	10.0	9.8	*8.3*	*6.7*	*5.4*	*4.3*	*3.4*	*2.7*	*2.2*	*1.7*	*1.4*	*1.1*
12	14.2	14.0	13.8	*12.9*	*10.4*	*8.3*	*6.7*	*5.4*	*4.3*	*3.4*	*2.7*	*2.2*	*1.7*	*1.4*	*1.1*
13	10.5	10.4	10.2	10.0	9.8	*8.3*	*6.7*	*5.4*	*4.3*	*3.4*	*2.7*	*2.2*	*1.7*	*1.4*	*1.1*
14	14.2	14.0	13.8	*12.9*	*10.4*	*8.3*	*6.7*	*5.4*	*4.3*	*3.4*	*2.7*	*2.2*	*1.7*	*1.4*	*1.1*
15	10.5	10.4	10.2	10.0	9.8	*8.3*	*6.7*	*5.4*	*4.3*	*3.4*	*2.7*	*2.2*	*1.7*	*1.4*	*1.1*
16	14.2	14.0	13.8	*12.9*	*10.4*	*8.3*	*6.7*	*5.4*	*4.3*	*3.4*	*2.7*	*2.2*	*1.7*	*1.4*	*1.1*
17	10.5	10.4	10.2	10.0	9.8	*8.3*	*6.7*	*5.4*	*4.3*	*3.4*	*2.7*	*2.2*	*1.7*	*1.4*	*1.1*
18	14.2	14.0	13.8	*12.9*	*10.4*	*8.3*	*6.7*	*5.4*	*4.3*	*3.4*	*2.7*	*2.2*	*1.7*	*1.4*	*1.1*
19	9.0	8.8	8.7	8.5	8.3	*7.1*	*5.7*	*4.6*	*3.7*	*2.9*	*2.3*	*1.9*	*1.4*	*1.2*	*0.9*
20	12.1	11.9	11.7	11.5	*8.8*	*7.1*	*5.7*	*4.6*	*3.7*	*2.9*	*2.3*	*1.9*	*1.4*	*1.2*	*0.9*
21	10.5	10.4	10.2	10.0	9.8	*8.3*	*6.7*	*5.4*	*4.3*	*3.4*	*2.7*	*2.2*	*1.7*	*1.4*	*1.1*
22	14.2	14.0	13.8	*12.9*	*10.4*	*8.3*	*6.7*	*5.4*	*4.3*	*3.4*	*2.7*	*2.2*	*1.7*	*1.4*	*1.1*
23	16.8	16.5	...	...	...	...	...	...	...	...	...	...	...	...	...
24	22.6	22.3	...	...	...	...	...	...	...	...	...	...	...	...	...
25	22.6	22.3	...	...	...	...	...	...	...	...	...	...	...	...	...
26	16.8	16.5	...	...	...	...	...	...	...	...	...	...	...	...	...
27	22.6	22.3	...	...	...	...	...	...	...	...	...	...	...	...	...
28	16.8	16.5	...	...	...	...	...	...	...	...	...	...	...	...	...
29	22.6	22.3	...	...	...	...	...	...	...	...	...	...	...	...	...
30	16.8	16.5	...	...	...	...	...	...	...	...	...	...	...	...	...
31	22.6	22.3	...	...	...	...	...	...	...	...	...	...	...	...	...
32	14.2	14.0	...	...	...	...	...	...	...	...	...	...	...	...	...
33	19.2	18.9	...	...	...	...	...	...	...	...	...	...	...	...	...
34	14.2	14.0	...	...	...	...	...	...	...	...	...	...	...	...	...
35	19.2	18.9	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
1	44Fe–25Ni–21Cr–Mo	Plate, sheet, strip	SB-625	...	N08904	Annealed
2	44Fe–25Ni–21Cr–Mo	Bar, wire	SB-649	...	N08904	Annealed
3	44Fe–25Ni–21Cr–Mo	Wld. pipe	SB-673	...	N08904	Annealed
4	44Fe–25Ni–21Cr–Mo	Wld. tube	SB-674	...	N08904	Annealed
5	44Fe–25Ni–21Cr–Mo	Smls. pipe & tube	SB-677	...	N08904	Annealed
6	25Ni–20Cr–6Mo–Cu–N	Plate, sheet, strip	SB-625	...	N08925	Annealed
7	25Ni–20Cr–6Mo–Cu–N	Plate, sheet, strip	SB-625	...	N08925	Annealed
8	25Ni–20Cr–6Mo–Cu–N	Bar, wire	SB-649	...	N08925	Annealed
9	25Ni–20Cr–6Mo–Cu–N	Bar, wire	SB-649	...	N08925	Annealed
10	25Ni–20Cr–6Mo–Cu–N	Wld. pipe	SB-673	...	N08925	Annealed
11	25Ni–20Cr–6Mo–Cu–N	Wld. pipe	SB-673	...	N08925	Annealed
12	25Ni–20Cr–6Mo–Cu–N	Wld. tube	SB-674	...	N08925	Annealed
13	25Ni–20Cr–6Mo–Cu–N	Wld. tube	SB-674	...	N08925	Annealed
14	25Ni–20Cr–6Mo–Cu–N	Smls. pipe & tube	SB-677	...	N08925	Annealed
15	25Ni–20Cr–6Mo–Cu–N	Smls. pipe & tube	SB-677	...	N08925	Annealed
16	62Ni–28Mo–5Fe	Plate, sheet, strip	SB-333	...	N10001	Annealed
17	62Ni–28Mo–5Fe	Plate, strip	SB-333	...	N10001	Annealed
18	62Ni–28Mo–5Fe	Smls. & wld. fittings	SB-366	...	N10001	Annealed
19	62Ni–28Mo–5Fe	Wld. pipe	SB-619	...	N10001	Solution ann.
20	62Ni–28Mo–5Fe	Wld. pipe	SB-619	...	N10001	Solution ann.
21	62Ni–28Mo–5Fe	Smls. pipe & tube	SB-622	...	N10001	Solution ann.
22	62Ni–28Mo–5Fe	Smls. pipe & tube	SB-622	...	N10001	Solution ann.
23	62Ni–28Mo–5Fe	Wld. tube	SB-626	...	N10001	Solution ann.
24	62Ni–28Mo–5Fe	Wld. tube	SB-626	...	N10001	Solution ann.
25	62Ni–28Mo–5Fe	Rod	SB-335	...	N10001	Annealed
26	62Ni–28Mo–5Fe	Rod	SB-335	...	N10001	Annealed
27	62Ni–28Mo–5Fe	Rod	SB-335	...	N10001	Annealed
28	62Ni–28Mo–5Fe	Rod	SB-335	...	N10001	Annealed
29	62Ni–28Mo–5Fe	Plate, strip	SB-333	...	N10001	Annealed
30	62Ni–28Mo–5Fe	Plate, strip	SB-333	...	N10001	Annealed
31	70Ni–16Mo–7Cr–5Fe	Smls. & wld. fittings	SB-366	...	N10003	Annealed
32	70Ni–16Mo–7Cr–5Fe	Plate, sheet, strip	SB-434	...	N10003	Annealed
33	70Ni–16Mo–7Cr–5Fe	Rod	SB-573	...	N10003	Annealed
34	54Ni–16Mo–15Cr	Smls. & wld. fittings	SB-366	...	N10276	Solution ann.
35	54Ni–16Mo–15Cr	Forgings	SB-564	...	N10276	Solution ann.
36	54Ni–16Mo–15Cr	Forgings	SB-564	...	N10276	Solution ann.
37	54Ni–16Mo–15Cr	Rod	SB-574	...	N10276	Solution ann.
38	54Ni–16Mo–15Cr	Rod	SB-574	...	N10276	Solution ann.

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes
1	...	45	71	31	NP	NP	700	NFN-9	...
2	...	45	71	31	NP	NP	700	NFN-9	...
3	...	45	71	31	NP	NP	700	NFN-9	G14
4	...	45	71	31	NP	NP	700	NFN-9	G14
5	...	45	71	31	NP	700	700	NFN-9	...
6	...	45	87	43	NP	NP	800	NFN-9	...
7	...	45	87	43	NP	NP	800	NFN-9	G5
8	...	45	87	43	NP	NP	800	NFN-9	...
9	...	45	87	43	NP	NP	800	NFN-9	G5
10	...	45	87	43	NP	NP	800	NFN-9	G14
11	...	45	87	43	NP	NP	800	NFN-9	G5, G14
12	...	45	87	43	NP	NP	800	NFN-9	G14
13	...	45	87	43	NP	NP	800	NFN-9	G5, G14
14	...	45	87	43	NP	NP	800	NFN-9	...
15	...	45	87	43	NP	NP	800	NFN-9	G5
16	...	44	100	45	NP	800 (Cl. 3 only)	800	NFN-5	...
17	...	44	100	45	NP	800 (Cl. 3 only)	800	NFN-5	G5
18	...	44	100	45	NP	NP	800	NFN-5	G5, W12
19	...	44	100	45	NP	NP	800	NFN-5	G14
20	...	44	100	45	NP	NP	800	NFN-5	G5, G14
21	...	44	100	45	NP	NP	800	NFN-5	...
22	...	44	100	45	NP	NP	800	NFN-5	G5
23	...	44	100	45	NP	NP	800	NFN-5	G14
24	...	44	100	45	NP	NP	800	NFN-5	G5, G14
25	...	44	100	46	NP	800 (Cl. 3 only)	800	NFN-5	G13
26	...	44	100	46	NP	800 (Cl. 3 only)	800	NFN-5	G5, G13
27	...	44	115	46	NP	800 (Cl. 3 only)	800	NFN-5	G13
28	...	44	115	46	NP	800 (Cl. 3 only)	800	NFN-5	G5, G13
29	...	44	115	50	NP	800 (Cl. 3 only)	800	NFN-5	...
30	...	44	115	50	NP	800 (Cl. 3 only)	800	NFN-5	G5
31	...	44	100	40	NP	NP	1300	NFN-6	T15, W12
32	...	44	100	40	NP	NP	1300	NFN-6	T15
33	...	44	100	40	NP	NP	1300	NFN-6	T15
34	...	44	100	41	NP	NP	1250	NFN-10	G5, T14, W12
35	...	44	100	41	NP	NP	1250	NFN-10	T15
36	...	44	100	41	NP	NP	1250	NFN-10	G5, T14
37	...	44	100	41	NP	800 (Cl. 3 only)	1250	NFN-10	T15
38	...	44	100	41	NP	800	1250	NFN-10	G5, T14

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
1	20.3	...	16.7	...	15.1	...	13.8	...	12.7	...	11.9	11.6	11.4	...	...	...	...
2	20.3	...	16.7	...	15.1	...	13.8	...	12.7	...	11.9	11.6	11.4	...	...	...	...
3	17.2	...	14.2	...	12.9	...	11.8	...	10.8	...	10.1	9.9	9.7	...	...	...	...
4	17.2	...	14.2	...	12.9	...	11.8	...	10.8	...	10.1	9.9	9.7	...	...	...	...
5	20.3	...	16.7	...	15.1	...	13.8	...	12.7	...	11.9	11.6	11.4	...	...	...	...
6	24.9	...	23.2	...	21.3	...	19.8	...	18.3	...	17.3	17.0	16.9	16.9	16.9	...	...
7	24.9	...	24.9	...	23.9	...	23.0	...	22.1	...	21.4	21.1	20.8	20.4	20.1	...	...
8	24.9	...	23.2	...	21.3	...	19.8	...	18.3	...	17.3	17.0	16.9	16.9	16.9	...	...
9	24.9	...	24.9	...	23.9	...	23.0	...	22.1	...	21.4	21.1	20.8	20.4	20.1	...	...
10	21.1	...	19.7	...	18.1	...	16.8	...	15.6	...	14.7	14.4	14.4	14.4	14.4	...	...
11	21.1	...	21.1	...	20.4	...	19.5	...	18.8	...	18.2	17.9	17.7	17.4	17.0	...	...
12	21.1	...	19.7	...	18.1	...	16.8	...	15.6	...	14.7	14.4	14.4	14.4	14.4	...	...
13	21.1	...	21.1	...	20.4	...	19.5	...	18.8	...	18.2	17.9	17.7	17.4	17.0	...	...
14	24.9	...	23.2	...	21.3	...	19.8	...	18.3	...	17.3	17.0	16.9	16.9	16.9	...	...
15	24.9	...	24.9	...	23.9	...	23.0	...	22.1	...	21.4	21.1	20.8	20.4	20.1	...	...
16	28.6	...	27.2	...	25.7	...	24.6	...	23.7	...	23.0	22.8	22.5	22.3	22.1	...	...
17	28.6	...	28.6	...	28.6	...	28.1	...	27.8	...	27.7	27.5	27.4	27.3	27.2	...	...
18	28.6	...	28.6	...	28.6	...	28.1	...	27.8	...	27.7	...	27.4	...	27.2	...	...
19	24.3	...	23.1	...	21.8	...	20.9	...	20.2	...	19.6	19.3	19.1	18.9	18.8	...	...
20	24.3	...	24.3	...	24.3	...	23.9	...	23.7	...	23.5	23.4	23.3	23.2	23.1	...	...
21	28.6	...	27.2	...	25.7	...	24.6	...	23.7	...	23.0	22.8	22.5	22.3	22.1	...	...
22	28.6	...	28.6	...	28.6	...	28.1	...	27.8	...	27.7	27.5	27.4	27.3	27.2	...	...
23	24.3	...	23.1	...	21.8	...	20.9	...	20.2	...	19.6	19.3	19.1	18.9	18.8	...	...
24	24.3	...	24.3	...	24.3	...	23.9	...	23.7	...	23.5	23.4	23.3	23.2	23.1	...	...
25	28.6	...	27.8	...	26.3	...	25.1	...	24.3	...	23.6	23.3	23.0	22.8	22.6	...	...
26	28.6	...	28.6	...	28.6	...	28.1	...	27.8	...	27.7	27.5	27.4	27.3	27.2	...	...
27	30.7	...	27.8	...	26.3	...	25.1	...	24.3	...	23.6	23.3	23.0	22.8	22.6	...	...
28	30.7	...	30.7	...	30.7	...	30.7	...	30.7	...	30.7	30.7	30.7	30.7	30.5	...	...
29	32.9	...	30.2	...	28.6	...	27.3	...	26.4	...	25.6	25.3	25.0	24.8	24.6	...	...
30	32.9	...	32.9	...	32.9	...	32.3	...	32.0	...	31.8	31.7	31.5	31.4	31.3	...	...
31	26.7	...	24.6	...	22.7	...	21.1	...	20.0	...	19.3	...	18.9	...	18.4	...	17.5
32	26.7	...	24.6	...	22.7	...	21.1	...	20.0	...	19.3	19.1	18.9	18.7	18.4	18.1	17.5
33	26.7	...	24.6	...	22.7	...	21.1	...	20.0	...	19.3	19.1	18.9	18.7	18.4	18.1	17.5
34	27.3	...	27.3	...	27.3	...	27.3	...	26.9	...	25.2	24.6	24.0	23.5	23.1	22.8	22.6
35	27.3	...	24.9	...	23.0	...	21.3	...	19.9	...	18.7	18.2	17.8	17.4	17.1	16.9	16.7
36	27.3	...	27.3	...	27.3	...	27.3	...	26.9	...	25.2	24.6	24.0	23.5	23.1	22.8	22.6
37	27.3	...	24.9	...	23.0	...	21.3	...	19.9	...	18.7	18.2	17.8	17.4	17.1	16.9	16.7
38	27.3	...	27.3	...	27.3	...	27.3	...	26.9	...	25.2	24.6	24.0	23.5	23.1	22.8	22.6

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	16.0	...	*12.4*	...	*6.0*	...	*3.5*	...	...	...	...	...	...	...
32	16.8	16.0	14.9	*12.4*	*9.3*	*6.0*	*4.8*	*3.5*	...	...	...	...	...	...	...
33	16.8	16.0	14.9	*12.4*	*9.3*	*6.0*	*4.8*	*3.5*	...	...	...	...	...	...	...
34	22.4	22.3	*18.5*	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...
35	16.6	16.5	16.5	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...
36	22.4	22.3	*18.5*	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...
37	16.6	16.5	16.5	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...
38	22.4	22.3	*18.5*	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	1	54Ni–16Mo–15Cr	Plate, sheet, strip	SB-575	...	N10276	Solution ann.
	2	54Ni–16Mo–15Cr	Plate, sheet, strip	SB-575	...	N10276	Solution ann.
	3	54Ni–16Mo–15Cr	Wld. pipe	SB-619	...	N10276	Solution ann.
	4	54Ni–16Mo–15Cr	Wld. pipe	SB-619	...	N10276	Solution ann.
	5	54Ni–16Mo–15Cr	Wld. pipe	SB-619	...	N10276	Solution ann.
	6	54Ni–16Mo–15Cr	Wld. pipe	SB-619	...	N10276	Solution ann.
	7	54Ni–16Mo–15Cr	Smls. pipe & tube	SB-622	...	N10276	Solution ann.
	8	54Ni–16Mo–15Cr	Smls. pipe & tube	SB-622	...	N10276	Solution ann.
	9	54Ni–16Mo–15Cr	Wld. tube	SB-626	...	N10276	Solution ann.
	10	54Ni–16Mo–15Cr	Wld. tube	SB-626	...	N10276	Solution ann.
	11	54Ni–16Mo–15Cr	Wld. tube	SB-626	...	N10276	Solution ann.
	12	54Ni–16Mo–15Cr	Wld. tube	SB-626	...	N10276	Solution ann.
01	13	Ni–28Mo–3Fe–1.3Cr–0.25Al	Plate, sheet, strip	SB-333	...	N10629	Solution ann.
01	14	Ni–28Mo–3Fe–1.3Cr–0.25Al	Plate, sheet, strip	SB-333	...	N10629	Solution ann.
01	15	Ni–28Mo–3Fe–1.3Cr–0.25Al	Rod	SB-335	...	N10629	Solution ann.
01	16	Ni–28Mo–3Fe–1.3Cr–0.25Al	Rod	SB-335	...	N10629	Solution ann.
01	17	Ni–28Mo–3Fe–1.3Cr–0.25Al	Smls. & wld. fittings	SB-366	...	N10629	Solution ann.
01	18	Ni–28Mo–3Fe–1.3Cr–0.25Al	Forgings	SB-564	...	N10629	Solution ann.
01	19	Ni–28Mo–3Fe–1.3Cr–0.25Al	Forgings	SB-564	...	N10629	Solution ann.
01	20	Ni–28Mo–3Fe–1.3Cr–0.25Al	Wld. pipe	SB-619	...	N10629	Solution ann.
01	21	Ni–28Mo–3Fe–1.3Cr–0.25Al	Wld. pipe	SB-619	...	N10629	Solution ann.
01	22	Ni–28Mo–3Fe–1.3Cr–0.25Al	Smls. pipe & tube	SB-622	...	N10629	Solution ann.
01	23	Ni–28Mo–3Fe–1.3Cr–0.25Al	Smls. pipe & tube	SB-622	...	N10629	Solution ann.
01	24	Ni–28Mo–3Fe–1.3Cr–0.25Al	Wld. tube	SB-626	...	N10629	Solution ann.
01	25	Ni–28Mo–3Fe–1.3Cr–0.25Al	Wld. tube	SB-626	...	N10629	Solution ann.
01	26	65Ni–28Mo–2Fe	Smls. & wld. fittings	SB-366	...	N10665	Annealed
	27	65Ni–28Mo–2Fe	Wld. pipe	SB-619	...	N10665	Annealed
	28	65Ni–28Mo–2Fe	Wld. pipe	SB-619	...	N10665	Annealed
	29	65Ni–28Mo–2Fe	Wld. tube	SB-626	...	N10665	Annealed
	30	65Ni–28Mo–2Fe	Wld. tube	SB-626	...	N10665	Annealed
	31	65Ni–28Mo–2Fe	Plate, strip	SB-333	...	N10665	Solution ann.
	32	65Ni–28Mo–2Fe	Plate, strip	SB-333	...	N10665	Solution ann.
	33	65Ni–28Mo–2Fe	Rod	SB-335	...	N10665	Solution ann.
	34	65Ni–28Mo–2Fe	Rod	SB-335	...	N10665	Solution ann.
	35	65Ni–28Mo–2Fe	Wld. pipe	SB-619	...	N10665	Solution ann.
	36	65Ni–28Mo–2Fe	Wld. pipe	SB-619	...	N10665	Solution ann.
	37	65Ni–28Mo–2Fe	Smls. pipe & tube	SB-622	...	N10665	Solution ann.
	38	65Ni–28Mo–2Fe	Smls. pipe & tube	SB-622	...	N10665	Solution ann.
	39	65Ni–28Mo–2Fe	Wld. tube	SB-626	...	N10665	Solution ann.
	40	65Ni–28Mo–2Fe	Wld. tube	SB-626	...	N10665	Solution ann.

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	...	44	100	41	NP	800	1250	NFN-10	G5, T14	
2	...	44	100	41	NP	800 (Cl. 3 only)	1250	NFN-10	T15	
3	...	44	100	41	NP	800 (Cl. 3 only)	NP	NFN-10	W5	
4	...	44	100	41	NP	800 (Cl. 3 only)	NP	NFN-10	G5, W5	
5	...	44	100	41	NP	800	1250	NFN-10	G5, G14, T14, W6	
6	...	44	100	41	NP	NP	1250	NFN-10	G14, T15	
7	...	44	100	41	NP	800	1250	NFN-10	G5, T14	
8	...	44	100	41	NP	800 (Cl. 3 only)	1250	NFN-10	T15	
9	...	44	100	41	NP	800 (Cl. 3 only)	NP	NFN-10	W5	
10	...	44	100	41	NP	800 (Cl. 3 only)	NP	NFN-10	G5, W5	
11	...	44	100	41	NP	800	1250	NFN-10	G5, G14, T14, W6	
12	...	44	100	41	NP	NP	1250	NFN-10	G14, T15	
13	...	44	110	51	NP	NP	800	NFN-16	G5	**01**
14	...	44	110	51	NP	NP	800	NFN-16	...	**01**
15	...	44	110	51	NP	NP	800	NFN-16	G5	**01**
16	...	44	110	51	NP	NP	800	NFN-16	...	**01**
17	...	44	110	51	NP	NP	800	NFN-16	G5, W12	**01**
18	...	44	110	51	NP	NP	800	NFN-16	G5	**01**
19	...	44	110	51	NP	NP	800	NFN-16	...	**01**
20	...	44	110	51	NP	NP	800	NFN-16	G5, G14	**01**
21	...	44	110	51	NP	NP	800	NFN-16	G14	**01**
22	...	44	110	51	NP	NP	800	NFN-16	G5	**01**
23	...	44	110	51	NP	NP	800	NFN-16	...	**01**
24	...	44	110	51	NP	NP	800	NFN-16	G5, G14	**01**
25	...	44	110	51	NP	NP	800	NFN-16	G14	**01**
26	...	44	110	51	NP	NP	800	NFN-16	G5, W12	**01**
27	...	44	110	51	NP	800 (Cl. 3 only)	NP	NFN-16	G5, W5	
28	...	44	110	51	NP	800 (Cl. 3 only)	NP	NFN-16	W5	
29	...	44	110	51	NP	800 (Cl. 3 only)	NP	NFN-16	G5, W5	
30	...	44	110	51	NP	800 (Cl. 3 only)	NP	NFN-16	W5	
31	...	44	110	51	NP	800 (Cl. 3 only)	800	NFN-16	...	
32	...	44	110	51	NP	800 (Cl. 3 only)	800	NFN-16	G5	
33	...	44	110	51	NP	800 (Cl. 3 only)	800	NFN-16	G13	
34	...	44	110	51	NP	800 (Cl. 3 only)	800	NFN-16	G5, G13	
35	...	44	110	51	NP	NP	800	NFN-16	G14	
36	...	44	110	51	NP	NP	800	NFN-16	G5, G14	
37	...	44	110	51	NP	800 (Cl. 3 only)	800	NFN-16	...	
38	...	44	110	51	NP	800 (Cl. 3 only)	800	NFN-16	G5	
39	...	44	110	51	NP	NP	800	NFN-16	G5, G14	
40	...	44	110	51	NP	NP	800	NFN-16	G14	

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
		–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
	1	27.3	...	27.3	...	27.3	...	27.3	...	26.9	...	25.2	24.6	24.0	23.5	23.1	22.8	22.6
	2	27.3	...	24.9	...	23.0	...	21.3	...	19.9	...	18.7	18.2	17.8	17.4	17.1	16.9	16.7
	3	27.3	...	24.9	...	23.0	...	21.3	...	19.9	...	18.7	18.2	17.8	17.4	17.1	...	...
	4	27.3	...	27.3	...	27.3	...	27.3	...	26.9	...	25.2	24.6	24.0	23.5	23.1	...	...
	5	23.2	...	23.2	...	23.2	...	23.2	...	22.8	...	21.5	20.9	20.4	20.0	19.6	19.4	19.2
	6	23.2	...	21.1	...	19.6	...	18.1	...	16.9	...	15.9	15.5	15.1	14.8	14.5	14.3	14.2
	7	27.3	...	27.3	...	27.3	...	27.3	...	26.9	...	25.2	24.6	24.0	23.5	23.1	22.8	22.6
	8	27.3	...	24.9	...	23.0	...	21.3	...	19.9	...	18.7	18.2	17.8	17.4	17.1	16.9	16.7
	9	27.3	...	24.9	...	23.0	...	21.3	...	19.9	...	18.7	18.2	17.8	17.4	17.1	...	...
	10	27.3	...	27.3	...	27.3	...	27.3	...	26.9	...	25.2	24.6	24.0	23.5	23.1	...	...
	11	23.2	...	23.2	...	23.2	...	23.2	...	22.8	...	21.5	20.9	20.4	20.0	19.6	19.4	19.2
	12	23.2	...	21.1	...	19.6	...	18.1	...	16.9	...	15.9	15.5	15.1	14.8	14.5	14.3	14.2
01	13	31.4	...	31.4	...	31.4	...	31.4	...	31.1	...	30.6	30.4	30.2	30.1	29.9	...	...
01	14	31.4	...	31.4	...	29.6	...	28.1	...	27.0	...	26.1	25.8	25.5	25.3	25.1	...	...
01	15	31.4	...	31.4	...	31.4	...	31.4	...	31.1	...	30.6	30.4	30.2	30.1	29.9	...	...
01	16	31.4	...	31.4	...	29.6	...	28.1	...	27.0	...	26.1	25.8	25.5	25.3	25.1	...	...
01	17	31.4	...	31.4	...	31.4	...	31.4	...	31.1	...	30.6	30.4	30.2	30.1	29.9	...	...
01	18	31.4	...	31.4	...	31.4	...	31.4	...	31.1	...	30.6	30.4	30.2	30.1	29.9	...	...
01	19	31.4	...	31.4	...	29.6	...	28.1	...	27.0	...	26.1	25.8	25.5	25.3	25.1	...	...
01	20	26.7	...	26.7	...	26.7	...	26.7	...	26.4	...	26.0	25.8	25.7	25.6	25.4	...	...
01	21	26.7	...	26.7	...	25.2	...	23.9	...	23.0	...	22.2	21.9	21.7	21.5	21.3	...	...
01	22	31.4	...	31.4	...	31.4	...	31.4	...	31.1	...	30.6	30.4	30.2	30.1	29.9	...	...
01	23	31.4	...	31.4	...	29.6	...	28.1	...	27.0	...	26.1	25.8	25.5	25.3	25.1	...	...
01	24	26.7	...	26.7	...	26.7	...	26.7	...	26.4	...	26.0	25.8	25.7	25.6	25.4	...	...
01	25	26.7	...	26.7	...	25.2	...	23.9	...	23.0	...	22.2	21.9	21.7	21.5	21.3	...	...
01	26	31.4	...	31.4	...	31.4	...	31.4	...	31.4	...	31.2	31.1	30.9	30.7	30.6	...	...
	27	31.4	...	31.4	...	31.4	...	31.4	...	31.4	...	31.2	31.1	30.9	30.7	30.6	...	...
	28	31.4	...	31.4	...	30.2	...	28.9	...	27.9	...	27.2	26.9	26.6	26.2	25.8	...	...
	29	31.4	...	31.4	...	31.4	...	31.4	...	31.4	...	31.2	31.1	30.9	30.7	30.6	...	...
	30	31.4	...	31.4	...	30.2	...	28.9	...	27.9	...	27.2	26.9	26.6	26.2	25.8	...	...
	31	31.4	...	31.4	...	30.2	...	28.9	...	27.9	...	27.2	26.9	26.6	26.2	25.8	...	...
	32	31.4	...	31.4	...	31.4	...	31.4	...	31.4	...	31.2	31.1	30.9	30.7	30.6	...	...
	33	31.4	...	31.4	...	30.2	...	28.9	...	27.9	...	27.2	26.9	26.6	26.2	25.8	...	...
	34	31.4	...	31.4	...	31.4	...	31.4	...	31.4	...	31.2	31.1	30.9	30.7	30.6	...	...
	35	26.7	...	26.7	...	25.7	...	24.6	...	23.7	...	23.1	22.9	22.6	22.3	21.9	...	...
	36	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.5	26.4	26.3	26.1	26.0	...	...
	37	31.4	...	31.4	...	30.2	...	28.9	...	27.9	...	27.2	26.9	26.6	26.2	25.8	...	...
	38	31.4	...	31.4	...	31.4	...	31.4	...	31.4	...	31.2	31.1	30.9	30.7	30.6	...	...
	39	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.5	26.4	26.3	26.1	26.0	...	...
	40	26.7	...	26.7	...	25.7	...	24.6	...	23.7	...	23.1	22.9	22.6	22.3	21.9	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	22.4	22.3	*18.5*	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...	
2	16.6	16.5	16.5	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	19.0	19.0	*15.7*	*12.8*	*10.4*	*8.3*	*6.6*	...	...	...	...	...	...	...	...	
6	14.1	14.0	14.0	*12.8*	*10.4*	*8.3*	*6.6*	...	...	...	...	...	...	...	...	
7	22.4	22.3	*18.5*	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...	
8	16.6	16.5	16.5	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	19.0	19.0	*15.7*	*12.8*	*10.4*	*8.3*	*6.6*	...	...	...	...	...	...	...	...	
12	14.1	14.0	14.0	*12.8*	*10.4*	*8.3*	*6.6*	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	1	65Ni–29.5Mo–2Fe–2Cr	Plate, sheet, strip	SB-333	...	N10675	Solution ann.
	2	65Ni–29.5Mo–2Fe–2Cr	Plate, sheet, strip	SB-333	...	N10675	Solution ann.
	3	65Ni–29.5Mo–2Fe–2Cr	Rod	SB-335	...	N10675	Solution ann.
	4	65Ni–29.5Mo–2Fe–2Cr	Rod	SB-335	...	N10675	Solution ann.
	5	65Ni–29.5Mo–2Fe–2Cr	Smls. & wld. fittings	SB-366	...	N10675	Solution ann.
	6	65Ni–29.5Mo–2Fe–2Cr	Forgings	SB-564	...	N10675	Solution ann.
	7	65Ni–29.5Mo–2Fe–2Cr	Forgings	SB-564	...	N10675	Solution ann.
	8	65Ni–29.5Mo–2Fe–2Cr	Wld. pipe	SB-619	...	N10675	Solution ann.
	9	65Ni–29.5Mo–2Fe–2Cr	Wld. pipe	SB-619	...	N10675	Solution ann.
	10	65Ni–29.5Mo–2Fe–2Cr	Smls. pipe & tube	SB-622	...	N10675	Solution ann.
	11	65Ni–29.5Mo–2Fe–2Cr	Smls. pipe & tube	SB-622	...	N10675	Solution ann.
	12	65Ni–29.5Mo–2Fe–2Cr	Wld. tube	SB-626	...	N10675	Solution ann.
	13	65Ni–29.5Mo–2Fe–2Cr	Wld. tube	SB-626	...	N10675	Solution ann.
	14	59Ni–22Cr–14Mo–4Fe–3W	Castings	SA-494	CX2MW	N26022	Solution ann.
	15	53Ni–17Mo–16Cr–6Fe–5W	Castings	SA-494	CW-12MW/C	N30002	Annealed
	16	62Ni–28Mo–5Fe	Castings	SA-494	N-12MV/B	N30012	Annealed
01	17	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Smls. & wld. fittings	SB-366	...	R20033	Solution ann.
01	18	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Forgings	SB-564	...	R20033	Solution ann.
01	19	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Wld. pipe	SB-619	...	R20033	Solution ann.
01	20	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Smls. pipe & tube	SB-622	...	R20033	Solution ann.
01	21	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Plate, sheet, strip	SB-625	...	R20033	Solution ann.
01	22	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Wld. tube	SB-626	...	R20033	Solution ann.
01	23	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Rod	SB-649	...	R20033	Solution ann.
	24	21Ni–30Fe–22Cr–18Co–3Mo–3W	Plate, sheet, strip	SB-435	...	R30556	Annealed
	25	21Ni–30Fe–22Cr–18Co–3Mo–3W	Plate, sheet, strip	SB-435	...	R30556	Annealed
	26	21Ni–30Fe–22Cr–18Co–3Mo–3W	Rod	SB-572	...	R30556	Annealed
	27	21Ni–30Fe–22Cr–18Co–3Mo–3W	Rod	SB-572	...	R30556	Annealed
	28	21Ni–30Fe–22Cr–18Co–3Mo–3W	Wld. pipe	SB-619	...	R30556	Annealed
	29	21Ni–30Fe–22Cr–18Co–3Mo–3W	Wld. pipe	SB-619	...	R30556	Annealed
	30	21Ni–30Fe–22Cr–18Co–3Mo–3W	Smls. pipe & tube	SB-622	...	R30556	Annealed
	31	21Ni–30Fe–22Cr–18Co–3Mo–3W	Smls. pipe & tube	SB-622	...	R30556	Annealed
	32	21Ni–30Fe–22Cr–18Co–3Mo–3W	Wld. tube	SB-626	...	R30556	Annealed
	33	21Ni–30Fe–22Cr–18Co–3Mo–3W	Wld. tube	SB-626	...	R30556	Annealed
	34	Ti	Plate, sheet, strip	SB-265	1	R50250	Annealed
	35	Ti	Smls. tube	SB-338	1	R50250	Annealed
	36	Ti	Wld. tube	SB-338	1	R50250	Annealed
	37	Ti	Bar, billet	SB-348	1	R50250	Annealed

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	...	44	110	51	NP	NP	800	NFN-16	G5	
2	...	44	110	51	NP	NP	800	NFN-16	...	
3	...	44	110	51	NP	NP	800	NFN-16	G5	
4	...	44	110	51	NP	NP	800	NFN-16	...	
5	...	44	110	51	NP	NP	800	NFN-16	G5, W12	
6	...	44	110	51	NP	NP	800	NFN-16	G5	
7	...	44	110	51	NP	NP	800	NFN-16	...	
8	...	44	110	51	NP	NP	800	NFN-16	G5, G14	
9	...	44	110	51	NP	NP	800	NFN-16	G14	
10	...	44	110	51	NP	NP	800	NFN-16	G5	
11	...	44	110	51	NP	NP	800	NFN-16	...	
12	...	44	110	51	NP	NP	800	NFN-16	G5, G14	
13	...	44	110	51	NP	NP	800	NFN-16	G14	
14	...	44	80	45	NP	NP	500	NFN-10	G15	
15	...	...	72	40	NP	NP	1000	...	G15, W1	
16	...	...	76	40	NP	NP	1000	...	G15, W1	
17	...	45	109	55	NP	NP	800	NFN-10	W12	**01**
18	...	45	109	55	NP	NP	800	NFN-10	...	**01**
19	...	45	109	55	NP	NP	800	NFN-10	G14	**01**
20	...	45	109	55	NP	NP	800	NFN-10	...	**01**
21	...	45	109	55	NP	NP	800	NFN-10	...	**01**
22	...	45	109	55	NP	NP	800	NFN-10	G14	**01**
23	...	45	109	55	NP	NP	800	NFN-10	...	**01**
24	...	45	100	45	NP	NP	1650	NFN-15	G29, T17	
25	...	45	100	45	NP	NP	1650	NFN-15	G5, G29, T16	
26	...	45	100	45	NP	NP	1650	NFN-15	G29, T17	
27	...	45	100	45	NP	NP	1650	NFN-15	G5, G29, T16	
28	...	45	100	45	NP	NP	1650	NFN-15	G14, G29, T16	
29	...	45	100	45	NP	NP	1650	NFN-15	G5, G14, G29, T15	
30	...	45	100	45	NP	NP	1650	NFN-15	G29, T17	
31	...	45	100	45	NP	NP	1650	NFN-15	G5, G29, T16	
32	...	45	100	45	NP	NP	1650	NFN-15	G14, G29, T16	
33	...	45	100	45	NP	NP	1650	NFN-15	G5, G14, G29, T15	
34	...	51	35	25	NP	600	600	NFT-3	...	
35	...	51	35	25	NP	600	600	NFT-3	...	
36	...	51	35	25	NP	600	600	NFT-3	G14, W6	
37	...	51	35	25	NP	600	600	NFT-3	...	

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
		–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
	1	31.4	...	31.4	...	31.4	...	31.4	...	31.1	...	30.6	30.4	30.2	30.1	29.9	...	...
	2	31.4	...	31.4	...	30.3	...	28.8	...	27.4	...	26.3	25.8	25.4	25.1	24.8	...	...
	3	31.4	...	31.4	...	31.4	...	31.4	...	31.1	...	30.6	30.4	30.2	30.1	29.9	...	...
	4	31.4	...	31.4	...	30.3	...	28.8	...	27.4	...	26.3	25.8	25.4	25.1	24.8	...	...
	5	31.4	...	31.4	...	31.4	...	31.4	...	31.1	...	30.6	30.4	30.2	30.1	29.9	...	...
	6	31.4	...	31.4	...	31.4	...	31.4	...	31.1	...	30.6	30.4	30.2	30.1	29.9	...	...
	7	31.4	...	31.4	...	30.3	...	28.8	...	27.4	...	26.3	25.8	25.4	25.1	24.8	...	...
	8	26.7	...	26.7	...	26.7	...	26.7	...	26.4	...	26.0	25.8	25.7	25.6	25.4	...	...
	9	26.7	...	26.7	...	25.8	...	24.5	...	23.4	...	22.4	21.9	21.6	21.3	21.1	...	...
	10	31.4	...	31.4	...	31.4	...	31.4	...	31.1	...	30.6	30.4	30.2	30.1	29.9	...	...
	11	31.4	...	31.4	...	30.3	...	28.8	...	27.4	...	26.3	25.8	25.4	25.1	24.8	...	...
	12	26.7	...	26.7	...	26.7	...	26.7	...	26.4	...	26.0	25.8	25.7	25.6	25.4	...	...
	13	26.7	...	26.7	...	25.8	...	24.5	...	23.4	...	22.4	21.9	21.6	21.3	21.1	...	...
	14	22.9	...	22.2	...	21.6	...	21.4	...	21.4	...	...	...	...	...	...	...	...
	15	20.6	...	19.5	...	18.5	...	18.5	...	18.1	...	16.9	16.9	16.9	16.9	16.9	16.9	16.5
	16	21.7	...	20.3	...	20.3	...	20.3	...	20.3	...	18.6	18.3	18.0	17.7	17.3	17.0	16.6
01	17	31.1	...	30.9	...	28.1	...	26.1	...	24.8	...	23.6	23.5	23.1	22.9	22.6	...	...
01	18	31.1	...	30.9	...	28.1	...	26.1	...	24.8	...	23.6	23.5	23.1	22.9	22.6	...	...
01	19	26.4	...	26.3	...	23.9	...	22.2	...	21.1	...	20.1	20.0	19.6	19.5	19.2	...	...
01	20	31.1	...	30.9	...	28.1	...	26.1	...	24.8	...	23.6	23.5	23.1	22.9	22.6	...	...
01	21	31.1	...	30.9	...	28.1	...	26.1	...	24.8	...	23.6	23.5	23.1	22.9	22.6	...	...
01	22	26.4	...	26.3	...	23.9	...	22.2	...	21.1	...	20.1	20.0	19.6	19.5	19.2	...	...
01	23	31.1	...	30.9	...	28.1	...	26.1	...	24.8	...	23.6	23.5	23.1	22.9	22.6	...	...
	24	28.6	...	25.6	...	23.1	...	21.3	...	20.1	...	19.3	18.9	18.7	18.4	18.2	18.0	17.8
	25	28.6	...	28.6	...	28.0	...	27.1	...	26.4	...	26.0	25.6	25.2	24.9	24.6	24.3	24.1
	26	28.6	...	25.6	...	23.1	...	21.3	...	20.1	...	19.3	18.9	18.7	18.4	18.2	18.0	17.8
	27	28.6	...	28.6	...	28.0	...	27.1	...	26.4	...	26.0	25.6	25.2	24.9	24.6	24.3	24.1
	28	24.3	...	21.8	...	19.6	...	18.1	...	17.1	...	16.4	16.1	15.9	15.7	15.5	15.3	15.2
	29	24.3	...	24.3	...	23.8	...	23.0	...	22.5	...	22.1	21.7	21.4	21.1	20.9	20.7	20.5
	30	28.6	...	25.6	...	23.1	...	21.3	...	20.1	...	19.3	18.9	18.7	18.4	18.2	18.0	17.8
	31	28.6	...	28.6	...	28.0	...	27.1	...	26.4	...	26.0	25.6	25.2	24.9	24.6	24.3	24.1
	32	24.3	...	21.8	...	19.6	...	18.1	...	17.1	...	16.4	16.1	15.9	15.7	15.5	15.3	15.2
	33	24.3	...	24.3	...	23.8	...	23.0	...	22.5	...	22.1	21.7	21.4	21.1	20.9	20.7	20.5
	34	10.0	9.3	8.3	7.4	6.6	6.0	5.5	5.1	4.7	4.2	3.6	...	...	...	...	...	...
	35	10.0	9.3	8.3	7.4	6.6	6.0	5.5	5.1	4.7	4.2	3.6	...	...	...	...	...	...
	36	8.5	7.9	7.0	6.3	5.6	5.1	4.7	4.3	4.0	3.6	3.0	...	...	...	...	...	...
	37	10.0	9.3	8.3	7.4	6.6	6.0	5.5	5.1	4.7	4.2	3.6	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	16.1	15.8	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	16.2	15.7	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
24	17.6	17.5	17.3	17.1	16.9	*13.6*	*10.9*	*8.8*	*7.0*	*5.6*	*4.5*	*3.6*	*2.8*	*2.2*	*1.8*	
25	23.8	23.6	23.3	21.2	*17.0*	*13.6*	*10.9*	*8.8*	*7.0*	*5.6*	*4.5*	*3.6*	*2.8*	*2.2*	*1.8*	
26	17.6	17.5	17.3	17.1	16.9	*13.6*	*10.9*	*8.8*	*7.0*	*5.6*	*4.5*	*3.6*	*2.8*	*2.2*	*1.8*	
27	23.8	23.6	23.3	21.2	*17.0*	*13.6*	*10.9*	*8.8*	*7.0*	*5.6*	*4.5*	*3.6*	*2.8*	*2.2*	*1.8*	
28	15.0	14.8	14.7	14.5	*14.4*	*11.6*	*9.3*	*7.5*	*6.0*	*4.8*	*3.8*	*3.1*	*2.4*	*1.9*	*1.5*	
29	20.2	20.0	19.8	*18.0*	*14.4*	*11.6*	*9.3*	*7.5*	*6.0*	*4.8*	*3.8*	*3.1*	*2.4*	*1.9*	*1.5*	
30	17.6	17.5	17.3	17.1	16.9	*13.6*	*10.9*	*8.8*	*7.0*	*5.6*	*4.5*	*3.6*	*2.8*	*2.2*	*1.8*	
31	23.8	23.6	23.3	21.2	*17.0*	*13.6*	*10.9*	*8.8*	*7.0*	*5.6*	*4.5*	*3.6*	*2.8*	*2.2*	*1.8*	
32	15.0	14.8	14.7	14.5	*14.4*	*11.6*	*9.3*	*7.5*	*6.0*	*4.8*	*3.8*	*3.1*	*2.4*	*1.9*	*1.5*	
33	20.2	20.0	19.8	*18.0*	*14.4*	*11.6*	*9.3*	*7.5*	*6.0*	*4.8*	*3.8*	*3.1*	*2.4*	*1.9*	*1.5*	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	1	Ti	Smls. & wld. fittings	SB-363	WPT1	R50250	Annealed
	2	Ti	Forgings	SB-381	F1	R50250	Annealed
01	3	Ti	Smls. pipe	SB-861	1	R50250	Annealed
01	4	Ti	Wld. pipe	SB-862	1	R50250	Annealed
	5	Ti	Castings	SB-367	C-2	R50400	...
	6	Ti	Plate, sheet, strip	SB-265	2	R50400	Annealed
	7	Ti	Smls. tube	SB-338	2	R50400	Annealed
	8	Ti	Wld. tube	SB-338	2	R50400	Annealed
	9	Ti	Bar, billet	SB-348	2	R50400	Annealed
	10	Ti	Smls. & wld. fittings	SB-363	WPT2	R50400	Annealed
	11	Ti	Forgings	SB-381	F2	R50400	Annealed
01	12	Ti	Smls. pipe	SB-861	2	R50400	Annealed
01	13	Ti	Wld. pipe	SB-862	2	R50400	Annealed
	14	Ti	Castings	SB-367	C-3	R50550	...
	15	Ti	Plate, sheet, strip	SB-265	3	R50550	Annealed
	16	Ti	Smls. tube	SB-338	3	R50550	Annealed
	17	Ti	Wld. tube	SB-338	3	R50550	Annealed
	18	Ti	Bar, billet	SB-348	3	R50550	Annealed
	19	Ti	Smls. & wld. fittings	SB-363	WPT3	R50550	Annealed
	20	Ti	Forgings	SB-381	F3	R50550	Annealed
01	21	Ti	Smls. pipe	SB-861	3	R50550	Annealed
01	22	Ti	Wld. pipe	SB-862	3	R50550	Annealed
01	23	Ti–Pd	Plate, sheet, strip	SB-265	11	R52250	Annealed
	24	Ti–Pd	Plate, sheet, strip	SB-265	17	R52252	Annealed
	25	Ti–Pd	Plate, sheet, strip	SB-265	7	R52400	Annealed
	26	Ti–Pd	Smls. tube	SB-338	7	R52400	Annealed
	27	Ti–Pd	Wld. tube	SB-338	7	R52400	Annealed
	28	Ti–Pd	Bar, billet	SB-348	7	R52400	Annealed
	29	Ti–Pd	Smls. fittings	SB-363	WPT7	R52400	Annealed
	30	Ti–Pd	Wld. fittings	SB-363	WPT7W	R52400	Annealed
	31	Ti–Pd	Forgings	SB-381	F7	R52400	Annealed
01	32	Ti–Pd	Smls. pipe	SB-861	7	R52400	Annealed
01	33	Ti–Pd	Wld. pipe	SB-862	7	R52400	Annealed
01	34	Ti–Pd	Plate, sheet, strip	SB-265	16	R52402	Annealed
01	35	Ti–Pd	Smls. tube	SB-338	16	R52402	Annealed
01	36	Ti–Pd	Wld. tube	SB-338	16	R52402	Annealed
	37	Ti–Pd	Bar, billet	SB-348	16	R52402	Annealed
	38	Ti–Pd	Forgings	SB-381	F16	R52402	Annealed

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TABLE 1B (CONT'D)
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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	...	51	35	25	NP	600	600	NFT-3	W5, W12	
2	...	51	35	25	NP	600	600	NFT-3	...	
3	...	51	35	25	NP	600	600	NFT-3	...	**01**
4	...	51	35	25	NP	600	600	NFT-3	G14, W6	**01**
5	...	51	50	40	NP	NP	500	NFT-2	W1	
6	...	51	50	40	NP	600	600	NFT-2	...	
7	...	51	50	40	NP	600	600	NFT-2	...	
8	...	51	50	40	NP	600	600	NFT-2	G14, W6	
9	...	51	50	40	NP	600	600	NFT-2	...	
10	...	51	50	40	NP	600	600	NFT-2	W5, W12	
11	...	51	50	40	NP	600	600	NFT-2	...	
12	...	51	50	40	NP	600	600	NFT-2	...	**01**
13	...	51	50	40	NP	600	600	NFT-2	G14, W6	**01**
14	...	52	65	55	NP	NP	500	NFT-1	W1	
15	...	52	65	55	NP	600	600	NFT-1	...	
16	...	52	65	55	NP	600	600	NFT-1	...	
17	...	52	65	55	NP	600	600	NFT-1	G14, W6	
18	...	52	65	55	NP	600	600	NFT-1	...	
19	...	52	65	55	NP	600	600	NFT-1	W5, W12	
20	...	52	65	55	NP	600	600	NFT-1	...	
21	...	52	65	55	NP	600	600	NFT-1	...	**01**
22	...	52	65	55	NP	600	600	NFT-1	G14, W6	**01**
23	...	51	35	25	NP	NP	600	NFT-3	...	**01**
24	...	51	35	25	NP	NP	600	NFT-3	...	
25	...	51	50	40	NP	600	600	NFT-2	...	
26	...	51	50	40	NP	600	600	NFT-2	...	
27	...	51	50	40	NP	600	600	NFT-2	G14, W6	
28	...	51	50	40	NP	600	600	NFT-2	...	
29	...	51	50	40	NP	NP	600	NFT-2	...	
30	...	51	50	40	NP	NP	600	NFT-2	G14	
31	...	51	50	40	NP	NP	600	NFT-2	...	
32	...	51	50	40	NP	600	600	NFT-2	...	**01**
33	...	51	50	40	NP	600	600	NFT-2	G14, W6	**01**
34	...	51	50	40	NP	NP	600	NFT-2	...	**01**
35	...	51	50	40	NP	NP	600	NFT-2	...	**01**
36	...	51	50	40	NP	NP	600	NFT-2	G14, W6	**01**
37	...	51	50	40	NP	NP	600	NFT-2	...	
38	...	51	50	40	NP	NP	600	NFT-2	...	

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
		–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
	1	10.0	9.3	8.3	7.4	6.6	6.0	5.5	5.1	4.7	4.2	3.6	...	...	...	...	...	...
	2	10.0	9.3	8.3	7.4	6.6	6.0	5.5	5.1	4.7	4.2	3.6	...	...	...	...	...	...
01	3	10.0	9.3	8.3	7.4	6.6	6.0	5.5	5.1	4.7	4.2	3.6	...	...	...	...	...	...
01	4	8.5	7.9	7.0	6.3	5.6	5.1	4.7	4.3	4.0	3.6	3.0	...	...	...	...	...	...
	5	14.3	13.1	11.8	10.7	9.7	8.9	8.1	7.4	6.8	...	...	...	...	...	...	...	...
	6	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...
	7	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...
	8	12.1	11.7	10.6	9.6	8.8	8.1	7.5	7.0	6.5	6.0	5.5	...	...	...	...	...	...
	9	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...
	10	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...
	11	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...
01	12	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...
01	13	12.1	11.7	10.6	9.6	8.8	8.1	7.5	7.0	6.5	6.0	5.5	...	...	...	...	...	...
	14	18.6	17.5	15.8	14.2	12.8	11.5	10.3	9.3	8.5	...	...	...	...	...	...	...	...
	15	18.6	17.5	15.8	14.2	12.8	11.5	10.3	9.3	8.5	7.9	7.4	...	...	...	...	...	...
	16	18.6	17.5	15.8	14.2	12.8	11.5	10.3	9.3	8.5	7.9	7.4	...	...	...	...	...	...
	17	15.8	14.9	13.4	12.1	10.8	9.7	8.8	7.9	7.2	6.7	6.3	...	...	...	...	...	...
	18	18.6	17.5	15.8	14.2	12.8	11.5	10.3	9.3	8.5	7.9	7.4	...	...	...	...	...	...
	19	18.6	17.5	15.8	14.2	12.8	11.5	10.3	9.3	8.5	7.9	7.4	...	...	...	...	...	...
	20	18.6	17.5	15.8	14.2	12.8	11.5	10.3	9.3	8.5	7.9	7.4	...	...	...	...	...	...
01	21	18.6	17.5	15.8	14.2	12.8	11.5	10.3	9.3	8.5	7.9	7.4	...	...	...	...	...	...
01	22	15.8	14.9	13.4	12.1	10.8	9.7	8.8	7.9	7.2	6.7	6.3	...	...	...	...	...	...
01	23	10.0	9.3	8.3	7.4	6.6	6.0	5.5	5.1	4.7	4.2	3.6	...	...	...	...	...	...
	24	10.0	9.3	8.3	7.4	6.6	6.0	5.5	5.1	4.7	4.2	3.6	...	...	...	...	...	...
	25	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...
	26	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...
	27	12.1	11.7	10.6	9.6	8.8	8.1	7.5	7.0	6.5	6.0	5.5	...	...	...	...	...	...
	28	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...
	29	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...
	30	12.1	11.7	10.6	9.6	8.8	8.1	7.5	7.0	6.5	6.0	5.5	...	...	...	...	...	...
	31	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...
01	32	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...
01	33	12.1	11.7	10.6	9.6	8.8	8.1	7.5	7.0	6.5	6.0	5.5	...	...	...	...	...	...
01	34	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...
01	35	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...
01	36	12.1	11.7	10.6	9.6	8.8	8.1	7.5	7.0	6.5	6.0	5.5	...	...	...	...	...	...
	37	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...
	38	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	1	Ti–0.3Mo–0.8Ni	Plate, sheet, strip	SB-265	12	R53400	Annealed
	2	Ti–0.3Mo–0.8Ni	Smls. tube	SB-338	12	R53400	Annealed
	3	Ti–0.3Mo–0.8Ni	Wld. tube	SB-338	12	R53400	Annealed
	4	Ti–0.3Mo–0.8Ni	Bar, billet	SB-348	12	R53400	Annealed
	5	Ti–0.3Mo–0.8Ni	Smls. fittings	SB-363	WPT12	R53400	Annealed
	6	Ti–0.3Mo–0.8Ni	Wld. fittings	SB-363	WPT12W	R53400	Annealed
	7	Ti–0.3Mo–0.8Ni	Forgings	SB-381	F12	R53400	Annealed
01	8	Ti–0.3Mo–0.8Ni	Smls. pipe	SB-861	12	R53400	Annealed
01	9	Ti–0.3Mo–0.8Ni	Wld. pipe	SB-862	12	R53400	Annealed
	10	Ti–3Al–2.5V	Plate, sheet, strip	SB-265	9	R56320	Annealed
	11	Ti–3Al–2.5V	Smls. tube	SB-338	9	R56320	Annealed
	12	Ti–3Al–2.5V	Wld. tube	SB-338	9	R56320	Annealed
	13	Ti–3Al–2.5V	Bar, billet	SB-348	9	R56320	Annealed
	14	Ti–3Al–2.5V	Smls. fittings	SB-363	WPT9	R56320	Annealed
	15	Ti–3Al–2.5V	Wld. fittings	SB-363	WPT9W	R56320	Annealed
	16	Ti–3Al–2.5V	Forgings	SB-381	F9	R56320	Annealed
01	17	Ti–3Al–2.5V	Smls. pipe	SB-861	9	R56320	Annealed
01	18	Ti–3Al–2.5V	Wld. pipe	SB-862	9	R56320	Annealed
01	19	99.2Zr	Forgings	SB-493	...	R60702	Annealed
01	20	99.2Zr	Smls. tube	SB-523	...	R60702	Annealed
01	21	99.2Zr	Wld. tube	SB-523	...	R60702	Annealed
01	22	99.2Zr	Bar, wire	SB-550	...	R60702	Annealed
01	23	99.2Zr	Plate, sheet, strip	SB-551	...	R60702	Annealed
01	24	99.2Zr	Smls. & wld. pipe	SB-658	...	R60702	Annealed
01	25	95.2Zr + Nb	Forgings	SB-493	...	R60705	Annealed
01	26	95.2Zr + Nb	Smls. tube	SB-523	...	R60705	Annealed
01	27	95.2Zr + Nb	Wld. tube	SB-523	...	R60705	Annealed
01	28	95.2Zr + Nb	Bar, wire	SB-550	...	R60705	Annealed
01	29	95.2Zr + Nb	Plate, sheet, strip	SB-551	...	R60705	Annealed
01	30	95.2Zr + Nb	Smls. & wld. pipe	SB-658	...	R60705	Annealed

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Size/ Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	External Pressure Chart No.	Notes	
1	...	52	70	50	NP	NP	600	NFT-1	...	
2	...	52	70	50	NP	NP	600	NFT-1	...	
3	...	52	70	50	NP	NP	600	NFT-1	G14, W6	
4	...	52	70	50	NP	NP	600	NFT-1	...	
5	...	52	70	50	NP	NP	600	NFT-1	...	
6	...	52	70	50	NP	NP	600	NFT-1	G14	
7	...	52	70	50	NP	NP	600	NFT-1	...	
8	...	52	70	50	NP	NP	600	NFT-1	...	**01**
9	...	52	70	50	NP	NP	600	NFT-1	G14, W6	**01**
10	...	53	90	70	NP	600	600	NFT-1	...	
11	...	53	90	70	NP	600	600	NFT-1	...	
12	...	53	90	70	NP	600	600	NFT-1	G14, W6	
13	...	53	90	70	NP	600	NP	NFT-1	...	
14	...	53	90	70	NP	600	NP	NFT-1	G14, W6	
15	...	53	90	70	NP	600	NP	NFT-1	G14, W6	
16	...	53	90	70	NP	600	NP	NFT-1	...	
17	...	53	90	70	NP	600	600	NFT-1	...	**01**
18	...	53	90	70	NP	600	600	NFT-1	G14, W6	**01**
19	...	61	55	30	NP	NP	700	NFZ-1	...	**01**
20	...	61	55	30	NP	NP	700	NFZ-1	...	**01**
21	...	61	55	30	NP	NP	700	NFZ-1	G14, W6	**01**
22	...	61	55	30	NP	NP	700	NFZ-1	...	**01**
23	...	61	55	30	NP	NP	700	NFZ-1	...	**01**
24	...	61	55	30	NP	NP	700	NFZ-1	...	**01**
25	...	62	70	55	NP	NP	700	NFZ-2	W2	**01**
26	...	62	80	55	NP	NP	700	NFZ-2	W2	**01**
27	...	62	80	55	NP	NP	700	NFZ-2	G14, W2, W6	**01**
28	...	62	80	55	NP	NP	700	NFZ-2	W2	**01**
29	...	62	80	55	NP	NP	700	NFZ-2	W2	**01**
30	...	62	80	55	NP	NP	700	NFZ-2	W2	**01**

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

	Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
		–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
	1	20.0	20.0	18.7	17.4	16.2	15.2	14.3	13.6	13.1	12.7	12.3	...	...	...	...	...	...
	2	20.0	20.0	18.7	17.4	16.2	15.2	14.3	13.6	13.1	12.7	12.3	...	...	...	...	...	...
	3	17.0	17.0	15.9	14.8	13.8	12.9	12.1	11.5	11.1	10.8	10.5	...	...	...	...	...	...
	4	20.0	20.0	18.7	17.4	16.2	15.2	14.3	13.6	13.1	12.7	12.3	...	...	...	...	...	...
	5	20.0	20.0	18.7	17.4	16.2	15.2	14.3	13.6	13.1	12.7	12.3	...	...	...	...	...	...
	6	17.0	17.0	15.9	14.8	13.8	12.9	12.1	11.5	11.1	10.8	10.5	...	...	...	...	...	...
	7	20.0	20.0	18.7	17.4	16.2	15.2	14.3	13.6	13.1	12.7	12.3	...	...	...	...	...	...
01	8	20.0	20.0	18.7	17.4	16.2	15.2	14.3	13.6	13.1	12.7	12.3	...	...	...	...	...	...
01	9	17.0	17.0	15.9	14.8	13.8	12.9	12.1	11.5	11.1	10.8	10.5	...	...	...	...	...	...
	10	25.7	25.7	24.7	23.7	22.6	21.4	20.2	19.0	18.1	17.5	17.2	...	...	...	...	...	...
	11	25.7	25.7	24.7	23.7	22.6	21.4	20.2	19.0	18.1	17.5	17.2	...	...	...	...	...	...
	12	21.9	21.9	21.0	20.2	19.2	18.2	17.1	16.2	15.4	14.9	14.7	...	...	...	...	...	...
	13	25.7	25.7	24.7	23.7	22.6	21.4	20.2	19.0	18.1	17.5	17.2	...	...	...	...	...	...
	14	25.7	25.7	24.7	23.7	22.6	21.4	20.2	19.0	18.1	17.5	17.2	...	...	...	...	...	...
	15	21.9	21.9	21.0	20.2	19.2	18.2	17.1	16.2	15.4	14.9	14.7	...	...	...	...	...	...
	16	25.7	25.7	24.7	23.7	22.6	21.4	20.2	19.0	18.1	17.5	17.2	...	...	...	...	...	...
01	17	25.7	25.7	24.7	23.7	22.6	21.4	20.2	19.0	18.1	17.5	17.2	...	...	...	...	...	...
01	18	21.9	21.9	21.0	20.2	19.2	18.2	17.1	16.2	15.4	14.9	14.7	...	...	...	...	...	...
01	19	15.7	15.1	13.7	12.4	11.2	10.1	9.1	8.3	7.4	6.6	6.0	5.6	5.2	...	...	...	...
01	20	15.7	15.1	13.7	12.4	11.2	10.1	9.1	8.3	7.4	6.6	6.0	5.6	5.2	...	...	...	...
01	21	13.4	12.8	11.6	10.5	9.5	8.6	7.7	7.0	6.3	5.6	5.1	4.7	4.5	...	...	...	...
01	22	15.7	15.1	13.7	12.4	11.2	10.1	9.1	8.3	7.4	6.6	6.0	5.6	5.2	...	...	...	...
01	23	15.7	15.1	13.7	12.4	11.2	10.1	9.1	8.3	7.4	6.6	6.0	5.6	5.2	...	...	...	...
01	24	15.7	15.1	13.7	12.4	11.2	10.1	9.1	8.3	7.4	6.6	6.0	5.6	5.2	...	...	...	...
01	25	20.0	...	16.6	...	14.2	...	12.5	...	11.3	...	10.4	...	9.9	...	...	...	...
01	26	22.9	...	19.0	...	16.2	...	14.3	...	12.9	...	11.9	...	11.3	...	...	...	...
01	27	19.4	...	16.1	...	13.8	...	12.2	...	11.0	...	10.1	...	9.6	...	...	...	...
01	28	22.9	...	19.0	...	16.2	...	14.3	...	12.9	...	11.9	...	11.3	...	...	...	...
01	29	22.9	...	19.0	...	16.2	...	14.3	...	12.9	...	11.9	...	11.3	...	...	...	...
01	30	22.9	...	19.0	...	16.2	...	14.3	...	12.9	...	11.9	...	11.3	...	...	...	...

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TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISION 1
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR NONFERROUS MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**

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NOTES TO TABLE 1B

GENERAL NOTES:

(a) The following abbreviations are used: ann., annealed; Applic., Applicability; Cond., Condition; cond., condenser; Desig., Designation; exch., exchanger; extr., extruded; fin., finished; fr., from; rel., relieved; rld., rolled; Smls., Seamless; Sol., Solution; treat., treated; and Wld., Welded.

(b) The stress values in this Table may be interpolated to determine values for intermediate temperatures.

(c) When used for Section III Class MC design, the stress values listed herein shall be multiplied by a factor of 1.1 (NE-3112.4); these values shall be considered as design stress intensities or allowable stress values as required by NE-3200 or NE-3300, respectively.

(d) For Section VIII applications, stress values in restricted shear, such as dowel bolts, rivets, or similar construction in which the shearing is so restricted that the section under consideration would fail without reduction of areas, shall be 0.80 times the values in this Table.

(e) For Section VIII applications, stress values in bearing shall be 1.60 times the values in this Table.

NOTES — GENERAL REQUIREMENTS:

G1 For steam at 250 psi (406°F), the values given for 400°F may be used.

G2 At temperatures over 1000°F, these stress values apply only when the carbon is 0.04% or higher.

G3 In the absence of evidence that the casting is of high quality throughout, values not in excess of 80% of those given in the Table shall be used. This is not intended to apply to valves and fittings made to recognized standards.

G4 For Section I applications, this material may not be used for parts of firetube boilers under external pressure.

G5 Due to the relatively low yield strength of these materials, these higher stress values were established at temperatures where the short time tensile properties govern to permit the use of these alloys where slightly greater deformation is acceptable. The stress values in this range exceed $66\frac{2}{3}$% but do not exceed 90% of the yield strength at temperature. Use of these stresses may result in dimensional changes due to permanent strain. These stress values are not recommended for the flanges of gasketed joints or other applications where slight amounts of distortion can cause leakage or malfunction. Table Y-2 lists multiplying factors which, when applied to the yield strength values shown in Table Y-1, will give allowable stress values that will result in lower levels of permanent strain.

G6 Maximum temperature for external pressure not to exceed 350°F.

G7 Use 350°F curve for all temperature values below 350°F.

G8 Use Fig. NFC-3 for temperatures above 300°F up to and including 400°F.

G9 Use Fig. NFC-4 up to and including 350°F. Use the 600°F curve of Fig. NFC-3 above 350°F up to and including 400°F. Maximum temperature for external pressure not to exceed 400°F.

G10 Maximum temperature for external pressure not to exceed 450°F.

G11 Referenced external pressure chart is applicable up to 700°F.

G12 Referenced external pressure chart is applicable up to 800°F.

G13 For Section VIII applications, use of external pressure charts for material in the form of barstock is permitted for stiffening rings only.

G14 A factor of 0.85 has been applied in arriving at the maximum allowable stress values in tension for this material. Divide tabulated values by 0.85 for maximum allowable longitudinal tensile stress.

G15 To these stress values a quality factor as specified in Section III, ND-3115 or UG-24 of Section VIII, Division 1 shall be applied for castings. This is not intended to apply to valves and fittings made to recognized standards.

G16 Allowable stress values shown are 90% of those for the corresponding core material.

G17 Copper–silicon alloys are not always suitable when exposed to certain media and high temperatures, particularly steam above 212°F. The user should ensure that the alloy selected is satisfactory for the service for which it is to be used.

G18 Because of the occasionally contingent danger from the failure of pressure vessels by stress corrosion cracking, the following is pertinent. These materials are suitable for engineering use under a wide variety of ordinary corrosive conditions with no particular hazard in respect to stress corrosion.

G19 Few alloys are completely immune to stress corrosion cracking in all combinations of stress and corrosive environments and the supplier of the material should be consulted. Reference may also be made to the following sources: (1) Stress Corrosion Cracking Control Measures, B. F. Brown, U. S. National Bureau of Standards (1977), available from NACE, Texas; (2) The Stress Corrosion of Metals, H. L. Logan, John Wiley & Sons, New York, 1966.

G20 For plate only.

G21 The maximum operating temperature is arbitrarily set at 500°F because harder temper adversely affects design stress in the creep rupture temperature range.

G22 The minimum tensile strength of reduced tension specimens in accordance with QW-462.1 of Section IX shall not be less than 110,000 psi.

G23 This alloy is subject to severe loss of impact strength at room temperatures after exposure in the range of 1000°F to 1400°F.

G24 For stress relieved tempers (T351, T3510, T3511, T451, T4510, T4511, T651, T6510, T6511), stress values for materials in the basic temper shall be used.

G25 The tension test specimen from plate 0.500 in. and thicker is machined from the core and does not include the cladding alloy; therefore, the allowable stress values for thickness less than 0.500 in. shall be used.

G26 The tension test specimen from plate 0.500 in. and thicker is machined from the core and does not include the cladding alloy; therefore, the allowable stress values shown are 90% of those for the core material of the same thickness.

G27 Alloy N06022 in the solution annealed condition is subject to severe loss of impact strength at room temperatures after exposure in the range of 1000°F to 1250°F.

G28 For external pressure design, the maximum design temperature is limited to 1000°F.

G29 Creep-fatigue, thermal ratcheting, and environmental effects are increasingly significant failure modes at temperatures in excess of 1500°F and shall be considered in the design.

NOTES — HEAT TREATMENT REQUIREMENTS:

H1 For temperatures above 1000°F, these stress values may be used only if the material is annealed at a minimum temperature of 1900°F and has a carbon content of 0.04% or higher.

H2 For temperatures above 1000°F, these stress values may be used only if the material is heat treated by heating it to a minimum temperature of 1900°F and quenching in water or rapidly cooling by other means.

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NOTES TO TABLE 1B (CONT'D)

NOTES — TIME-DEPENDENT PROPERTIES:

T1 Allowable stresses for temperatures of 250°F and above are values obtained from time-dependent properties.
T2 Allowable stresses for temperatures of 300°F and above are values obtained from time-dependent properties.
T3 Allowable stresses for temperatures of 350°F and above are values obtained from time-dependent properties.
T4 Allowable stresses for temperatures of 400°F and above are values obtained from time-dependent properties.
T5 Allowable stresses for temperatures of 500°F and above are values obtained from time-dependent properties.
T6 Allowable stresses for temperatures of 550°F and above are values obtained from time-dependent properties.
T7 Allowable stresses for temperatures of 600°F and above are values obtained from time-dependent properties.
T8 Allowable stresses for temperatures of 750°F and above are values obtained from time-dependent properties.
T9 Allowable stresses for temperatures of 800°F and above are values obtained from time-dependent properties.
T10 Allowable stresses for temperatures of 850°F and above are values obtained from time-dependent properties.
T11 Allowable stresses for temperatures of 900°F and above are values obtained from time-dependent properties.
T12 Allowable stresses for temperatures of 950°F and above are values obtained from time-dependent properties.
T13 Allowable stresses for temperatures of 1000°F and above are values obtained from time-dependent properties.
T14 Allowable stresses for temperatures of 1050°F and above are values obtained from time-dependent properties.
T15 Allowable stresses for temperatures of 1100°F and above are values obtained from time-dependent properties.
T16 Allowable stresses for temperatures of 1150°F and above are values obtained from time-dependent properties.
T17 Allowable stresses for temperatures of 1200°F and above are values obtained from time-dependent properties.
T18 Allowable stresses for temperatures of 1250°F and above are values obtained from time-dependent properties.

NOTES — WELDING REQUIREMENTS:

W1 No welding or brazing permitted.
W2 For Section VIII applications, UNF-56(d) shall apply for welded constructions.
W3 For welded and brazed constructions, stress values for O (annealed) temper material shall be used.
W4 The stress values given for this material are not applicable when either welding or thermal cutting is employed.
W5 These *S* values do not include a longitudinal weld efficiency factor. For Section III applications, for materials welded without filler metal, ultrasonic examination, radiographic examination, or eddy current examination, in accordance with NC-2550, shall provide a longitudinal weld efficiency factor of 1.00. Materials welded with filler metal meeting the requirements of NC-2560 shall receive a longitudinal weld efficiency factor of 1.00. Other longitudinal weld efficiency factors shall be in accordance with the following:
(a) for single butt weld, with filler metal, 0.80;
(b) for single or double butt weld, without filler metal, 0.85;
(c) for double butt weld, with filler metal, 0.90;
(d) for single or double butt weld, with radiography or ultrasonic, 1.00.
W6 Filler metal shall not be used in the manufacture of welded pipe or tubing.
W7 Strength of reduced-section tensile specimen required to qualify welding procedures. See QW-150, Section IX.
W8 After welding, heat treat at 1150–1200°F, hold 1½ hr at temperature for the first inch of cross-section thickness and ½ hr for each additional inch, and air cool. For castings used in pumps, valves, and fittings 2 in. nominal pipe size and less, PWHT is not required for socket welds and attachment welds when the castings have been temper annealed at 1150–1200°F prior to welding.
W9 If welded or brazed, the allowable stress values for the annealed condition shall be used and the minimum tensile strength of the reduced tension specimen in accordance with QW-462.1 of Section IX shall not be less than 30.0 ksi.
W10 When nonferrous materials conforming to specifications in Section II, Part B are used in welded or brazed construction, the maximum allowable working stresses shall not exceed the values given herein for annealed material at the metal temperature shown.
W11 These maximum allowable stress values are to be used in welded or brazed constructions.
W12 These *S* values do not include a weld factor. For Section VIII, Division 1 applications using welds made without filler metal, the tabulated tensile stress values shall be multiplied by 0.85. For welds made with filler metal, consult UW-12 of Section VIII, Division 1.
W13 For service at 1200°F or higher, the deposited weld metal shall be of the same nominal chemistry as the base metal.
W14 No welding permitted.
W15 For Section VIII applications, no welding is permitted.

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TABLE 2A
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	Carbon steel	Bar, shapes	SA-675	45	...	...	...	1	1
2	Carbon steel	Plate	SA-285	A	K01700	...	...	1	1
3	Carbon steel	Wld. pipe	SA-672	A45	K01700	...	...	1	1
4	Carbon steel	Wld. pipe	SA-53	E/A	K02504	...	...	1	1
5	Carbon steel	Smls. pipe	SA-53	S/A	K02504	...	...	1	1
6	Carbon steel	Smls. pipe	SA-106	A	K02501	...	...	1	1
7	Carbon steel	Bar, shapes	SA-675	50	...	...	...	1	1
8	Carbon steel	Plate	SA-283	B	...	...	...	1	1
9	Carbon steel	Plate	SA-285	B	K02200	...	≤ 2	1	1
10	Carbon steel	Wld. pipe	SA-672	A50	K02200	...	...	1	1
11	Carbon steel	Bar, shapes	SA-675	55	...	...	...	1	1
12	Carbon steel	Plate	SA-285	C	K02801	...	≤ 2	1	1
13	Carbon steel	Wld. pipe	SA-333	1	K03008	...	...	1	1
14	Carbon steel	Smls. pipe	SA-333	1	K03008	...	...	1	1
15	Carbon steel	Wld. tube	SA-334	1	K03008	...	...	1	1
16	Carbon steel	Smls. tube	SA-334	1	K03008	...	...	1	1
17	Carbon steel	Plate	SA-516	55	K01800	...	...	1	1
18	Carbon steel	Smls. pipe	SA-524	II	K02104	...	...	1	1
19	Carbon steel	Wld. pipe	SA-671	CA55	K02801	...	...	1	1
20	Carbon steel	Wld. pipe	SA-671	CE55	K02202	...	...	1	1
21	Carbon steel	Wld. pipe	SA-672	A55	K02801	...	...	1	1
22	Carbon steel	Wld. pipe	SA-672	B55	K02001	...	...	1	1
23	Carbon steel	Wld. pipe	SA-672	C55	K01800	...	...	1	1
24	Carbon steel	Wld. pipe	SA-672	E55	K02202	...	...	1	1
25	Carbon steel	Plate, bar, shapes	SA-36	...	K02600	...	...	1	1
26	Carbon steel	Plate	SA-662	A	K01701	...	...	1	1
27	Carbon steel	Forgings	SA-181	...	K03502	60	...	1	1
28	Carbon steel	Castings	SA-216	WCA	J02502	...	...	1	1
29	Carbon steel	Forgings	SA-266	1	K03506	...	...	1	1
30	Carbon steel	Forgings	SA-350	LF1	K03009	1	...	1	1
31	Carbon steel	Castings	SA-352	LCA	J02504	...	...	1	1
32	Carbon steel	Cast pipe	SA-660	WCA	J02504	...	...	1	1
33	Carbon steel	Bar, shapes	SA-675	60	...	...	...	1	1
34	Carbon steel	Forgings	SA-765	I	K03046	...	...	1	1
35	Carbon steel	Plate	SA-515	60	K02401	...	...	1	1
36	Carbon steel	Plate	SA-516	60	K02100	...	...	1	1
37	Carbon steel	Wld. pipe	SA-671	CB60	K02401	...	...	1	1
38	Carbon steel	Wld. pipe	SA-671	CC60	K02100	...	...	1	1
39	Carbon steel	Wld. pipe	SA-671	CE60	K02402	...	...	1	1

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TABLE 2A
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only)		External Pressure Chart No.	Notes
			III	VIII-2		
1	45	22.5	NP	700	CS-1	...
2	45	24	700	700	CS-1	...
3	45	24	700	NP	CS-1	G1, G4
4	48	30	700 (SPT)	NP	CS-2	...
5	48	30	700 (SPT)	NP	CS-2	...
6	48	30	700	700	CS-2	...
7	50	25	700 (SPT)	700	CS-1	...
8	50	27	NP	700	CS-1	...
9	50	27	700	700	CS-1	...
10	50	27	700	NP	CS-1	G1, G4
11	55	27.5	700 (SPT)	700	CS-1	...
12	55	30	700	700	CS-2	...
13	55	30	700	NP	CS-2	...
14	55	30	700	700	CS-2	...
15	55	30	700	NP	CS-2	...
16	55	30	700	700	CS-2	...
17	55	30	700	700	CS-2	...
18	55	30	NP	700	CS-2	...
19	55	30	700	NP	CS-2	G1, G4
20	55	30	700	NP	CS-2	G1, G4
21	55	30	700	NP	CS-2	G1, G4
22	55	30	700	NP	CS-2	G1, G4
23	55	30	700	NP	CS-2	G1, G4
24	55	30	700	NP	CS-2	G1, G4
25	58	36	700 (SPT)	700	CS-2	...
26	58	40	NP	700	CS-3	...
27	60	30	700	700	CS-2	...
28	60	30	700	700	CS-2	...
29	60	30	700	700	CS-2	...
30	60	30	700	700	CS-2	...
31	60	30	700	NP	...	...
32	60	30	700	NP	CS-2	...
33	60	30	700 (SPT)	700	CS-2	...
34	60	30	NP	700	CS-2	...
35	60	32	700	700	CS-2	...
36	60	32	700	700	CS-2	...
37	60	32	700	NP	CS-2	G1, G4
38	60	32	700	NP	CS-2	G1, G4
39	60	32	700	NP	CS-2	G1, G4

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TABLE 2A
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	15.0	...	13.7	...	13.3	12.9	12.1	11.1	10.9	10.8	...	...	...	...
2	15.0	...	14.6	...	14.2	13.7	12.9	11.9	11.6	11.5	...	...	...	...
3	15.0	...	15.0	...	14.2	13.7	12.9	11.9	11.6	11.5	...	...	...	...
4	16.0	...	16.0	...	16.0	16.0	16.0	14.8	14.5	14.4	...	...	...	...
5	16.0	...	16.0	...	16.0	16.0	16.0	14.8	14.5	14.4	...	...	...	...
6	16.0	...	16.0	...	16.0	16.0	16.0	14.8	14.5	14.4	...	...	...	...
7	16.7	...	15.2	...	14.8	14.3	13.5	12.3	12.1	12.0	...	...	...	...
8	16.7	...	16.4	...	16.0	15.4	14.6	13.3	13.1	13.0	...	...	...	...
9	16.7	...	16.4	...	16.0	15.4	14.6	13.3	13.1	13.0	...	...	...	...
10	16.7	...	16.4	...	16.0	15.4	14.6	13.3	13.1	13.0	...	...	...	...
11	18.3	...	16.7	...	16.3	15.7	14.9	13.6	13.3	13.2	...	...	...	...
12	18.3	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
13	18.3	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
14	18.3	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
15	18.3	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
16	18.3	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
17	18.3	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
18	18.3	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
19	18.3	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
20	18.3	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
21	18.3	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
22	18.3	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
23	18.3	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
24	18.3	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
25	19.3	...	19.3	...	19.3	19.3	19.3	17.7	17.4	17.3	...	...	...	...
26	19.3	...	19.3	...	19.3	19.3	19.3	19.3	19.3	19.2	...	...	...	...
27	20.0	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
28	20.0	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
29	20.0	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
30	20.0	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
31	20.0	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
32	20.0	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
33	20.0	...	18.3	...	17.7	17.1	16.2	14.8	14.5	14.4	...	...	...	...
34	20.0	...	18.3	...	17.7	17.2	16.2	14.8	14.5	14.4	...	...	...	...
35	20.0	...	19.5	...	18.9	18.3	17.3	15.8	15.5	15.4	...	...	...	...
36	20.0	...	19.5	...	18.9	18.3	17.3	15.8	15.5	15.4	...	...	...	...
37	20.0	...	19.5	...	18.9	18.3	17.3	15.8	15.5	15.4	...	...	...	...
38	20.0	...	19.5	...	18.9	18.3	17.3	15.8	15.5	15.4	...	...	...	...
39	20.0	...	19.5	...	18.9	18.3	17.3	15.8	15.5	15.4	...	...	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	Carbon steel	Wld. pipe	SA-672	B60	K02401	...	...	1	1
2	Carbon steel	Wld. pipe	SA-672	C60	K02100	...	...	1	1
3	Carbon steel	Wld. pipe	SA-672	E60	K02402	...	...	1	1
4	Carbon steel	Plate	SA-283	D	K02702	...	...	1	1
5	Carbon steel	Wld. pipe	SA-53	E/B	K03005	...	...	1	1
6	Carbon steel	Smls. pipe	SA-53	S/B	K03005	...	...	1	1
7	Carbon steel	Smls. pipe	SA-106	B	K03006	...	...	1	1
8	Carbon steel	Fittings	SA-234	WPB	K03006	...	...	1	1
9	Carbon steel	Wld. fittings	SA-234	WPB	K03006	W	...	1	1
10	Carbon steel	Wld. pipe	SA-333	6	K03006	...	...	1	1
11	Carbon steel	Smls. pipe	SA-333	6	K03006	...	...	1	1
12	Carbon steel	Smls. & wld. tube	SA-334	6	K03006	...	...	1	1
13	Carbon steel	Forgings	SA-372	A	K03002	...	...	1	1
14	Carbon steel	Fittings	SA-420	WPL6	...	...	...	1	1
15	Carbon steel	Wld. fittings	SA-420	WPL6	...	WP-W	...	1	1
16	Carbon steel	Smls. pipe	SA-524	I	K02104	...	...	1	1
17	Carbon steel	Bar	SA-695	B/35	K03504	...	...	1	1
18	Carbon steel	Bar	SA-696	B	K03200	...	...	1	1
19	Carbon steel	Forgings	SA-727	...	K02506	...	...	1	1
20	Carbon steel	Wld. tube	SA-178	C	K03503	...	...	1	1
21	Carbon steel	Wld. tube	SA-178	C	K03503	...	...	1	1
22	Carbon steel	Smls. tube	SA-210	A-1	K02707	...	...	1	1
23	Carbon steel	Bar, shapes	SA-675	65	...	...	...	1	1
24	Carbon steel	Castings	SA-352	LCB	J03003	...	...	1	1
25	Carbon steel	Plate	SA-515	65	K02800	...	...	1	1
26	Carbon steel	Plate	SA-516	65	K02403	...	...	1	1
27	Carbon steel	Wld. pipe	SA-671	CB65	K02800	...	...	1	1
28	Carbon steel	Wld. pipe	SA-671	CC65	K02403	...	...	1	1
29	Carbon steel	Wld. pipe	SA-672	B65	K02800	...	...	1	1
30	Carbon steel	Wld. pipe	SA-672	C65	K02403	...	...	1	1
31	Carbon steel	Plate	SA-662	B	K02203	...	...	1	1
32	Carbon steel	Plate	SA-537	...	K12437	1	$2\frac{1}{2} < t \leq 4$	1	2
33	Carbon steel	Wld. pipe	SA-691	CMSH-70	K12437	...	$2\frac{1}{2} < t \leq 4$	1	2
34	Carbon steel	Bar, shapes	SA-675	70	...	...	...	1	1
35	Carbon steel	Forgings	SA-105	...	K03504	...	...	1	2
36	Carbon steel	Forgings	SA-181	...	K03502	70	...	1	2
37	Carbon steel	Castings	SA-216	WCB	J03002	...	...	1	2

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TABLE 2A (CONT'D)
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DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) III	VIII-2	External Pressure Chart No.	Notes
1	60	32	700	NP	CS-2	G1, G4
2	60	32	700	NP	CS-2	G1, G4
3	60	32	700	NP	CS-2	G1, G4
4	60	33	NP	700	CS-2	...
5	60	35	700 (SPT)	NP	CS-2	...
6	60	35	700 (SPT)	NP	CS-2	...
7	60	35	700	700	CS-2	...
8	60	35	700	700	CS-2	...
9	60	35	700	NP	CS-2	...
10	60	35	700	NP	CS-2	...
11	60	35	700	700	CS-2	...
12	60	35	700	NP	CS-2	...
13	60	35	NP	650	CS-2	G19, H5
14	60	35	700	700	CS-2	...
15	60	35	700	NP	CS-2	...
16	60	35	NP	700	CS-2	...
17	60	35	700	NP	...	...
18	60	35	700	NP	...	...
19	60	36	700 (SPT)	700	CS-2	...
20	60	37	700	NP	CS-2	...
21	60	37	NP	700	CS-2	G14
22	60	37	700	700	CS-2	...
23	65	32.5	NP	700	CS-2	...
24	65	35	700	700	CS-2	...
25	65	35	700	700	CS-2	...
26	65	35	700	700	CS-2	...
27	65	35	700	NP	CS-2	G1, G4
28	65	35	700	NP	CS-2	G1, G4
29	65	35	700	NP	CS-2	G1, G4
30	65	35	700	NP	CS-2	G1, G4
31	65	40	NP	700	CS-3	...
32	65	45	700	700	CS-4	...
33	65	45	700	NP	CS-4	G1, G2
34	70	35	NP	700	CS-2	...
35	70	36	700	700	CS-2	...
36	70	36	700	700	CS-2	...
37	70	36	700	700	CS-2	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	19.5	...	18.9	18.3	17.3	15.8	15.5	15.4	...	...	...	...
2	20.0	...	19.5	...	18.9	18.3	17.3	15.8	15.5	15.4	...	...	...	...
3	20.0	...	19.5	...	18.9	18.3	17.3	15.8	15.5	15.4	...	...	...	...
4	20.0	...	19.5	...	18.9	18.3	17.3	15.8	15.5	15.4	...	...	...	...
5	20.0	...	20.0	...	20.0	20.0	18.9	17.3	16.9	16.8	...	...	...	...
6	20.0	...	20.0	...	20.0	20.0	18.9	17.3	16.9	16.8	...	...	...	...
7	20.0	...	20.0	...	20.0	20.0	18.9	17.3	16.9	16.8	...	...	...	...
8	20.0	...	20.0	...	20.0	20.0	18.9	17.3	16.9	16.8	...	...	...	...
9	20.0	...	20.0	...	20.0	20.0	18.9	17.3	16.9	16.8	...	...	...	...
10	20.0	...	20.0	...	20.0	20.0	18.9	17.3	16.9	16.8	...	...	...	...
11	20.0	...	20.0	...	20.0	20.0	18.9	17.3	16.9	16.8	...	...	...	...
12	20.0	...	20.0	...	20.0	20.0	18.9	17.3	16.9	16.8	...	...	...	...
13	20.0	...	20.0	...	20.0	20.0	18.9	17.3	16.9	...	...	...	...	...
14	20.0	...	20.0	...	20.0	20.0	18.9	17.3	16.9	16.8	...	...	...	...
15	20.0	...	20.0	...	20.0	20.0	18.9	17.3	16.9	16.8	...	...	...	...
16	20.0	...	20.0	...	20.0	20.0	18.9	17.3	16.9	16.8	...	...	...	...
17	20.0	...	20.0	...	20.0	20.0	18.9	17.3	16.9	16.8	...	...	...	...
18	20.0	...	20.0	...	20.0	20.0	18.9	17.3	16.9	16.8	...	...	...	...
19	20.0	...	20.0	...	20.0	20.0	19.4	17.7	17.4	17.3	...	...	...	...
20	20.0	...	20.0	...	20.0	20.0	20.0	18.2	17.9	17.8	...	...	...	...
21	17.0	...	17.0	...	17.0	17.0	17.0	15.5	15.2	15.1	...	...	...	...
22	20.0	...	20.0	...	20.0	20.0	20.0	18.2	17.9	17.8	...	...	...	...
23	21.7	...	19.8	...	19.2	18.6	17.5	16.1	15.7	15.6	...	...	...	...
24	21.7	...	21.3	...	20.7	20.0	18.9	17.3	16.9	16.8	...	...	...	...
25	21.7	...	21.3	...	20.7	20.0	18.9	17.3	16.9	16.8	...	...	...	...
26	21.7	...	21.3	...	20.7	20.0	18.9	17.3	16.9	16.8	...	...	...	...
27	21.7	...	21.3	...	20.7	20.0	18.9	17.3	16.9	16.8	...	...	...	...
28	21.7	...	21.3	...	20.7	20.0	18.9	17.3	16.9	16.8	...	...	...	...
29	21.7	...	21.3	...	20.7	20.0	18.9	17.3	17.0	16.8	...	...	...	...
30	21.7	...	21.3	...	20.7	20.0	18.9	17.3	17.0	16.8	...	...	...	...
31	21.6	...	21.6	...	21.6	21.6	21.5	19.7	19.3	19.2	...	...	...	...
32	21.7	...	21.7	...	21.3	21.3	21.3	20.6	20.3	19.6	...	...	...	...
33	21.7	...	21.7	...	21.3	21.3	21.3	20.6	20.3	19.6	...	...	...	...
34	23.3	...	21.3	...	20.7	20.0	18.9	17.3	17.0	16.8	...	...	...	...
35	23.3	...	21.9	...	21.3	20.6	19.4	17.8	17.4	17.3	...	...	...	...
36	23.3	...	21.9	...	21.3	20.6	19.4	17.8	17.4	17.3	...	...	...	...
37	23.3	...	21.9	...	21.3	20.6	19.4	17.8	17.4	17.3	...	...	...	...

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SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	Carbon steel	Forgings	SA-266	2	K03506	...	...	1	2
2	Carbon steel	Forgings	SA-266	4	K03017	...	...	1	2
3	Carbon steel	Forgings	SA-350	LF2	K03011	...	...	1	2
4	Carbon steel	Forgings	SA-508	1	K13502	...	...	1	2
5	Carbon steel	Forgings	SA-508	1A	K13502	...	...	1	2
6	Carbon steel	Forgings	SA-541	1	K03506	...	...	1	2
7	Carbon steel	Forgings	SA-541	1A	K03506	...	...	1	2
8	Carbon steel	Cast pipe	SA-660	WCB	J03003	...	...	1	2
9	Carbon steel	Forgings	SA-765	II	K03047	...	...	1	2
10	Carbon steel	Plate	SA-515	70	K03101	...	...	1	2
11	Carbon steel	Plate	SA-516	70	K02700	...	...	1	2
12	Carbon steel	Wld. pipe	SA-671	CB70	K03101	...	...	1	2
13	Carbon steel	Wld. pipe	SA-671	CC70	K02700	...	...	1	2
14	Carbon steel	Wld. pipe	SA-672	B70	K03101	...	...	1	2
15	Carbon steel	Wld. pipe	SA-672	C70	K02700	...	...	1	2
16	Carbon steel	Smls. pipe	SA-106	C	K03501	...	...	1	2
17	Carbon steel	Smls. tube	SA-210	C	K03501	...	...	1	2
18	Carbon steel	Castings	SA-216	WCC	K02503	...	...	1	2
19	Carbon steel	Fittings	SA-234	WPC	K03501	...	...	1	2
20	Carbon steel	Wld. fittings	SA-234	WPC	K03501	W	...	1	2
21	Carbon steel	Castings	SA-352	LCC	J02505	...	...	1	2
22	Carbon steel	Castings	SA-487	16	...	A	...	1	2
23	Carbon steel	Plate	SA-537	...	K12437	3	$4 < t \leq 6$	1	3
24	Carbon steel	Cast pipe	SA-660	WCC	J02505	...	...	1	2
25	Carbon steel	Bar	SA-695	B/40	K03504	...	...	1	2
26	Carbon steel	Bar	SA-696	C	K03200	...	...	1	2
27	Carbon steel	Plate	SA-662	C	K02007	...	...	1	2
28	Carbon steel	Plate	SA-537	...	K12437	2	$4 < t \leq 6$	1	3
29	Carbon steel	Plate	SA-738	C	...	...	$4 < t \leq 6$	1	3
30	Carbon steel	Plate	SA-537	...	K12437	1	$\leq 2\frac{1}{2}$	1	2
31	Carbon steel	Wld. pipe	SA-671	CD70	K12437	...	$\leq 2\frac{1}{2}$	1	2
32	Carbon steel	Wld. pipe	SA-672	D70	K12437	...	$\leq 2\frac{1}{2}$	1	2
33	Carbon steel	Wld. pipe	SA-691	CMSH-70	K12437	...	$\leq 2\frac{1}{2}$	1	2
34	Carbon steel	Forgings	SA-266	3	K05001	...	...	1	2
35	Carbon steel	Plate	SA-299	...	K02803	...	> 1	1	2
36	Carbon steel	Wld. pipe	SA-691	CMS-75	K02803	...	> 1	1	2
37	Carbon steel	Plate	SA-299	...	K02803	...	≤ 1	1	2
38	Carbon steel	Wld. pipe	SA-671	CK75	K02803	...	≤ 1	1	2
39	Carbon steel	Wld. pipe	SA-672	N75	K02803	...	≤ 1	1	2
40	Carbon steel	Wld. pipe	SA-691	CMS-75	K02803	...	≤ 1	1	2

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DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) III	VIII-2	External Pressure Chart No.	Notes
1	70	36	700	700	CS-2	...
2	70	36	NP	700	CS-2	...
3	70	36	700	700	CS-2	...
4	70	36	700	700	CS-2	...
5	70	36	700	700	CS-2	...
6	70	36	700	700	CS-2	...
7	70	36	700	700	CS-2	...
8	70	36	700	NP	CS-2	...
9	70	36	NP	700	CS-2	...
10	70	38	700	700	CS-2	...
11	70	38	700	700	CS-2	...
12	70	38	700	NP	CS-2	G1, G3
13	70	38	700	NP	CS-2	G1, G4
14	70	38	700	NP	CS-2	G1, G3
15	70	38	700	NP	CS-2	G1, G4
16	70	40	700	700	CS-3	...
17	70	40	NP	700	CS-3	...
18	70	40	700	700	CS-3	...
19	70	40	700	700	CS-3	...
20	70	40	700	NP	...	...
21	70	40	700	NP	...	...
22	70	40	700	NP	...	...
23	70	40	NP	700	CS-3	...
24	70	40	700	NP	...	...
25	70	40	700	NP	...	...
26	70	40	700	NP	...	...
27	70	43	NP	700	CS-3	...
28	70	46	700	700	CS-4 (Use Cl. 1 curve)	...
29	70	46	NP	650	CS-4 (Use Cl. 1 curve)	...
30	70	50	700	700	CS-4	...
31	70	50	700	NP	...	G1, G4
32	70	50	700	NP	...	G1, G4
33	70	50	700	NP	CS-4	G1, G4
34	75	37.5	700	700	CS-2	W1, W6
35	75	40	700	700	CS-3	...
36	75	40	700	NP	...	G1, G4
37	75	42	700	700	CS-3	...
38	75	42	700	NP	...	G1
39	75	42	700	NP	...	G1
40	75	42	700	NP	...	G1

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	23.3	...	21.9	...	21.3	20.6	19.4	17.8	17.4	17.3	...	...	...	...
2	23.3	...	21.9	...	21.3	20.6	19.4	17.8	17.4	17.3	...	...	...	...
3	23.3	...	21.9	...	21.3	20.6	19.4	17.8	17.4	17.3	...	...	...	...
4	23.3	...	21.9	...	21.3	20.6	19.4	17.8	17.4	17.3	...	...	...	...
5	23.3	...	21.9	...	21.3	20.6	19.4	17.8	17.4	17.3	...	...	...	...
6	23.3	...	21.9	...	21.3	20.6	19.4	17.8	17.4	17.3	...	...	...	...
7	23.3	...	21.9	...	21.3	20.6	19.4	17.8	17.4	17.3	...	...	...	...
8	23.3	...	21.9	...	21.3	20.6	19.4	17.8	17.4	17.3	...	...	...	...
9	23.3	...	21.9	...	21.3	20.6	19.4	17.8	17.4	17.3	...	...	...	...
10	23.3	...	23.1	...	22.5	21.7	20.5	18.7	18.4	18.3	...	...	...	...
11	23.3	...	23.1	...	22.5	21.7	20.5	18.7	18.4	18.3	...	...	...	...
12	23.3	...	23.1	...	22.5	21.7	20.5	18.7	18.4	18.3	...	...	...	...
13	23.3	...	23.1	...	22.5	21.7	20.5	18.7	18.4	18.3	...	...	...	...
14	23.3	...	23.1	...	22.5	21.7	20.5	18.7	18.4	18.3	...	...	...	...
15	23.3	...	23.1	...	22.5	21.7	20.5	18.7	18.4	18.3	...	...	...	...
16	23.3	...	23.3	...	23.3	22.9	21.6	19.7	19.4	19.2	...	...	...	...
17	23.3	...	23.3	...	23.3	22.9	21.6	19.7	19.4	19.2	...	...	...	...
18	23.3	...	23.3	...	23.3	22.9	21.6	19.7	19.4	19.2	...	...	...	...
19	23.3	...	23.3	...	23.3	22.9	21.6	19.7	19.4	19.2	...	...	...	...
20	23.3	...	23.3	...	23.3	22.9	21.6	19.7	19.4	19.2	...	...	...	...
21	23.3	...	23.3	...	23.3	22.9	21.6	19.7	19.4	19.2	...	...	...	...
22	23.3	...	23.2	...	21.8	21.0	20.3	19.6	19.1	18.6	...	...	...	...
23	23.3	...	23.3	...	23.2	22.2	21.2	20.4	20.1	19.8	...	...	...	...
24	23.3	...	23.3	...	23.3	22.9	21.6	19.7	19.4	19.2	...	...	...	...
25	23.3	...	23.3	...	23.3	22.9	21.6	19.7	19.4	19.2	...	...	...	...
26	23.3	...	23.3	...	23.3	22.9	21.6	19.7	19.4	19.2	...	...	...	...
27	23.3	...	23.3	...	23.3	23.3	23.1	21.2	20.8	20.7	...	...	...	...
28	23.3	...	23.3	...	23.3	23.1	23.1	23.1	23.0	22.7	...	...	...	...
29	23.3	...	23.3	...	23.3	23.1	23.1	23.1	23.0	...	...	...	...	...
30	23.3	...	23.3	...	22.9	22.9	22.9	22.6	22.0	21.4	...	...	...	...
31	23.3	...	23.2	...	22.9	22.9	22.9	22.6	22.0	21.4	...	...	...	...
32	23.3	...	23.2	...	22.9	22.9	22.9	22.6	22.0	21.4	...	...	...	...
33	23.3	...	23.2	...	22.9	22.9	22.9	22.6	22.0	21.4	...	...	...	...
34	25.0	...	22.8	...	22.2	21.4	20.2	18.5	18.2	18.0	...	...	...	...
35	25.0	...	24.4	...	23.7	22.9	21.6	19.7	19.4	19.2	...	...	...	...
36	25.0	...	24.4	...	23.7	22.9	21.6	19.7	19.4	19.2	...	...	...	...
37	25.0	...	25.0	...	24.8	24.0	22.7	20.7	20.4	20.2	...	...	...	...
38	25.0	...	25.0	...	24.8	24.0	22.7	20.7	20.4	20.2	...	...	...	...
39	25.0	...	25.0	...	24.8	24.0	22.7	20.7	20.4	20.2	...	...	...	...
40	25.0	...	25.0	...	24.8	24.0	22.7	20.7	20.4	20.2	...	...	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	Carbon steel	Forgings	SA-372	B	K04001	...	...	1	2
2	Carbon steel	Plate	SA-738	A	K12447	...	...	1	2
3	Carbon steel	Plate	SA-537	...	K12437	3	$2\frac{1}{2} < t \leq 4$	1	3
4	Carbon steel	Plate	SA-537	...	K12437	2	$2\frac{1}{2} < t \leq 4$	1	3
5	Carbon steel	Wld. pipe	SA-691	CMSH-80	K12437	...	$2\frac{1}{2} < t \leq 4$	1	3
6	Carbon steel	Plate	SA-738	C	...	...	$2\frac{1}{2} < t \leq 4$	1	3
7	Carbon steel	Plate	SA-537	...	K12437	3	$\leq 2\frac{1}{2}$	1	3
8	Carbon steel	Plate	SA-537	...	K12437	2	$\leq 2\frac{1}{2}$	1	3
9	Carbon steel	Wld. pipe	SA-671	CD80	K12437	...	$\leq 2\frac{1}{2}$	1	3
10	Carbon steel	Wld. pipe	SA-672	D80	K12437	...	$\leq 2\frac{1}{2}$	1	3
11	Carbon steel	Wld. pipe	SA-691	CMSH-80	K12437	...	$\leq 2\frac{1}{2}$	1	3
12	Carbon steel	Plate	SA-738	C	...	...	$\leq 2\frac{1}{2}$	1	3
13	Carbon steel	Plate	SA-738	B	K12447	...	...	1	3
14	Carbon steel	Forgings	SA-372	C	K04801	...	...	...	...
15	Carbon steel	Plate	SA-724	A	K11831	...	...	1	4
16	Carbon steel	Plate	SA-724	C	K12037	...	...	1	4
17	Carbon steel	Plate	SA-724	B	K12031	...	...	1	4
18	C–Mn–Cb	Plate	SA-812	65	...	...	...	1	3
19	C–Mn–Si–Cb	Plate	SA-737	B	K12001	...	...	1	2
20	C–Mn–Si–Cb	Plate	SA-812	80	...	...	...	1	4
21	C–Mn–Si–V	Plate	SA-737	C	K12202	...	...	1	3
22	C–$\frac{1}{2}$Mo	Smls. tube	SA-209	T1b	K11422	...	...	3	1
23	C–$\frac{1}{2}$Mo	Smls. tube	SA-209	T1	K11522	...	...	3	1
24	C–$\frac{1}{2}$Mo	Fittings	SA-234	WP1	K12821	...	...	3	1
25	C–$\frac{1}{2}$Mo	Wld. fittings	SA-234	WP1	K12821	W	...	3	1
26	C–$\frac{1}{2}$Mo	Smls. pipe	SA-335	P1	K11522	...	...	3	1
27	C–$\frac{1}{2}$Mo	Forged pipe	SA-369	FP1	K11522	...	...	3	1
28	C–$\frac{1}{2}$Mo	Smls. tube	SA-209	T1a	K12023	...	...	3	1
29	C–$\frac{1}{2}$Mo	Castings	SA-217	WC1	J12524	...	...	3	1
30	C–$\frac{1}{2}$Mo	Castings	SA-217	WC1	J12524	...	...	3	1
31	C–$\frac{1}{2}$Mo	Castings	SA-352	LC1	J12522	...	...	3	1
32	C–$\frac{1}{2}$Mo	Castings	SA-352	LC1	J12522	...	...	3	1
33	C–$\frac{1}{2}$Mo	Cast pipe	SA-426	CP1	J12521	...	...	3	1
34	C–$\frac{1}{2}$Mo	Plate	SA-204	A	K11820	...	...	3	1
35	C–$\frac{1}{2}$Mo	Wld. pipe	SA-672	L65	K11820	...	...	3	1
36	C–$\frac{1}{2}$Mo	Wld. pipe	SA-691	CM-65	K11820	...	...	3	1
37	C–$\frac{1}{2}$Mo	Forgings	SA-182	F1	K12822	...	...	3	2
38	C–$\frac{1}{2}$Mo	Plate	SA-204	B	K12020	...	...	3	2
39	C–$\frac{1}{2}$Mo	Forgings	SA-336	F1	K12520	...	...	3	2
40	C–$\frac{1}{2}$Mo	Wld. pipe	SA-672	L70	K12020	...	...	3	2
41	C–$\frac{1}{2}$Mo	Wld. pipe	SA-691	CM-70	K12020	...	...	3	2

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) III	VIII-2	External Pressure Chart No.	Notes
1	75	45	NP	100	CS-3	G19, H5, W2, W6
2	75	45	NP	700	CS-2	...
3	75	50	NP	700	CS-3	...
4	75	55	700	700	CS-4 (Use Cl. 1 curve)	...
5	75	55	700	NP	CS-4	...
6	75	55	NP	650	CS-4 (Use Cl. 1 curve)	...
7	80	55	NP	700	CS-3	...
8	80	60	700	700	CS-4	...
9	80	60	700	NP	CS-4	G1, G4
10	80	60	700	NP	CS-3	G1, G4
11	80	60	700	NP	CS-4	G1, G4
12	80	60	NP	650	CS-4	...
13	85	60	NP	600	CS-4 (Use Cl. 2 curve)	...
14	90	55	NP	100	CS-3	G19, H5, W2, W6
15	90	70	NP	700	CS-2	...
16	90	70	NP	700	CS-2	...
17	95	75	NP	700	CS-2	...
18	85	65	NP	650	CS-2	...
19	70	50	700	700	CS-3	...
20	100	80	NP	650	CS-2	...
21	80	60	700	700	CS-3	...
22	53	28	NP	700	CS-1	...
23	55	30	NP	700	CS-2	...
24	55	30	700	700	CS-2	...
25	55	30	700	NP	...	...
26	55	30	700	700	CS-2	...
27	55	30	700	700	CS-2	...
28	60	32	NP	700	CS-2	...
29	65	35	700 (SPT)	NP	...	...
30	65	35	700	700	CS-2	...
31	65	35	700 (SPT)	NP	...	...
32	65	35	700	700	CS-2	...
33	65	35	700	NP	...	...
34	65	37	700	700	CS-2	...
35	65	37	700	NP	CS-2	G1, G2
36	65	37	700	NP	CS-2	G1, G2
37	70	40	700	700	CS-3	...
38	70	40	700	700	CS-3	...
39	70	40	700	700	CS-3	...
40	70	40	700	NP	CS-3	G1, G2
41	70	40	700	NP	CS-3	G1, G2

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	25.0	...	...	...	...	...	...	...	...	...	...	...	...	...
2	25.0	...	25.0	...	24.3	22.5	21.1	20.3	19.8	19.3	...	...	...	...
3	25.0	...	25.0	...	25.0	24.7	24.7	24.7	24.6	24.3	...	...	...	...
4	25.0	...	25.0	...	25.0	24.7	24.7	24.7	24.6	24.3	...	...	...	...
5	25.0	...	25.0	...	25.0	24.7	24.7	24.7	24.6	24.3	...	...	...	...
6	25.0	...	25.0	...	25.0	24.7	24.7	24.7	24.6	...	...	...	...	...
7	26.7	...	26.7	...	26.7	26.4	26.4	26.4	26.2	25.9	...	...	...	...
8	26.7	...	26.7	...	26.7	26.4	26.4	26.4	26.2	25.9	...	...	...	...
9	26.7	...	26.7	...	26.7	26.4	26.4	26.4	26.2	25.9	...	...	...	...
10	26.7	...	26.7	...	26.7	26.4	26.4	26.4	26.2	25.9	...	...	...	...
11	26.7	...	26.7	...	26.7	26.4	26.4	26.4	26.2	25.9	...	...	...	...
12	26.7	...	26.7	...	26.7	26.4	26.4	26.4	26.2	...	...	...	...	...
13	28.3	...	28.3	...	28.3	28.3	28.3	28.3	...	...	...	...	...	...
14	30.0	...	...	...	...	...	...	...	...	...	...	...	...	...
15	30.0	30.0	30.0	30.0	30.0	29.7	29.7	29.7	29.5	29.2	...	...	...	...
16	30.0	30.0	30.0	30.0	30.0	29.7	29.7	29.7	29.5	29.2	...	...	...	...
17	31.7	31.7	31.7	31.7	31.7	31.4	31.4	31.4	31.2	30.8	...	...	...	...
18	28.3	...	28.3	...	28.3	28.3	28.3	28.3	28.3	...	...	...	...	...
19	23.3	...	23.3	...	23.3	23.3	23.1	22.6	22.4	22.1	...	...	...	...
20	33.3	...	33.3	...	32.7	32.7	32.7	32.7	32.7	...	...	...	...	...
21	26.7	...	26.7	...	26.7	26.7	26.7	26.7	26.7	26.5	...	...	...	...
22	17.7	...	17.2	...	16.4	15.7	15.1	14.7	14.4	14.1	...	...	...	...
23	18.3	...	18.3	...	17.5	16.9	16.3	15.7	15.4	15.1	...	...	...	...
24	18.3	...	18.3	...	17.5	16.9	16.3	15.7	15.4	15.1	...	...	...	...
25	18.3	...	18.3	...	17.5	16.9	16.3	15.7	15.4	15.1	...	...	...	...
26	18.3	...	18.3	...	17.5	16.9	16.3	15.7	15.4	15.1	...	...	...	...
27	18.3	...	18.3	...	17.5	16.9	16.3	15.7	15.4	15.1	...	...	...	...
28	20.0	...	19.7	...	18.7	17.9	17.3	16.7	16.4	16.1	...	...	...	...
29	21.7	...	21.5	...	20.5	19.7	18.9	18.3	18.0	17.6	...	...	...	...
30	21.7	...	21.5	...	20.5	19.7	18.9	18.3	18.0	17.6	...	...	...	...
31	21.7	...	21.5	...	20.5	19.7	18.9	18.3	18.0	17.6	...	...	...	...
32	21.7	...	21.5	...	20.5	19.7	18.9	18.3	18.0	17.6	...	...	...	...
33	21.7	...	21.5	...	20.5	19.7	18.9	18.3	18.0	17.6	...	...	...	...
34	21.7	...	21.7	...	21.7	20.7	20.0	19.3	19.0	18.6	...	...	...	...
35	21.7	...	21.7	...	21.7	20.7	20.0	19.3	19.0	18.6	...	...	...	...
36	21.7	...	21.7	...	21.7	20.7	20.0	19.3	19.0	18.6	...	...	...	...
37	23.3	...	23.3	...	23.3	22.5	21.7	20.9	20.5	20.1	...	...	...	...
38	23.3	...	23.3	...	23.3	22.5	21.7	20.9	20.5	20.1	...	...	...	...
39	23.3	...	23.3	...	23.3	22.5	21.7	20.9	20.5	20.1	...	...	...	...
40	23.3	...	23.3	...	23.3	22.5	21.7	20.9	20.5	20.1	...	...	...	...
41	23.3	...	23.3	...	23.3	22.5	21.7	20.9	20.5	20.1	...	...	...	...

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SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	C–½Mo	Plate	SA-204	C	K12320	...	...	3	2
2	C–½Mo	Wld. pipe	SA-672	L75	K12320	...	...	3	2
3	C–½Mo	Wld. pipe	SA-691	CM-75	K12320	...	...	3	2
4	C–½Mo	Plate	SA-517	J	K11625	...	≤ 1¼	11B	6
5	½Cr–⅕Mo–V	Plate	SA-517	B	K11630	...	≤ 1¼	11B	4
6	½Cr–⅕Mo–V	Plate	SA-517	B	K11630	...	≤ 1¼	11B	4
7	½Cr–¼Mo–Si	Forgings	SA-592	A	K11856	...	2½ < t ≤ 4	11B	1
8	½Cr–¼Mo–Si	Plate	SA-517	A	K11856	...	≤ 1¼	11B	1
9	½Cr–¼Mo–Si	Forgings	SA-592	A	K11856	...	≤ 2½	11B	1
10	½Cr–½Mo	Smls. pipe	SA-335	P2	K11547	...	...	3	1
11	½Cr–½Mo	Forged pipe	SA-369	FP2	K11547	...	...	3	1
12	½Cr–½Mo	Plate	SA-387	2	K12143	1	...	3	1
13	½Cr–½Mo	Wld. pipe	SA-691	½CR	K12143	...	...	3	1
14	½Cr–½Mo	Smls. tube	SA-213	T2	K11547	...	...	3	1
15	½Cr–½Mo	Cast pipe	SA-426	CP2	J11547	...	...	3	1
16	½Cr–½Mo	Forgings	SA-182	F2	K12122	...	...	3	2
17	½Cr–½Mo	Plate	SA-387	2	K12143	2	...	3	2
18	¾Cr–½Ni–Cu	Smls. tube	SA-423	1	K11535	...	...	4	2
19	¾Cr–¾Ni–Cu–Al	Smls. pipe	SA-333	4	K11267	...	...	4	2
20	1Cr–⅕Mo	Forgings	SA-372	E	K13047	70	...	...	...
21	1Cr–⅕Mo	Forgings	SA-372	F	G41350	70	...	...	...
22	1Cr–⅕Mo	Forgings	SA-372	G	K13049	70	...	...	...
23	1Cr–⅕Mo	Forgings	SA-372	H	K13547	70	...	...	...
24	1Cr–⅕Mo	Forgings	SA-372	J	K13548	70	...	...	...
25	1Cr–⅕Mo	Forgings	SA-372	J	G41370	110	...	...	...
26	1Cr–½Mo	Plate	SA-387	12	K11757	1	...	4	1
27	1Cr–½Mo	Wld. pipe	SA-691	1CR	K11757	22	...	4	1
28	1Cr–½Mo	Cast pipe	SA-426	CP12	J11562	...	...	4	1
29	1Cr–½Mo	Forgings	SA-182	F12	K11562	1	...	4	1
30	1Cr–½Mo	Smls. tube	SA-213	T12	K11562	...	...	4	1
31	1Cr–½Mo	Fittings	SA-234	WP12	K12062	1	...	4	1
32	1Cr–½Mo	Smls. pipe	SA-335	P12	K11562	...	...	4	1
33	1Cr–½Mo	Forged pipe	SA-369	FP12	K11562	...	...	4	1
34	1Cr–½Mo	Plate	SA-387	12	K11757	2	...	4	1
35	1Cr–½Mo	Wld. pipe	SA-691	1CR	K11757	42	...	4	1
36	1Cr–½Mo	Forgings	SA-182	F12	K11564	2	...	4	1
37	1Cr–½Mo	Forgings	SA-336	F12	K11564	...	...	4	1

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TABLE 2A (CONT'D)
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DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) III	VIII-2	External Pressure Chart No.	Notes
1	75	43	700	700	CS-3	...
2	75	43	700	NP	CS-3	G1, G2
3	75	43	700	NP	CS-3	G1, G2
4	115	100	700 (SPT)	700	HT-1	...
5	115	100	700 (SPT)	NP	...	...
6	115	100	NP	700	HT-1	...
7	105	90	700 (SPT)	NP	...	...
8	115	100	700 (SPT)	700	HT-1	...
9	115	100	NP	700	CS-2	...
10	55	30	700	700	CS-2	...
11	55	30	700	700	CS-2	...
12	55	33	700	700	CS-2	...
13	55	33	700	NP	CS-2	G1, G2
14	60	30	700	700	CS-2	...
15	60	30	700	NP	CS-2	...
16	70	40	NP	700	CS-3	...
17	70	45	NP	100	CS-3	H2
18	60	37	NP	700	CS-2	...
19	60	35	NP	100	CS-2	...
20	120	70	NP	650	CS-2	G19, H4, W2, W6
21	120	70	NP	650	CS-2	G19, H4, W2, W6
22	120	70	NP	100	CS-2	G19, H4, W2, W6
23	120	70	NP	100	CS-2	G19, H4, W2, W6
24	120	70	NP	650	CS-2	G19, H4, W2, W6
25	135	110	NP	650	CS-2	H4, W2, W6
26	55	33	700	900	CS-2	...
27	55	33	700	NP	...	G22
28	60	30	700	NP	...	...
29	60	32	NP	900	CS-2	...
30	60	32	700	900	CS-2	...
31	60	32	700	900	CS-2	...
32	60	32	700	900	CS-2	...
33	60	32	700	900	CS-2	...
34	65	40	700	900	CS-3	...
35	65	40	700	NP	...	G23, H2
36	70	40	700	900	CS-3	...
37	70	40	700	900	CS-3	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	25.0	...	25.0	...	25.0	24.1	23.3	22.5	22.1	21.7	...	...	...	...
2	25.0	...	25.0	...	25.0	24.1	23.3	22.5	22.1	21.7	...	...	...	...
3	25.0	...	25.0	...	25.0	24.1	23.3	22.5	22.1	21.7	...	...	...	...
4	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.2	37.5	...	...	...	...
5	38.3	...	38.3	...	38.3	38.3	38.3	38.1	37.2	36.4	...	...	...	...
6	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.2	37.5	...	...	...	...
7	35.0	...	35.0	...	35.0	35.0	35.0	34.8	34.0	33.2	...	...	...	...
8	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.2	37.5	...	...	...	...
9	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.2	37.5	...	...	...	...
10	18.3	...	18.3	...	17.5	16.9	16.3	15.7	15.4	15.1	...	...	...	...
11	18.3	...	18.3	...	17.5	16.9	16.3	15.7	15.4	15.1	...	...	...	...
12	18.3	...	18.3	...	18.3	18.3	17.9	17.3	16.9	16.6	...	...	...	...
13	18.3	...	18.3	...	18.3	18.3	17.9	17.3	16.9	16.6	...	...	...	...
14	20.0	...	18.5	...	17.5	16.9	16.3	15.7	15.4	15.1	...	...	...	...
15	20.0	...	18.5	...	17.5	16.9	16.3	15.7	15.4	15.1	...	...	...	...
16	23.3	...	23.3	...	23.3	22.5	21.7	20.9	20.5	20.1	...	...	...	...
17	23.3	...	...	...	...	...	...	...	...	...	...	...	...	...
18	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	...	...	...	...
19	20.0	...	...	...	...	...	...	...	...	...	...	...	...	...
20	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	...	...	...	...	...
21	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	...	...	...	...	...
22	40.0	...	...	...	...	...	...	...	...	...	...	...	...	...
23	40.0	...	...	...	...	...	...	...	...	...	...	...	...	...
24	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	...	...	...	...	...
25	45.0	44.1	43.1	43.0	42.9	42.5	42.2	41.8	40.0	...	...	...	...	...
26	18.3	...	18.3	...	18.3	17.9	17.3	16.7	16.5	16.3	16.0	15.7	15.4	13.6
27	18.3	...	18.3	...	18.3	17.9	17.3	16.7	16.5	16.3	...	...	...	...
28	20.0	...	19.3	...	18.1	17.3	16.7	16.3	16.1	15.8	...	...	...	...
29	20.0	...	19.3	...	18.1	17.3	16.7	16.3	16.1	15.8	15.5	15.3	14.9	14.5
30	20.0	...	19.3	...	18.1	17.3	16.7	16.3	16.1	15.8	15.5	15.3	14.9	14.5
31	20.0	...	19.3	...	18.1	17.3	16.7	16.3	16.1	15.8	15.5	15.3	14.9	14.5
32	20.0	...	19.3	...	18.1	17.3	16.7	16.3	16.1	15.8	15.5	15.3	14.9	14.5
33	20.0	...	19.3	...	18.1	17.3	16.7	16.3	16.1	15.8	15.5	15.3	14.9	14.5
34	21.7	...	21.7	...	21.7	21.7	20.9	20.3	20.1	19.7	19.4	19.1	18.7	13.6
35	21.7	...	21.7	...	21.7	21.7	20.9	20.3	20.1	19.7	...	...	...	...
36	23.3	...	23.3	...	22.7	21.7	20.9	20.3	20.1	19.7	19.4	19.1	18.7	13.6
37	23.3	...	23.3	...	22.7	21.7	20.9	20.3	20.1	19.7	19.4	19.1	18.7	13.6

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	1¼Cr–½Mo	Castings	SA-217	WC6	J12072	...	...	4	1
2	1¼Cr–½Mo	Cast pipe	SA-426	CP11	J12072	...	...	4	1
3	1¼Cr–½Mo	Bar	SA-739	B11	K11797	...	...	4	1
4	1¼Cr–½Mo–Si	Smls. tube	SA-199	T11	K11597	...	...	4	1
5	1¼Cr–½Mo–Si	Forgings	SA-182	F11	K11597	1	...	4	1
6	1¼Cr–½Mo–Si	Smls. tube	SA-213	T11	K11597	...	...	4	1
7	1¼Cr–½Mo–Si	Fittings	SA-234	WP11	...	1	...	4	1
8	1¼Cr–½Mo–Si	Wld. fittings	SA-234	WP11	...	1/W	...	4	1
9	1¼Cr–½Mo–Si	Smls. pipe	SA-335	P11	K11597	...	...	4	1
10	1¼Cr–½Mo–Si	Forged pipe	SA-369	FP11	K11597	...	...	4	1
11	1¼Cr–½Mo–Si	Plate	SA-387	11	K11789	1	...	4	1
12	1¼Cr–½Mo–Si	Wld. pipe	SA-691	1¼CR	K11789	...	...	4	1
13	1¼Cr–½Mo–Si	Forgings	SA-182	F11	K11572	2	...	4	1
14	1¼Cr–½Mo–Si	Forgings	SA-336	F11	K11572	2	...	4	1
15	1¼Cr–½Mo–Si	Forgings	SA-336	F11	K11572	3	...	4	1
16	1¼Cr–½Mo–Si	Plate	SA-387	11	K11789	2	...	4	1
17	1¼Cr–½Mo–Si	Wld. pipe	SA-691	1¼CR	K11789	...	...	4	1
18	1¾Cr–½Mo–Cu	Forgings	SA-592	E	K11695	...	$2\frac{1}{2} < t \le 4$	11B	2
19	1¾Cr–½Mo–Cu	Forgings	SA-592	E	K11695	...	$\le 2\frac{1}{2}$	11B	2
20	1¾Cr–½Mo–Ti	Plate	SA-517	E	K21604	...	$2\frac{1}{2} < t \le 6$	11B	2
21	1¾Cr–½Mo–Ti	Plate	SA-517	E	K21604	...	$\le 2\frac{1}{2}$	11B	2
22	2¼Cr–1Mo	Smls. tube	SA-199	T22	K21590	...	...	5A	1
23	2¼Cr–1Mo	Forgings	SA-182	F22	K21590	1	...	5A	1
24	2¼Cr–1Mo	Smls. tube	SA-213	T22	K21590	...	...	5A	1
25	2¼Cr–1Mo	Fittings	SA-234	WP22	K21590	1	...	5A	1
26	2¼Cr–1Mo	Wld. fittings	SA-234	WP22	K21590	1/W	...	5A	1
27	2¼Cr–1Mo	Smls. pipe	SA-335	P22	K21590	...	...	5A	1
28	2¼Cr–1Mo	Forgings	SA-336	F22	K21590	1	...	5A	1
29	2¼Cr–1Mo	Forged pipe	SA-369	FP22	K21590	...	...	5A	1
30	2¼Cr–1Mo	Plate	SA-387	22	K21590	1	...	5A	1
31	2¼Cr–1Mo	Wld. pipe	SA-691	2¼CR	K21590	...	...	5A	1
32	2¼Cr–1Mo	Castings	SA-217	WC9	J21890	...	...	5A	1
33	2¼Cr–1Mo	Castings	SA-217	WC9	J21890	...	...	5A	1
34	2¼Cr–1Mo	Cast pipe	SA-426	CP22	J21890	...	...	5A	1
35	2¼Cr–1Mo	Forgings	SA-182	F22	K21590	3	...	5A	1
36	2¼Cr–1Mo	Forgings	SA-336	F22	K21590	3	...	5A	1
37	2¼Cr–1Mo	Plate	SA-387	22	K21590	2	...	5A	1
38	2¼Cr–1Mo	Wld. pipe	SA-691	2¼CR	K21590	...	...	5A	1
39	2¼Cr–1Mo	Bar	SA-739	B22	K21390	...	...	5A	1

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only)		External Pressure Chart No.	Notes
			III	VIII-2		
1	70	40	700	900	CS-3	...
2	70	40	700	NP	...	...
3	70	45	700	900	CS-3	...
4	60	25	NP	700	CS-1	...
5	60	30	NP	900	CS-2	...
6	60	30	700	900	CS-2	...
7	60	30	700	900	CS-2	...
8	60	30	700	NP	...	...
9	60	30	700	900	CS-2	...
10	60	30	700	900	CS-2	...
11	60	35	700	900	CS-2	...
12	60	35	700	NP	CS-2	G1, G2
13	70	40	700	900	CS-2	...
14	70	40	NP	900	CS-3	...
15	75	45	NP	700	CS-2	...
16	75	45	700	900	CS-3	...
17	75	45	700	NP	CS-3	G1, G2, H2
18	105	90	700 (SPT)	700	CS-2	S1
19	115	100	NP	700	CS-2	...
20	105	90	700 (SPT)	700	HT-1	...
21	115	100	700 (SPT)	700	HT-1	...
22	60	25	NP	700	CS-1	...
23	60	30	700	NP	CS-2	...
24	60	30	700	900	CS-2	W5
25	60	30	700	900	CS-2	W5
26	60	30	700	NP	...	...
27	60	30	700	900	CS-2	W5
28	60	30	700	900	CS-2	W5
29	60	30	700	900	CS-2	W5
30	60	30	700	900	CS-2	H1, W5
31	60	30	700	NP	CS-2	G1, G2
32	70	40	700	900	CS-3	W5
33	70	40	700 (SPT)	NP	...	...
34	70	40	700	NP	...	...
35	75	45	700	900	CS-3	W5
36	75	45	700	900	CS-3	W5
37	75	45	700	900	CS-3	W5
38	75	45	700	NP	CS-3	G1, G2, H2
39	75	45	700	900	CS-3	W5

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	23.3	...	23.3	...	22.7	21.7	20.9	20.3	20.1	19.7	19.4	19.1	18.7	13.6
2	23.3	...	23.3	...	22.7	21.7	20.9	20.3	20.1	19.7	...	...	...	...
3	23.3	...	23.3	...	23.3	23.3	23.3	22.9	22.5	22.2	21.9	21.5	21.0	13.6
4	16.7	...	15.6	...	15.0	14.6	14.3	13.9	13.5	13.0	...	...	...	...
5	20.0	...	18.5	...	17.5	16.9	16.3	15.7	15.4	15.1	15.2	15.0	14.5	12.8
6	20.0	...	18.5	...	17.5	16.9	16.3	15.7	15.4	15.1	15.2	15.0	14.5	12.8
7	20.0	...	18.5	...	17.5	16.9	16.3	15.7	15.4	15.1	15.2	15.0	14.5	12.8
8	20.0	...	18.5	...	17.5	16.9	16.3	15.7	15.4	15.1	...	...	...	...
9	20.0	...	18.5	...	17.5	16.9	16.3	15.7	15.4	15.1	15.2	15.0	14.5	12.8
10	20.0	...	18.5	...	17.5	16.9	16.3	15.7	15.4	15.1	15.2	15.0	14.5	12.8
11	20.0	...	20.0	...	20.0	19.7	18.9	18.3	18.0	17.6	17.3	16.8	16.3	15.0
12	20.0	...	20.0	...	20.0	19.7	18.9	18.3	18.0	17.6	...	...	...	...
13	23.3	...	23.3	...	23.3	22.5	21.7	20.9	20.5	20.1	19.7	19.2	18.7	14.5
14	23.3	...	23.3	...	23.3	22.5	21.7	20.9	20.5	20.1	19.7	19.2	18.7	14.5
15	25.0	...	25.0	...	25.0	25.0	24.3	23.5	23.1	22.7	...	...	...	...
16	25.0	...	25.0	...	25.0	25.0	24.3	23.5	23.1	22.7	22.2	21.6	21.1	16.0
17	25.0	...	25.0	...	25.0	25.0	24.3	23.5	23.1	22.7	...	...	...	...
18	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	34.9	34.3	...	...	...	...
19	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.2	37.5	...	...	...	...
20	35.0	...	35.0	...	35.0	35.0	35.0	35.0	34.9	34.3	...	...	...	...
21	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.2	37.5	...	...	...	...
22	16.7	...	15.4	...	15.0	14.9	14.9	14.9	14.9	14.9	...	...	...	...
23	20.0	...	18.5	...	18.1	17.9	17.9	17.9	17.9	17.9	...	...	...	...
24	20.0	...	18.5	...	18.1	17.9	17.9	17.9	17.9	17.9	17.9	17.8	14.5	12.8
25	20.0	...	18.5	...	18.1	17.9	17.9	17.9	17.9	17.9	17.9	17.8	14.5	12.8
26	20.0	...	18.5	...	18.1	17.9	17.9	17.9	17.9	17.9	...	...	...	...
27	20.0	...	18.5	...	18.1	17.9	17.9	17.9	17.9	17.9	17.9	17.8	14.5	12.8
28	20.0	...	18.5	...	18.1	17.9	17.9	17.9	17.9	17.9	17.9	17.8	14.5	12.8
29	20.0	...	18.5	...	18.1	17.9	17.9	17.9	17.9	17.9	17.9	17.8	14.5	12.8
30	20.0	...	18.5	...	18.1	17.9	17.9	17.9	17.9	17.9	17.9	17.8	14.5	12.8
31	20.0	...	18.5	...	18.1	17.9	17.9	17.9	17.9	17.9	...	...	...	...
32	23.3	...	23.3	...	23.1	22.5	22.4	22.4	22.2	21.9	21.5	21.0	19.8	16.0
33	23.3	...	23.3	...	23.1	22.5	22.4	22.4	22.2	21.9	...	...	...	...
34	23.3	...	23.3	...	23.1	22.5	22.4	22.4	22.2	21.9	...	...	...	...
35	25.0	...	25.0	...	24.5	24.1	23.9	23.8	23.6	23.4	23.0	22.5	21.8	17.0
36	25.0	...	25.0	...	24.5	24.1	23.9	23.8	23.6	23.4	23.0	22.5	21.8	17.0
37	25.0	...	25.0	...	24.5	24.1	23.9	23.8	23.6	23.4	23.0	22.5	21.8	17.0
38	25.0	...	25.0	...	24.5	24.1	23.9	23.8	23.6	23.4	...	...	...	...
39	25.0	...	25.0	...	24.5	24.1	23.9	23.8	23.6	23.4	23.0	22.5	21.8	17.0

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SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	2¼Cr–1Mo	Castings	SA-487	8	J22091	A	...	5C	1
2	2¼Cr–1Mo	Castings	SA-487	8	J22091	A	...	5C	1
3	2¼Cr–1Mo	Forgings	SA-508	22	K21590	3	...	5C	1
4	2¼Cr–1Mo	Forgings	SA-541	22	K21390	3	...	5C	1
5	2¼Cr–1Mo	Plate	SA-542	B	K21590	4	...	5C	1
6	2¼Cr–1Mo	Forgings	SA-541	22	K21390	4	≥ ¼	5C	4
7	2¼Cr–1Mo–V	Forgings	SA-182	F22V	K31835	...	...	5C	1
8	2¼Cr–1Mo–V	Forgings	SA-336	F22V	K31835	...	...	5C	1
9	2¼Cr–1Mo–V	Forgings	SA-541	22V	K31835	...	...	5C	1
10	2¼Cr–1Mo–V	Plate	SA-542	D	K31835	4a	...	5C	1
11	2¼Cr–1Mo–V	Plate	SA-832	22V	K31835	...	...	5C	1
12	3Cr–1Mo	Smls. tube	SA-199	T21	K31545	...	...	5A	1
13	3Cr–1Mo	Smls. tube	SA-213	T21	K31545	...	...	5A	1
14	3Cr–1Mo	Smls. pipe	SA-335	P21	K31545	...	...	5A	1
15	3Cr–1Mo	Forgings	SA-336	F21	K31545	1	...	5A	1
16	3Cr–1Mo	Forged pipe	SA-369	FP21	K31545	...	...	5A	1
17	3Cr–1Mo	Plate	SA-387	21	K31545	1	...	5A	1
18	3Cr–1Mo	Cast pipe	SA-426	CP21	J31545	...	...	5A	1
19	3Cr–1Mo	Forgings	SA-182	F21	K31545	...	...	5A	1
20	3Cr–1Mo	Forgings	SA-336	F21	K31545	3	...	5A	1
21	3Cr–1Mo	Plate	SA-387	21	K31545	2	...	5A	1
22	3Cr–1Mo–¼V–Ti–B	Forgings	SA-182	F3V	K31830	...	...	5C	1
23	3Cr–1Mo–¼V–Ti–B	Forgings	SA-336	F3V	K31830	...	...	5C	1
24	3Cr–1Mo–¼V–Ti–B	Forgings	SA-508	3V	K31830	...	...	5C	1
25	3Cr–1Mo–¼V–Ti–B	Forgings	SA-541	3V	K31830	...	...	5C	1
26	3Cr–1Mo–¼V–Ti–B	Plate	SA-542	C	K31830	4a	...	5C	1
27	3Cr–1Mo–¼V–Ti–B	Plate	SA-832	21V	K31830	...	...	5C	1
28	5Cr–½Mo	Smls. tube	SA-199	T5	K41545	...	...	5B	1
29	5Cr–½Mo	Smls. tube	SA-213	T5	K41545	...	...	5B	1
30	5Cr–½Mo	Fittings	SA-234	WP5	K41545	...	...	5B	1
31	5Cr–½Mo	Wld. fittings	SA-234	WP5	K41545	W	...	5B	1
32	5Cr–½Mo	Smls. pipe	SA-335	P5	K41545	...	...	5B	1
33	5Cr–½Mo	Forged pipe	SA-369	FP5	K41545	...	...	5B	1
34	5Cr–½Mo	Plate	SA-387	5	K41545	1	...	5B	1
35	5Cr–½Mo	Wld. pipe	SA-691	5CR	K41545	...	...	5B	1
36	5Cr–½Mo	Forgings	SA-336	F5	K41545	...	...	5B	1
37	5Cr–½Mo	Forgings	SA-182	F5	K41545	...	...	5B	1
38	5Cr–½Mo	Plate	SA-387	5	K41545	2	...	5B	1
39	5Cr–½Mo	Forgings	SA-336	F5A	K42544	...	...	5B	1

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DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only)		External Pressure Chart No.	Notes
			III	VIII-2		
1	85	55	700	NP	...	...
2	85	55	NP	700	CS-3	...
3	85	55	NP	850	CS-2	G24
4	85	55	NP	850	CS-2	G24
5	85	55	NP	850	CS-2	G24
6	105	85	700	NP	CS-3	S4, W1
7	85	60	NP	900	CS-2	G24
8	85	60	NP	900	CS-2	G24
9	85	60	NP	900	CS-2	G24
10	85	60	NP	900	CS-2	G24
11	85	60	NP	900	CS-2	G24
12	60	25	NP	700	CS-1	...
13	60	30	700	850	CS-2	...
14	60	30	700	850	CS-2	...
15	60	30	700	850	CS-2	...
16	60	30	700	850	CS-2	...
17	60	30	700	850	CS-2	...
18	60	30	700	NP	...	...
19	75	45	700	850	CS-3	...
20	75	45	700	850	CS-3	...
21	75	45	700	850	CS-3	...
22	85	60	NP	850	CS-2	G24
23	85	60	NP	850	CS-2	G24
24	85	60	NP	850	CS-2	G24
25	85	60	NP	850	CS-2	G24
26	85	60	NP	850	CS-2	G24
27	85	60	NP	850	CS-2	G24
28	60	25	NP	700	CS-1	...
29	60	30	700	700	CS-2	...
30	60	30	700	700	CS-2	...
31	60	30	700	NP	...	...
32	60	30	700	700	CS-2	...
33	60	30	700	700	CS-2	...
34	60	30	700	700	CS-2	...
35	60	30	700	NP	...	G1, G2
36	60	36	NP	700	CS-2	...
37	70	40	700	700	CS-3	...
38	75	45	700	700	CS-3	...
39	80	50	NP	700	CS-3	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	28.3	...	28.3	...	28.0	27.3	27.2	27.2	27.0	26.8	...	...	...	...
2	28.3	...	28.3	...	28.0	27.3	27.2	27.2	27.1	26.8	...	...	...	...
3	28.3	...	28.3	...	28.3	28.2	27.8	27.3	27.0	26.6	26.2	25.7	23.8	...
4	28.3	...	28.3	...	28.3	28.2	27.8	27.3	27.0	26.6	26.2	25.7	23.8	...
5	28.3	...	28.3	...	28.3	28.2	27.8	27.3	27.0	26.6	26.2	25.7	23.8	...
6	35.0	...	35.0	...	35.0	35.0	34.8	34.3	34.0	33.6	...	...	...	...
7	28.3	...	28.3	...	28.3	28.3	28.3	27.6	27.1	26.5	25.9	25.2	24.5	23.6
8	28.3	...	28.3	...	28.3	28.3	28.3	27.6	27.1	26.5	25.9	25.2	24.5	23.6
9	28.3	...	28.3	...	28.3	28.3	28.3	27.6	27.1	26.5	25.9	25.2	24.5	23.6
10	28.3	...	28.3	...	28.3	28.3	28.3	27.6	27.1	26.5	25.9	25.2	24.5	23.6
11	28.3	...	28.3	...	28.3	28.3	28.3	27.6	27.1	26.5	25.9	25.2	24.5	23.6
12	16.7	...	15.6	...	15.0	14.6	14.3	13.9	13.5	13.0	...	...	...	...
13	20.0	...	18.5	...	18.1	17.9	17.9	17.9	17.9	17.9	17.9	17.8	14.0	...
14	20.0	...	18.5	...	18.1	17.9	17.9	17.9	17.9	17.9	17.9	17.8	14.0	...
15	20.0	...	18.5	...	18.1	17.9	17.9	17.9	17.9	17.9	17.9	17.8	14.0	...
16	20.0	...	18.5	...	18.1	17.9	17.9	17.9	17.9	17.9	17.9	17.8	14.0	...
17	20.0	...	18.5	...	18.1	17.9	17.9	17.9	17.9	17.9	17.9	17.8	14.0	...
18	20.0	...	18.5	...	18.1	17.9	17.9	17.9	17.9	17.9	...	...	...	...
19	25.0	...	25.0	...	24.5	24.1	23.9	23.8	23.6	23.4	23.0	22.5	19.0	...
20	25.0	...	25.0	...	24.5	24.1	23.9	23.8	23.6	23.4	23.0	22.5	19.0	...
21	25.0	...	25.0	...	24.5	24.1	23.9	23.8	23.6	23.4	23.0	22.5	19.0	...
22	28.3	...	28.3	...	27.2	26.4	25.8	25.4	25.2	25.0	24.6	24.3	23.8	...
23	28.3	...	28.3	...	27.2	26.4	25.8	25.4	25.2	25.0	24.6	24.3	23.8	...
24	28.3	...	28.3	...	27.2	26.4	25.8	25.4	25.2	25.0	24.6	24.3	23.8	...
25	28.3	...	28.3	...	27.2	26.4	25.8	25.4	25.2	25.0	24.6	24.3	23.8	...
26	28.3	...	28.3	...	27.2	26.4	25.8	25.4	25.2	25.0	24.6	24.3	23.8	...
27	28.3	...	28.3	...	27.2	26.4	25.8	25.4	25.2	25.0	24.6	24.3	23.8	...
28	16.7	...	15.0	...	14.5	14.3	14.2	14.0	13.8	13.6	...	...	...	...
29	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
30	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
31	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
32	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
33	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
34	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
35	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
36	20.0	...	19.9	...	19.4	19.2	19.2	18.9	18.6	18.2	...	...	...	...
37	23.3	...	23.3	...	22.6	22.4	22.4	22.0	21.7	21.3	...	...	...	...
38	25.0	...	24.9	...	24.2	24.1	23.9	23.6	23.2	22.8	...	...	...	...
39	26.7	...	26.6	...	25.8	25.6	25.6	25.2	24.7	24.3	...	...	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	5Cr–½Mo	Castings	SA-217	C5	J42045	...	...	5B	1
2	5Cr–½Mo	Cast pipe	SA-426	CP5	J42045	...	...	5B	1
3	5Cr–½Mo	Forgings	SA-182	F5a	K42544	...	...	5B	1
4	5Cr–½Mo–Si	Smls. tube	SA-213	T5b	K51545	...	...	5B	1
5	5Cr–½Mo–Si	Smls. pipe	SA-335	P5b	K51545	...	...	5B	1
6	5Cr–½Mo–Ti	Smls. tube	SA-213	T5c	K41245	...	...	5B	1
7	5Cr–½Mo–Ti	Smls. pipe	SA-335	P5c	K41245	...	...	5B	1
8	9Cr–1Mo	Smls. tube	SA-199	T9	K81590	...	...	5B	1
9	9Cr–1Mo	Smls. tube	SA-213	T9	K81590	...	...	5B	1
10	9Cr–1Mo	Fittings	SA-234	WP9	K90941	...	...	5B	1
11	9Cr–1Mo	Smls. pipe	SA-335	P9	K81590	...	...	5B	1
12	9Cr–1Mo	Forged pipe	SA-369	FP9	K90941	...	...	5B	1
13	9Cr–1Mo	Forgings	SA-182	F9	K90941	...	...	5B	1
14	9Cr–1Mo	Forgings	SA-336	F9	K81590	...	...	5B	1
15	9Cr–1Mo	Castings	SA-217	C12	J82090	...	...	5B	1
16	9Cr–1Mo	Cast pipe	SA-426	CP9	J82090	...	...	5B	1
17	9Cr–1Mo–V	Forgings	SA-182	F91	K90901	...	...	5B	2
18	9Cr–1Mo–V	Smls. tube	SA-213	T91	K90901	...	...	5B	2
19	9Cr–1Mo–V	Smls. pipe	SA-335	P91	K90901	...	...	5B	2
20	9Cr–1Mo–V	Plate	SA-387	91	K90901	...	...	5B	2
21	12Cr	Bar	SA-479	403	S40300	A	...	6	1
22	12Cr	Bar	SA-479	403	S40300	1	...	6	1
23	12Cr–Al	Plate	SA-240	405	S40500	...	...	7	1
24	12Cr–Al	Bar	SA-479	405	S40500	...	...	7	1
25	12Cr–Al	Smls. tube	SA-268	TP405	S40500	...	...	7	1
26	12½Cr–2Ni	Bar	SA-479	414	S41400	...	...	6	4
27	13Cr	Plate	SA-240	410S	S41008	...	...	7	1
28	13Cr	Smls. tube	SA-268	TP410	S41000	...	...	6	1
29	13Cr	Plate	SA-240	410	S41000	...	...	6	1
30	13Cr	Forgings	SA-182	F6a	S41000	1	...	6	1
31	13Cr	Bar	SA-479	410	S41000	A	...	6	1
32	13Cr	Bar	SA-479	410	S41000	1	...	6	1
33	13Cr	Forgings	SA-182	F6a	S41000	2	...	6	3
34	13Cr	Forgings	SA-336	F6	S41000	...	...	6	3
35	13Cr	Castings	SA-217	CA15	J91150	...	...	6	3
36	13Cr	Cast pipe	SA-426	CPCA15	J91150	...	...	6	3
37	13Cr–4Ni	Castings	SA-487	CA6NM	J91540	A	...	6	4
38	13Cr–4Ni	Forgings	SA-182	F6NM	S41500	...	...	6	4
39	13Cr–8Ni–2Mo	Forgings	SA-705	XM-13	S13800	...	...	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only)		External Pressure Chart No.	Notes
			III	VIII-2		
1	90	60	700	700	CS-3	H2
2	90	60	700	NP	...	...
3	90	65	NP	700	CS-3	...
4	60	30	NP	700	CS-2	...
5	60	30	NP	700	CS-2	...
6	60	30	NP	700	CS-2	...
7	60	30	NP	700	CS-2	...
8	60	25	NP	700	CS-1	...
9	60	30	700	700	CS-2	...
10	60	30	NP	700	CS-2	...
11	60	30	700	700	CS-2	...
12	60	30	700	700	CS-2	...
13	85	55	NP	700	CS-3	...
14	85	55	NP	700	CS-3	...
15	90	60	700 (SPT)	700	CS-3	H2
16	90	60	700	NP	...	...
17	85	60	700	NP	CS-3	...
18	85	60	700	NP	CS-3	H6
19	85	60	700	NP	CS-3	H6
20	85	60	700	NP	CS-3	...
21	70	40	700	NP	...	...
22	70	40	700	NP	...	...
23	60	25	700	800	CS-1	G18
24	60	25	700	NP	...	G18
25	60	30	NP	800	CS-2	G18
26	115	90	700	NP	...	...
27	60	30	700	800	CS-2	...
28	60	30	NP	800	CS-2	...
29	65	30	NP	800	CS-2	...
30	70	40	700	NP	CS-2	...
31	70	40	700	NP	...	...
32	70	40	700	NP	...	...
33	85	55	700	800	CS-3	...
34	85	55	NP	800	CS-3	...
35	90	65	700	100	CS-3	...
36	90	65	700	NP	...	...
37	110	80	700	NP	...	...
38	115	90	700	NP	CS-3	...
39	150	135	600	NP	...	W1

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	30.0	...	29.9	...	29.1	28.9	28.7	28.3	27.9	27.3	...	...	...	...
2	30.0	...	29.9	...	29.1	28.9	28.7	28.3	27.9	27.3	...	...	...	...
3	30.0	...	29.9	...	29.1	28.9	28.7	28.3	27.9	27.3	...	...	...	...
4	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
5	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
6	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
7	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
8	16.7	...	15.0	...	14.5	14.3	14.2	14.0	13.8	13.6	...	...	...	...
9	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
10	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
11	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
12	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
13	28.3	...	28.3	...	27.5	27.2	27.1	26.8	26.3	25.8	...	...	...	...
14	28.3	...	28.3	...	27.5	27.2	27.1	26.8	26.3	25.8	...	...	...	...
15	30.0	...	29.9	...	29.1	28.9	28.7	28.3	27.9	27.3	...	...	...	...
16	30.0	...	29.9	...	29.1	28.9	28.7	28.3	27.9	27.3	...	...	...	...
17	28.3	...	28.3	...	28.3	28.2	28.1	27.7	27.3	26.7	...	...	...	...
18	28.3	...	28.3	...	28.3	28.2	28.1	27.7	27.3	26.7	...	...	...	...
19	28.3	...	28.3	...	28.3	28.2	28.1	27.7	27.3	26.7	...	...	...	...
20	28.3	...	28.3	...	28.3	28.2	28.1	27.7	27.3	26.7	...	...	...	...
21	23.3	...	23.3	...	23.3	22.8	22.0	21.2	20.9	20.7	...	...	...	...
22	23.3	...	23.3	...	23.3	22.8	22.0	21.2	20.9	20.7	...	...	...	...
23	16.7	...	15.3	...	14.8	14.5	14.3	14.1	13.8	13.5	13.1	12.6	...	...
24	16.7	...	15.3	...	14.8	14.5	14.3	14.1	13.8	13.5	...	...	...	...
25	20.0	...	18.4	...	17.7	17.4	17.2	16.8	16.5	16.2	15.7	15.1	...	...
26	38.3	...	38.3	...	38.3	37.4	36.1	34.9	34.4	33.9	...	...	...	...
27	20.0	...	18.4	...	17.7	17.4	17.2	16.9	16.3	16.1	15.7	15.1	...	...
28	20.0	...	18.4	...	17.7	17.4	17.2	16.8	16.5	16.2	15.7	15.1	...	...
29	20.0	...	18.4	...	17.7	17.4	17.2	16.8	16.5	16.2	15.7	15.1	...	...
30	23.3	...	23.3	...	23.3	22.8	22.0	21.2	20.9	20.7	...	...	...	...
31	23.3	...	23.3	...	23.3	22.8	22.0	21.2	20.9	20.7	...	...	...	...
32	23.3	...	23.3	...	23.3	22.8	22.0	21.2	20.9	20.7	...	...	...	...
33	28.3	...	28.3	...	28.3	27.9	26.7	25.7	25.4	25.0	24.2	23.2	...	...
34	28.3	...	28.3	...	28.3	27.9	26.7	25.7	25.4	25.0	24.2	23.2	...	...
35	30.0	...	30.0	...	29.4	28.5	28.4	27.6	27.2	26.4	...	...	...	...
36	30.0	...	30.0	...	29.4	28.5	28.4	27.6	27.2	26.4	...	...	...	...
37	36.7	...	36.7	...	35.9	35.0	34.4	33.7	33.2	32.6	...	...	...	...
38	38.3	...	38.3	...	38.3	37.9	36.6	35.0	34.2	33.4	...	...	...	...
39	50.0	...	50.0	...	50.0	48.7	47.9	45.9	...	...	...	...	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	15Cr	Smls. tube	SA-268	TP429	S42900	...	...	6	2
2	15Cr	Plate	SA-240	429	S42900	...	...	6	2
3	17Cr	Smls. tube	SA-268	TP430	S43000	...	...	7	2
4	17Cr	Plate	SA-240	430	S43000	...	...	7	2
5	17Cr–4Ni–4Cu	Forgings, bar	SA-564	630	S17400	H1150	...	...	...
6	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1150	...	...	...
7	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1150	...	...	...
8	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1100	...	...	...
9	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1100	...	...	...
10	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1100	...	...	...
11	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1075	...	...	...
12	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1075	...	...	...
13	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1075	...	...	...
14	26Cr–3Ni–3Mo	Plate	SA-240	26-3-3	S44660	...	$\leq 2/10$	10K	1
15	26Cr–3Ni–3Mo	Smls. tube	SA-268	26-3-3	S44660	...	$\leq 2/10$	10K	1
16	26Cr–3Ni–3Mo	Wld. tube	SA-268	26-3-3	S44660	...	$\leq 2/10$	10K	1
17	26Cr–3Ni–3Mo	Wld. tube	SA-803	26-3-3	S44660	...	$\leq 2/10$	10K	1
18	27Cr–1Mo	Plate	SA-240	XM-27	S44627	...	...	10I	1
19	27Cr–1Mo	Smls. & wld. tube	SA-268	TPXM-27	S44627	...	...	10I	1
20	27Cr–1Mo	Bar	SA-479	XM-27	S44627	...	...	10I	1
21	29Cr–4Mo–Ti	Smls. tube	SA-268	...	S44735	...	...	10J	1
22	Mn–¼Mo	Forgings	SA-372	D	K14508	...	...	...	...
23	Mn–¼Mo	Forgings	SA-372	D	K14508	...	...	...	...
24	Mn–¼Mo–V	Castings	SA-487	2	J13005	A	...	10F	1
25	Mn–½Mo	Plate	SA-302	A	K12021	...	...	3	2
26	Mn–½Mo	Wld. pipe	SA-672	H75	K12021	...	...	3	2
27	Mn–½Mo	Plate	SA-302	B	K12022	...	...	3	3
28	Mn–½Mo	Plate	SA-533	A	K12521	1	...	3	3
29	Mn–½Mo	Wld. pipe	SA-672	H80	K12022	...	...	3	3
30	Mn–½Mo	Plate	SA-533	A	K12521	2	...	3	3
31	Mn–½Mo	Plate	SA-533	A	K12521	3	...	11A	4
32	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	1	...	3	3
33	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	2	...	3	3
34	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	3	...	11A	4
35	Mn–½Mo–½Ni	Plate	SA-302	C	K12039	...	...	3	3
36	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	1	...	3	3
37	Mn–½Mo–½Ni	Wld. pipe	SA-672	J80	K12539	...	...	3	3

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) III	VIII-2	External Pressure Chart No.	Notes
1	60	35	NP	800	CS-3	G18
2	65	30	NP	800	CS-3	G18
3	60	35	NP	800	HA-2	G18
4	65	30	NP	800	HA-2	G18
5	135	105	650	NP	HA-7	G8, W1
6	135	105	650	NP	HA-7	G8, W1
7	135	105	650	NP	...	G8, W1
8	140	115	650	NP	...	G8, W1
9	140	115	650	NP	...	G8, W1
10	140	115	650	NP	...	G8, W1
11	145	125	650	NP	...	G8, W1
12	145	125	650	NP	...	G8, W1
13	145	125	650	NP	...	G8, W1
14	85	65	NP	700	HA-5	G18, H7
15	85	65	NP	700	HA-5	G18, H7
16	85	65	NP	700	HA-5	G14, G18, H7
17	85	65	NP	600	HA-5	G14, G18, H7
18	65	40	650	NP	...	G18
19	65	40	650	NP	...	G18
20	65	40	650	NP	...	G18
21	75	60	NP	600	CS-2	G18
22	105	65	NP	650	CS-3	G19, H2, W2, W6
23	105	65	NP	650	CS-2	G19, H3, W2, W6
24	85	53	700 (SPT)	NP	...	...
25	75	45	700	700	CS-3	...
26	75	45	700	NP	...	G1, G2
27	80	50	700	700	CS-3	...
28	80	50	700	700	CS-5	...
29	80	50	700	NP	CS-3	G1, G2
30	90	70	700	700	CS-5	...
31	100	83	700	NP	...	...
32	80	50	700	NP	CS-5	...
33	90	70	700	700	CS-5	...
34	100	83	700	700	CS-3	...
35	80	50	700	700	CS-3	...
36	80	50	700	700	CS-5	...
37	80	50	700	NP	CS-3	G1, G2

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	19.6	19.2	19.0	18.5	18.2	17.6	17.1	16.4	...	...
2	20.0	...	18.4	...	17.7	17.4	17.2	16.8	16.5	16.2	15.7	15.1	...	...
3	20.0	...	20.0	...	19.6	19.2	19.0	18.5	18.2	17.6	17.1	16.4	...	...
4	20.0	...	18.4	...	17.7	17.4	17.2	16.8	16.5	16.2	15.7	15.1	...	...
5	45.0	...	45.0	...	45.0	43.8	42.8	42.1	41.9	...	...	...	...	...
6	45.0	...	45.0	...	45.0	43.8	42.8	42.1	41.9	...	...	...	...	...
7	45.0	...	45.0	...	45.0	43.8	42.8	42.1	41.9	...	...	...	...	...
8	46.7	...	46.7	...	46.7	45.5	44.4	43.8	43.5	...	...	...	...	...
9	46.7	...	46.7	...	46.7	45.5	44.4	43.8	43.5	...	...	...	...	...
10	46.7	...	46.7	...	46.7	45.5	44.4	43.8	43.5	...	...	...	...	...
11	48.3	...	48.3	...	48.3	47.0	46.0	45.3	44.9	...	...	...	...	...
12	48.3	...	48.3	...	48.3	47.0	46.0	45.3	44.9	...	...	...	...	...
13	48.3	...	48.3	...	48.3	47.0	46.0	45.3	44.9	...	...	...	...	...
14	28.3	...	28.3	...	28.3	27.9	27.7	27.6	27.5	27.3	...	...	...	...
15	28.3	...	28.3	...	28.3	27.9	27.7	27.6	27.5	27.3	...	...	...	...
16	24.1	...	24.1	...	24.1	23.7	23.5	23.5	23.4	23.2	...	...	...	...
17	24.1	...	24.1	...	24.1	23.7	23.5	23.5	...	...	...	...	...	...
18	21.7	...	21.7	...	20.8	19.6	18.8	18.7	18.7	...	...	...	...	...
19	21.7	...	21.7	...	20.8	19.6	18.8	18.7	18.7	...	...	...	...	...
20	21.7	...	21.7	...	20.8	19.6	18.8	18.7	18.7	...	...	...	...	...
21	25.0	...	24.5	...	24.2	23.9	23.6	23.4	...	...	...	...	...	...
22	35.0	...	35.0	...	35.0	35.0	35.0	35.0	35.0	...	...	...	...	...
23	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	...	...	...	...	...
24	28.3	...	28.3	...	28.3	28.2	28.2	27.3	26.9	26.5	...	...	...	...
25	25.0	...	25.0	...	25.0	25.0	25.0	25.0	25.0	25.0	...	...	...	...
26	25.0	...	25.0	...	25.0	25.0	25.0	25.0	25.0	25.0	...	...	...	...
27	26.7	...	26.7	...	26.7	26.7	26.7	26.7	26.7	26.7	...	...	...	...
28	26.7	...	26.7	...	26.7	26.7	26.7	26.7	26.7	26.7	...	...	...	...
29	26.7	...	26.7	...	26.7	26.7	26.7	26.7	26.7	26.7	...	...	...	...
30	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	...	...	...	...
31	33.3	...	33.3	...	33.3	33.3	33.3	33.3	33.3	33.3	...	...	...	...
32	26.7	...	26.7	...	26.7	26.7	26.7	26.7	26.7	26.7	...	...	...	...
33	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	...	...	...	...
34	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	...	...	...	...
35	26.7	...	26.7	...	26.7	26.7	26.7	26.7	26.7	26.7	...	...	...	...
36	26.7	...	26.7	...	26.7	26.7	26.7	26.7	26.7	26.7	...	...	...	...
37	26.7	...	26.7	...	26.7	26.7	26.7	26.7	26.7	26.7	...	...	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
	1	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	2	...	3	3
	2	Mn–½Mo–½Ni	Wld. pipe	SA-672	J90	K12539	...	...	3	3
	3	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	3	...	11A	4
	4	Mn–½Mo–½Ni	Wld. pipe	SA-672	J100	K12539	...	...	11A	4
	5	Mn–½Mo–¾Ni	Plate	SA-302	D	K12054	...	...	3	3
	6	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	1	...	3	3
	7	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	2	...	3	3
	8	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	3	...	11A	4
	9	Mn–½Ni–V	Plate	SA-225	C	K12524	...	...	10A	1
	10	Mn–V	Castings	SA-487	1	J13002	A	...	10A	1
	11	½Ni–½Cr–¼Mo–V	Castings	SA-487	4	J13047	A	...	10F	1
	12	½Ni–½Mo–V	Forgings	SA-541	3	K12045	1	...	3	3
01	13	½Ni–½Mo–V	Forgings	SA-541	3	K12045	2	...	3	3
	14	¾Ni–½Cr–½Mo–V	Forgings	SA-592	F	K11576	...	$2\frac{1}{2} < t \le 4$	11B	3
	15	¾Ni–½Cr–½Mo–V	Forgings	SA-592	F	K11576	...	$2\frac{1}{2} < t \le 4$	11B	3
	16	¾Ni–½Cr–½Mo–V	Plate	SA-517	F	K11576	...	$\le 2\frac{1}{2}$	11B	3
	17	¾Ni–½Cr–½Mo–V	Forgings	SA-592	F	K11576	...	$\le 2\frac{1}{2}$	11B	3
	18	¾Ni–½Cu–Mo	Smls. tube	SA-423	2	K11540	...	...	4	2
	19	¾Ni–½Mo–⅓Cr–V	Forgings	SA-508	2	K12766	1	...	3	3
	20	¾Ni–½Mo–⅓Cr–V	Forgings	SA-541	2	K12765	1	...	3	3
01	21	¾Ni–½Mo–⅓Cr–V	Forgings	SA-508	2	K12766	2	...	3	3
01	22	¾Ni–½Mo–⅓Cr–V	Forgings	SA-541	2	K12765	2	...	3	3
	23	¾Ni–½Mo–Cr–V	Forgings	SA-508	3	K12042	1	...	3	3
01	24	¾Ni–½Mo–Cr–V	Forgings	SA-508	3	K12042	2	...	3	3
	25	¾Ni–1Mo–¾Cr	Castings	SA-217	WC5	J22000	...	...	4	1
	26	¾Ni–1Mo–¾Cr	Castings	SA-217	WC5	J22000	...	...	4	1
	27	1Ni–½Cr–½Mo	Castings	SA-217	WC4	J12082	...	...	4	1
	28	1¼Ni–1Cr–½Mo	Plate	SA-517	P	K21650	...	$2\frac{1}{2} < t \le 4$	11B	8
	29	1¼Ni–1Cr–½Mo	Plate	SA-517	P	K21650	...	$2\frac{1}{2} < t \le 4$	11B	8
	30	1¼Ni–1Cr–½Mo	Plate	SA-517	P	K21650	...	$\le 2\frac{1}{2}$	11B	8
	31	2Ni–1Cu	Forgings	SA-182	FR	K22035	...	...	9A	1
	32	2Ni–1Cu	Smls. pipe	SA-333	9	K22035	...	...	9A	1
	33	2Ni–1Cu	Smls. pipe	SA-334	9	K22035	...	...	9A	1
	34	2Ni–1Cu	Forgings	SA-350	LF9	K22036	...	...	9A	1
	35	2Ni–1Cu	Fittings	SA-420	WPL9	K22035	...	...	9A	1
	36	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	1	...	...	...
	37	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	2	...	...	...
	38	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	3	...	...	...
	39	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	4	...	...	...
	40	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	5	...	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) III	VIII-2	External Pressure Chart No.	Notes	
1	90	70	700	700	CS-5	...	
2	90	70	700	NP	...	G1, G2	
3	100	83	700	700	CS-3	...	
4	100	83	700	NP	...	G1, G2	
5	80	50	700	700	CS-3	...	
6	80	50	700	700	CS-5	...	
7	90	70	700	700	CS-5	...	
8	100	83	700	NP	...	...	
9	105	70	NP	700	CS-2	...	
10	85	55	700 (SPT)	700	CS-3	H2	
11	90	60	700	700	CS-3	H2	
12	80	50	700	700	CS-3	...	
13	90	65	700	700	CS-5	...	**01**
14	105	90	700 (SPT)	NP	...	...	
15	105	90	NP	700	CS-2	S1	
16	115	100	700 (SPT)	700	HT-1	...	
17	115	100	NP	700	CS-2	...	
18	60	37	NP	700	CS-2	...	
19	80	50	700	700	CS-5	...	
20	80	50	700	700	CS-3	...	
21	90	65	700	700	CS-5	...	**01**
22	90	65	700	700	CS-5	...	**01**
23	80	50	700	700	CS-5	...	
24	90	65	700	700	CS-5	...	**01**
25	70	40	700	700	CS-3	...	
26	70	40	700 (SPT)	NP	...	...	
27	70	40	700 (SPT)	700	CS-3	...	
28	105	90	700 (SPT)	NP	...	...	
29	105	90	NP	700	HT-1	...	
30	115	100	700 (SPT)	700	HT-1	...	
31	63	46	NP	100	CS-3	...	
32	63	46	NP	100	CS-3	...	
33	63	46	NP	100	CS-3	...	
34	63	46	NP	100	CS-3	...	
35	63	46	NP	100	CS-3	...	
36	115	100	700 (SPT)	700	CS-2	G20, G21, W1	
37	135	120	700 (SPT)	700	CS-2	G6, G21, W1	
38	155	140	700 (SPT)	NP	...	W1	
39	175	160	700 (SPT)	NP	...	W1	
40	190	180	700 (SPT)	NP	...	W1	

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

	Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
		–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
	1	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	...	...	...	...
	2	30.0	...	30.0	...	30.0	30.0	30.0	30.0	30.0	30.0	...	...	...	...
	3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	...	...	...	...
	4	33.3	...	33.3	...	33.3	33.3	33.3	33.3	33.3	33.3	...	...	...	...
	5	26.7	...	26.7	...	26.7	26.7	26.7	26.7	26.7	26.7	...	...	...	...
	6	26.7	...	26.7	...	26.7	26.7	26.7	26.7	26.7	26.7	...	...	...	...
	7	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	...	...	...	...
	8	33.3	...	33.3	...	33.3	33.3	33.3	33.3	33.3	33.3	...	...	...	...
	9	35.0	...	35.0	...	35.0	35.0	35.0	34.4	33.9	33.6	...	...	...	...
	10	28.3	...	28.3	...	28.3	28.3	28.3	27.7	27.2	26.7	...	...	...	...
	11	30.0	...	30.0	...	30.0	30.0	30.0	30.0	30.0	29.7	...	...	...	...
	12	26.7	...	26.7	...	26.7	26.7	26.7	26.7	26.7	26.7	...	...	...	...
01	13	30.0	...	30.0	...	30.0	30.0	30.0	30.0	30.0	30.0	...	...	...	...
	14	35.0	...	35.0	...	35.0	35.0	35.0	34.8	34.0	33.2	...	...	...	...
	15	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	34.9	34.3	...	...	...	...
	16	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.2	37.5	...	...	...	...
	17	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.2	37.5	...	...	...	...
	18	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	...	...	...	...
	19	26.7	...	26.7	...	26.7	26.7	26.7	26.7	26.7	26.7	...	...	...	...
	20	26.7	...	26.7	...	26.7	26.7	26.7	26.7	26.7	26.7	...	...	...	...
01	21	30.0	...	30.0	...	30.0	30.0	30.0	30.0	30.0	30.0	...	...	...	...
01	22	30.0	...	30.0	...	30.0	30.0	30.0	30.0	30.0	30.0	...	...	...	...
	23	26.7	...	26.7	...	26.7	26.7	26.7	26.7	26.7	26.7	...	...	...	...
01	24	30.0	...	30.0	...	30.0	30.0	30.0	30.0	30.0	30.0	...	...	...	...
	25	23.3	...	23.3	...	23.3	22.5	21.7	20.9	20.5	20.1	...	...	...	...
	26	23.3	...	23.3	...	23.3	22.5	21.7	20.9	20.5	20.1	...	...	...	...
	27	23.3	...	23.3	...	23.3	22.5	21.7	20.9	20.5	20.1	...	...	...	...
	28	35.0	...	35.0	...	35.0	35.0	35.0	34.8	34.0	33.2	...	...	...	...
	29	35.0	...	35.0	...	35.0	35.0	35.0	35.0	34.9	34.3	...	...	...	...
	30	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.2	37.5	...	...	...	...
	31	21.0	...	...	...	...	...	...	...	...	...	...	...	...	...
	32	21.0	...	...	...	...	...	...	...	...	...	...	...	...	...
	33	21.0	...	...	...	...	...	...	...	...	...	...	...	...	...
	34	21.0	...	...	...	...	...	...	...	...	...	...	...	...	...
	35	21.0	...	...	...	...	...	...	...	...	...	...	...	...	...
	36	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	37.7	36.7	...	...	...	...
	37	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	44.3	43.0	...	...	...	...
	38	51.7	...	51.7	...	51.7	51.7	51.7	51.7	51.7	51.7	...	...	...	...
	39	58.3	...	58.3	...	58.3	58.3	58.3	58.3	58.3	58.3	...	...	...	...
	40	63.3	...	63.3	...	63.3	63.3	63.3	63.3	63.3	63.3	...	...	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	2½Ni	Plate	SA-203	A	K21703	...	...	9A	1
2	2½Ni	Plate	SA-203	B	K22103	...	...	9A	1
3	2½Ni	Castings	SA-352	LC2	J22500	...	...	9A	1
4	2¾Ni–1½Cr–½Mo	Plate	SA-543	C	...	3	...	11A	5
5	2¾Ni–1½Cr–½Mo	Plate	SA-543	C	...	1	...	11A	5
6	2¾Ni–1½Cr–½Mo	Plate	SA-543	C	...	2	...	11A	5
7	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	1	...	...	...
8	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	2	...	...	...
9	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	3	...	...	...
10	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	4	...	...	...
11	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	5	...	...	...
12	3Ni–1¾Cr–½Mo	Plate	SA-543	B	K42339	3	...	11A	5
13	3Ni–1¾Cr–½Mo	Plate	SA-543	B	K42339	1	...	11A	5
14	3Ni–1¾Cr–½Mo	Plate	SA-543	B	K42339	2	...	11A	5
15	3½Ni	Smls. pipe	SA-333	3	K31918	...	...	9B	1
16	3½Ni	Smls. tube	SA-334	3	K31918	...	...	9B	1
17	3½Ni	Fittings	SA-420	WPL3	...	...	...	9B	1
18	3½Ni	Plate	SA-203	D	K31718	...	...	9B	1
19	3½Ni	Forgings	SA-350	LF3	K32025	...	...	9B	1
20	3½Ni	Forgings	SA-765	III	K32026	...	...	9B	1
21	3½Ni	Plate	SA-203	E	K32018	...	...	9B	1
22	3½Ni	Plate	SA-203	E	K32018	...	...	9B	1
23	3½Ni	Castings	SA-352	LC3	J31550	...	...	9B	1
24	3½Ni	Plate	SA-203	F	...	...	> 2	9B	1
25	3½Ni	Plate	SA-203	F	...	...	≤ 2	9B	1
26	3½Ni–1¾Cr–½Mo–V	Forgings	SA-508	4N	K22375	3	...	3	3
27	3½Ni–1¾Cr–½Mo–V	Forgings	SA-508	4N	K22375	1	...	11A	5
28	3½Ni–1¾Cr–½Mo–V	Forgings	SA-508	4N	K22375	2	...	11A	5
29	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	1	...	...	...
30	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	2	...	...	...
31	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	3	...	...	...
32	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	4	...	...	...
33	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	5	...	...	...
34	5Ni–¼Mo	Plate	SA-645	...	K41583	...	...	11A	2
35	5Ni–¼Mo	Plate	SA-645	...	K41583	...	...	11A	2
01 36	8Ni	Plate	SA-553	II	K71340	...	...	11A	1
01 37	8Ni	Plate	SA-553	II	K71340	...	...	11A	1

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only)		External Pressure Chart No.	Notes	
			III	VIII-2			
1	65	37	NP	300	CS-2	...	
2	70	40	NP	300	CS-3	...	
3	70	40	100	100	CS-3	...	
4	90	70	NP	650	CS-2	...	
5	105	85	NP	650	CS-2	...	
6	115	100	NP	650	HT-2	...	
7	115	100	700 (SPT)	700	CS-2	G20, G21, W1	
8	135	120	700 (SPT)	700	CS-2	G6, G21, W1	
9	155	140	700 (SPT)	NP	...	W1	
10	175	160	700 (SPT)	NP	...	W1	
11	190	180	700 (SPT)	NP	...	W1	
12	90	70	NP	650	CS-2	...	
13	105	85	NP	650	CS-2	...	
14	115	100	NP	650	HT-2	...	
15	65	35	NP	100	CS-2	...	
16	65	35	NP	100	CS-2	...	
17	65	35	NP	300	CS-2	...	
18	65	37	NP	300	CS-2	...	
19	70	37.5	700	300	CS-2	...	
20	70	37.5	NP	100	CS-2	...	
21	70	40	300 (SPT)	300	CS-3	...	
22	70	40	500	NP	CS-3	...	
23	70	40	100	100	CS-3	...	
24	75	50	NP	100	CS-3	...	
25	80	55	NP	100	CS-3	...	
26	90	70	650	700	CS-2	G16	
27	105	85	600 (SPT)	700	CS-2	...	
28	115	100	NP	650	CS-2	...	
29	115	100	700 (SPT)	700	CS-2	G20, G21, W1	
30	135	120	700 (SPT)	700	CS-2	G6, G21, W1	
31	155	140	700 (SPT)	NP	...	W1	
32	175	160	700 (SPT)	NP	...	W1	
33	190	180	700 (SPT)	NP	...	W1	
34	95	65	NP	250	CS-2	W3	
35	95	65	NP	250	CS-2	W4	
36	100	85	NP	250	CS-2	W3	**01**
37	100	85	NP	250	CS-2	W4	**01**

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	21.7	...	19.6	...	19.6	...	...	...	...	...	...	...	...	...
2	23.3	...	21.1	...	21.1	...	...	...	...	...	...	...	...	...
3	23.3	...	...	...	...	...	...	...	...	...	...	...	...	...
4	30.0	30.0	30.0	30.0	30.0	29.7	29.4	29.1	28.7	...	...	...	...	...
5	35.0	35.0	35.0	35.0	35.0	34.6	34.4	33.9	33.5	...	...	...	...	...
6	38.3	38.3	38.3	38.3	38.3	37.9	37.7	37.2	36.6	...	...	...	...	...
7	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	37.7	36.7	...	...	...	...
8	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	44.3	43.0	...	...	...	...
9	51.7	...	51.7	...	51.7	51.7	51.7	51.7	51.7	51.7	...	...	...	...
10	58.3	...	58.3	...	58.3	58.3	58.3	58.3	58.3	58.3	...	...	...	...
11	63.3	...	63.3	...	63.3	63.3	63.3	63.3	63.3	63.3	...	...	...	...
12	30.0	30.0	30.0	30.0	30.0	29.7	29.4	29.1	28.7	...	...	...	...	...
13	35.0	35.0	35.0	35.0	35.0	34.6	34.4	33.9	33.5	...	...	...	...	...
14	38.3	38.3	38.3	38.3	38.3	37.9	37.7	37.2	36.6	...	...	...	...	...
15	21.7	...	...	...	...	...	...	...	...	...	...	...	...	...
16	21.7	...	...	...	...	...	...	...	...	...	...	...	...	...
17	21.7	...	19.6	...	19.6	...	...	...	...	...	...	...	...	...
18	21.7	...	19.6	...	19.6	...	...	...	...	...	...	...	...	...
19	23.3	...	22.8	...	22.2	21.5	20.2	18.5	18.2	16.8	...	...	...	...
20	23.3	...	...	...	...	...	...	...	...	...	...	...	...	...
21	23.3	...	23.3	...	23.3	...	...	...	...	...	...	...	...	...
22	23.3	...	23.3	...	23.3	22.9	21.6	...	...	...	...	...	...	...
23	23.3	...	...	...	...	...	...	...	...	...	...	...	...	...
24	25.0	...	...	...	...	...	...	...	...	...	...	...	...	...
25	26.7	...	...	...	...	...	...	...	...	...	...	...	...	...
26	30.0	30.0	30.0	30.0	30.0	29.7	29.4	29.1	28.7	28.2	...	...	...	...
27	35.0	35.0	35.0	35.0	35.0	34.6	34.4	33.9	33.5	32.9	...	...	...	...
28	38.3	38.3	38.3	38.3	38.3	37.9	37.7	37.2	36.6	...	...	...	...	...
29	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	37.7	36.7	...	...	...	...
30	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	44.3	43.0	...	...	...	...
31	51.7	...	51.7	...	51.7	51.7	51.7	51.7	51.7	51.7	...	...	...	...
32	58.3	...	58.3	...	58.3	58.3	58.3	58.3	58.3	58.3	...	...	...	...
33	63.3	...	63.3	...	63.3	63.3	63.3	63.3	63.3	63.3	...	...	...	...
34	33.3	33.3	33.3	33.3	...	...	...	...	...	...	...	...	...	...
35	31.7	31.7	31.7	31.6	...	...	...	...	...	...	...	...	...	...
01 36	33.3	33.3	33.3	33.3	...	...	...	...	...	...	...	...	...	...
01 37	31.7	31.7	31.7	31.6	...	...	...	...	...	...	...	...	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
	1	9Ni	Smls. pipe	SA-333	8	K81340	...	...	11A	1
	2	9Ni	Smls. pipe	SA-333	8	K81340	...	...	11A	1
	3	9Ni	Smls. tube	SA-334	8	K81340	...	...	11A	1
	4	9Ni	Smls. tube	SA-334	8	K81340	...	...	11A	1
	5	9Ni	Plate	SA-353	...	K81340	...	...	11A	1
	6	9Ni	Plate	SA-353	...	K81340	...	...	11A	1
	7	9Ni	Fittings	SA-420	WPL8	K81340	...	...	11A	1
	8	9Ni	Fittings	SA-420	WPL8	K81340	...	...	11A	1
	9	9Ni	Forgings	SA-522	I	K81340	...	...	11A	1
	10	9Ni	Forgings	SA-522	I	K81340	...	...	11A	1
01	11	9Ni	Plate	SA-553	I	K81340	...	...	11A	1
01	12	9Ni	Plate	SA-553	I	K81340	...	...	11A	1
	13	25Ni–15Cr–2Ti	Forgings, bar	SA-638	660	S66286	...	...	...	...
	14	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...	> 5	8	1
	15	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...	> 5	8	1
	16	16Cr–12Ni–2Mo	Forgings	SA-336	F316L	S31603	...	...	8	1
	17	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...	≤ 5	8	1
	18	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...	≤ 5	8	1
	19	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316L	S31603	...	...	8	1
	20	16Cr–12Ni–2Mo	Plate	SA-240	316L	S31603	...	...	8	1
	21	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316L	S31603	...	...	8	1
	22	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316L	S31603	...	...	8	1
	23	16Cr–12Ni–2Mo	Wld. pipe	SA-312	TP316L	S31603	...	...	8	1
	24	16Cr–12Ni–2Mo	Smls. pipe	SA-312	TP316L	S31603	...	...	8	1
	25	16Cr–12Ni–2Mo	Wld. pipe	SA-312	TP316L	S31603	...	...	8	1
	26	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316L	S31603	...	...	8	1
	27	16Cr–12Ni–2Mo	Fittings	SA-403	316L	S31603	...	...	8	1
	28	16Cr–12Ni–2Mo	Fittings	SA-403	316L	S31603	CR	...	8	1
	29	16Cr–12Ni–2Mo	Wld. fittings	SA-403	316L	S31603	WP-W	...	8	1
	30	16Cr–12Ni–2Mo	Wld. fittings	SA-403	316L	S31603	WP-W	...	8	1
	31	16Cr–12Ni–2Mo	Wld. fittings	SA-403	316L	S31603	WP-WX	...	8	1
	32	16Cr–12Ni–2Mo	Bar	SA-479	316L	S31603	...	...	8	1
	33	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316L	S31603	...	...	8	1
	34	16Cr–12Ni–2Mo	Wld. pipe	SA-688	TP316L	S31603	...	...	8	1
	35	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316L	S31603	...	...	8	1
	36	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316L	S31603	...	...	8	1
	37	16Cr–12Ni–2Mo	Castings	SA-351	CF3M	J92800	...	...	8	1
	38	16Cr–12Ni–2Mo	Cast pipe	SA-451	CPF3M	J92800	...	...	8	1
	39	16Cr–12Ni–2Mo	Castings	SA-351	CF8M	J92900	...	...	8	1
	40	16Cr–12Ni–2Mo	Cast pipe	SA-451	CPF8M	J92900	...	...	8	1

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only)		External Pressure Chart No.	Notes	
			III	VIII-2			
1	100	75	NP	250	CS-2	W3	
2	100	75	NP	250	CS-2	W4	
3	100	75	NP	250	CS-2	W3	
4	100	75	NP	250	CS-2	W4	
5	100	75	NP	250	CS-2	W3	
6	100	75	NP	250	CS-2	W4	
7	100	75	NP	250	CS-2	W3	
8	100	75	NP	250	CS-2	W4	
9	100	75	NP	250	CS-2	G19, S2, W3	
10	100	75	NP	250	CS-2	G19, S2, W4	
11	100	85	NP	250	CS-2	W3	**01**
12	100	85	NP	250	CS-2	W4	**01**
13	130	85	700	NP	...	G9, G15, W1	
14	65	25	800	800	HA-4	G7	
15	65	25	NP	800	HA-4	...	
16	65	25	800	800	HA-4	G7	
17	70	25	800	800	HA-4	G7	
18	70	25	NP	800	HA-4	...	
19	70	25	800	800	HA-4	G7	
20	70	25	800	800	HA-4	G7	
21	70	25	800	NP	HA-4	G7	
22	70	25	NP	800	HA-4	G7, G14	
23	70	25	800	NP	...	G7	
24	70	25	800	800	HA-4	G7	
25	70	25	NP	800	HA-4	G7, G14	
26	70	25	800	NP	HA-4	G7	
27	70	25	800	NP	HA-4	G7	
28	70	25	NP	800	HA-4	G7, G14	
29	70	25	800	NP	HA-4	G7	
30	70	25	NP	800	HA-4	G7, G14	
31	70	25	NP	800	HA-4	G7, G14	
32	70	25	800	NP	...	G7	
33	70	25	800	NP	...	G7	
34	70	25	NP	800	HA-4	G7, G14	
35	70	25	800	NP	HA-4	G7	
36	70	25	800	NP	HA-4	G7	
37	70	30	800	NP	...	G7, G18	
38	70	30	800	NP	...	G7, G18	
39	70	30	800	800	HA-3	G7, G10, G11, G18	
40	70	30	800	NP	...	G7, G18	

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	33.3	33.3	33.3	33.3	...	...	...	...	...	...	...	...	...	...
2	31.7	31.7	31.7	31.6	...	...	...	...	...	...	...	...	...	...
3	33.3	33.3	33.3	33.3	...	...	...	...	...	...	...	...	...	...
4	31.7	31.7	31.7	31.6	...	...	...	...	...	...	...	...	...	...
5	33.3	33.3	33.3	33.3	...	...	...	...	...	...	...	...	...	...
6	31.7	31.7	31.7	31.6	...	...	...	...	...	...	...	...	...	...
7	33.3	33.3	33.3	33.3	...	...	...	...	...	...	...	...	...	...
8	31.7	31.7	31.7	31.6	...	...	...	...	...	...	...	...	...	...
9	33.3	33.3	33.3	33.3	...	...	...	...	...	...	...	...	...	...
10	31.7	31.7	31.7	31.6	...	...	...	...	...	...	...	...	...	...
01 11	33.3	33.3	33.3	33.3	...	...	...	...	...	...	...	...	...	...
01 12	31.7	31.7	31.7	31.6	...	...	...	...	...	...	...	...	...	...
13	43.3	...	43.3	...	43.3	43.2	42.4	41.6	41.2	40.9	...	...	...	...
14	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.8	13.5	13.2	13.0	...	...
15	16.7	...	16.7	...	16.7	15.5	14.4	13.5	13.2	12.9	12.6	12.4	...	...
16	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.8	13.5	13.2	13.0	...	...
17	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.8	13.5	13.2	13.0	...	...
18	16.7	...	16.7	...	16.7	15.5	14.4	13.5	13.2	12.9	12.6	12.4	...	...
19	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.8	13.5	13.2	13.0	...	...
20	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.8	13.5	13.2	13.0	...	...
21	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.8	13.5	13.2	13.0	...	...
22	14.2	...	14.2	...	14.2	13.4	12.6	11.9	11.7	11.5	11.2	11.1	...	...
23	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.8	13.5	13.2	13.0	...	...
24	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.8	13.5	13.2	13.0	...	...
25	14.2	...	14.2	...	14.2	13.4	12.6	11.9	11.7	11.5	11.2	11.1	...	...
26	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.8	13.5	13.2	13.0	...	...
27	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.8	13.5	13.2	13.0	...	...
28	14.2	...	14.2	...	14.2	13.4	12.6	11.9	11.7	11.5	11.2	11.1	...	...
29	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.8	13.5	13.2	13.0	...	...
30	14.2	...	14.2	...	14.2	13.4	12.6	11.9	11.7	11.5	11.2	11.1	...	...
31	14.2	...	14.2	...	14.2	13.4	12.6	11.9	11.7	11.5	11.2	11.1	...	...
32	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.8	13.5	13.2	13.0	...	...
33	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.8	13.5	13.2	13.0	...	...
34	14.2	...	14.2	...	14.2	13.4	12.6	11.9	11.7	11.5	11.2	11.1	...	...
35	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.8	13.5	13.2	13.0	...	...
36	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.8	13.5	13.2	13.0	...	...
37	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
38	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
39	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
40	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...	> 5	8	1
2	16Cr–12Ni–2Mo	Forgings	SA-336	F316	S31600	...	...	8	1
3	16Cr–12Ni–2Mo	Forged pipe	SA-430	FP316	S31600	...	...	8	1
4	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...	> 5	8	1
5	16Cr–12Ni–2Mo	Forgings	SA-336	F316H	S31609	...	...	8	1
6	16Cr–12Ni–2Mo	Forged pipe	SA-430	FP316H	S31609	...	...	8	1
7	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...	≤ 5	8	1
8	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316	S31600	...	...	8	1
9	16Cr–12Ni–2Mo	Plate	SA-240	316	S31600	...	...	8	1
10	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316	S31600	...	...	8	1
11	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316	S31600	...	...	8	1
12	16Cr–12Ni–2Mo	Wld. pipe	SA-312	TP316	S31600	...	...	8	1
13	16Cr–12Ni–2Mo	Smls. pipe	SA-312	TP316	S31600	...	...	8	1
14	16Cr–12Ni–2Mo	Wld. pipe	SA-312	TP316	S31600	...	...	8	1
15	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316	S31600	1	...	8	1
16	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316	S31600	...	...	8	1
17	16Cr–12Ni–2Mo	Fittings	SA-403	316	S31600	...	...	8	1
18	16Cr–12Ni–2Mo	Fittings	SA-403	316	S31600	WP-S	...	8	1
19	16Cr–12Ni–2Mo	Wld. fittings	SA-403	316	S31600	WP-W	...	8	1
20	16Cr–12Ni–2Mo	Bar	SA-479	316	S31600	...	...	8	1
21	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316	S31600	...	...	8	1
22	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316	S31600	...	...	8	1
23	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316	S31600	...	...	8	1
24	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316	S31600	...	...	8	1
25	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...	≤ 5	8	1
26	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316H	S31609	...	...	8	1
27	16Cr–12Ni–2Mo	Plate	SA-240	316H	S31609	...	...	8	1
28	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316H	S31609	...	...	8	1
29	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316H	S31609	...	...	8	1
30	16Cr–12Ni–2Mo	Wld. pipe	SA-312	TP316H	S31609	...	...	8	1
31	16Cr–12Ni–2Mo	Smls. pipe	SA-312	TP316H	S31609	...	...	8	1
32	16Cr–12Ni–2Mo	Wld. pipe	SA-312	TP316H	S31609	...	...	8	1
33	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316H	S31609	1	...	8	1
34	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316H	S31609	...	...	8	1
35	16Cr–12Ni–2Mo	Fittings	SA-403	316H	S31609	...	...	8	1
36	16Cr–12Ni–2Mo	Wld. fittings	SA-403	316H	S31609	WP-W	...	8	1
37	16Cr–12Ni–2Mo	Cast pipe	SA-452	TP316H	S31609	...	...	8	1
38	16Cr–12Ni–2Mo	Bar	SA-479	316H	S31609	...	...	8	1
39	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316H	S31609	...	...	8	1
40	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316H	S31609	...	...	8	1

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) III	VIII-2	External Pressure Chart No.	Notes
1	70	30	800	800	HA-2	G7
2	70	30	800	800	HA-2	G7, G10, G11
3	70	30	800	NP	HA-2	G7
4	70	30	800	800	HA-2	G7
5	70	30	800	800	HA-2	G7
6	70	30	800	800	HA-2	G7
7	75	30	800	800	HA-2	G7, G10
8	75	30	800	800	HA-2	G7, G10
9	75	30	800	800	HA-2	G7, G10, G11
10	75	30	800	NP	HA-2	G7
11	75	30	NP	800	HA-2	G7, G10, G14
12	75	30	800	NP	HA-2	G7
13	75	30	800	800	HA-2	G7, G10, G11
14	75	30	NP	800	HA-2	G7, G10, G14
15	75	30	800	NP	HA-2	G7
16	75	30	800	800	HA-2	G7, G10, G11
17	75	30	800	NP	HA-2	G7
18	75	30	NP	800	HA-2	G7
19	75	30	800	NP	HA-2	G7
20	75	30	800	NP	...	G7
21	75	30	800	NP	...	G7
22	75	30	NP	800	HA-2	G7, G10, G14
23	75	30	800	NP	HA-2	G7
24	75	30	800	NP	HA-2	G7
25	75	30	800	NP	HA-2	G7
26	75	30	800	800	HA-2	G7
27	75	30	800	NP	HA-2	G7
28	75	30	800	NP	HA-2	G7
29	75	30	NP	800	HA-2	G7, G14
30	75	30	800	NP	HA-2	G7
31	75	30	800	800	HA-2	G7
32	75	30	NP	800	HA-2	G7, G14
33	75	30	800	NP	...	G7
34	75	30	800	800	HA-2	G7
35	75	30	800	NP	HA-2	G7
36	75	30	800	NP	HA-2	G7
37	75	30	800	NP	...	G7, G18
38	75	30	800	NP	...	G7
39	75	30	800	NP	HA-2	G7
40	75	30	800	NP	HA-2	G7

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	−20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
2	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
3	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
4	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
5	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
6	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
7	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
8	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
9	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
10	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
11	17.0	...	17.0	...	17.0	16.4	15.3	14.5	14.2	13.9	13.7	13.5	...	...
12	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
13	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
14	17.0	...	17.0	...	17.0	16.4	15.3	14.5	14.2	13.9	13.7	13.5	...	...
15	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
16	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
17	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
18	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
19	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
20	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
21	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
22	17.0	...	17.0	...	17.0	16.4	15.3	14.5	14.2	13.9	13.7	13.5	...	...
23	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
24	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
25	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
26	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
27	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
28	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
29	17.0	...	17.0	...	17.0	16.4	15.3	14.5	14.2	13.9	13.7	13.5	...	...
30	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
31	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
32	17.0	...	17.0	...	17.0	16.4	15.3	14.5	14.2	13.9	13.7	13.5	...	...
33	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
34	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
35	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
36	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
37	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
38	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
39	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
40	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316LN	S31653	...	> 5	8	1
2	16Cr–12Ni–2Mo–N	Forgings	SA-336	F316LN	S31653	...	...	8	1
3	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316LN	S31653	...	≤ 5	8	1
4	16Cr–12Ni–2Mo–N	Smls. tube	SA-213	TP316LN	S31653	...	...	8	1
5	16Cr–12Ni–2Mo–N	Plate	SA-240	316LN	S31653	...	...	8	1
6	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316LN	S31653	...	...	8	1
7	16Cr–12Ni–2Mo–N	Smls. & wld. pipe	SA-312	TP316LN	S31653	...	...	8	1
8	16Cr–12Ni–2Mo–N	Wld. pipe	SA-358	316LN	S31653	...	...	8	1
9	16Cr–12Ni–2Mo–N	Smls. pipe	SA-376	TP316LN	S31653	...	...	8	1
10	16Cr–12Ni–2Mo–N	Fittings	SA-403	316LN	S31653	...	...	8	1
11	16Cr–12Ni–2Mo–N	Wld. fittings	SA-403	316LN	S31653	WP-W	...	8	1
12	16Cr–12Ni–2Mo–N	Bar	SA-479	316LN	S31653	...	...	8	1
13	16Cr–12Ni–2Mo–N	Wld. tube	SA-688	TP316LN	S31653	...	...	8	1
14	16Cr–12Ni–2Mo–N	Wld. pipe	SA-813	TP316LN	S31653	...	...	8	1
15	16Cr–12Ni–2Mo–N	Wld. pipe	SA-814	TP316LN	S31653	...	...	8	1
16	16Cr–12Ni–2Mo–N	Forged pipe	SA-430	FP316N	S31651	...	...	8	1
17	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316N	S31651	...	≤ 5	8	1
18	16Cr–12Ni–2Mo–N	Smls. tube	SA-213	TP316N	S31651	...	≤ 5	8	1
19	16Cr–12Ni–2Mo–N	Plate	SA-240	316N	S31651	...	≤ 5	8	1
20	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316N	S31651	...	...	8	1
21	16Cr–12Ni–2Mo–N	Wld. pipe	SA-312	TP316N	S31651	...	≤ 5	8	1
22	16Cr–12Ni–2Mo–N	Smls. pipe	SA-312	TP316N	S31651	...	≤ 5	8	1
23	16Cr–12Ni–2Mo–N	Wld. pipe	SA-312	TP316N	S31651	...	...	8	1
24	16Cr–12Ni–2Mo–N	Forgings	SA-336	F316N	S31651	...	≤ 5	8	1
25	16Cr–12Ni–2Mo–N	Wld. pipe	SA-358	316N	S31651	...	≤ 5	8	1
26	16Cr–12Ni–2Mo–N	Smls. pipe	SA-376	TP316N	S31651	...	...	8	1
27	16Cr–12Ni–2Mo–N	Fittings	SA-403	316N	S31651	...	...	8	1
28	16Cr–12Ni–2Mo–N	Fittings	SA-403	316N	S31651	CR	...	8	1
29	16Cr–12Ni–2Mo–N	Wld. fittings	SA-403	316N	S31651	WP-W	...	8	1
30	16Cr–12Ni–2Mo–N	Wld. fittings	SA-403	316N	S31651	WP-W	...	8	1
31	16Cr–12Ni–2Mo–N	Wld. fittings	SA-403	316N	S31651	WP-WX	...	8	1
32	16Cr–12Ni–2Mo–N	Bar	SA-479	316N	S31651	...	...	8	1
33	16Cr–12Ni–2Mo–N	Wld. tube	SA-688	TP316N	S31651	...	...	8	1
34	16Cr–12Ni–2Mo–N	Wld. pipe	SA-813	TP316N	S31651	...	...	8	1
35	16Cr–12Ni–2Mo–N	Wld. pipe	SA-814	TP316N	S31651	...	...	8	1
36	18Cr–3Ni–12Mn	Plate	SA-240	XM-29	S24000	...	...	8	3
37	18Cr–3Ni–12Mn	Plate	SA-240	XM-29	S24000	...	...	8	3
38	18Cr–5Ni–3Mo	Smls. tube	SA-789	...	S31500	...	...	10H	1
39	18Cr–5Ni–3Mo	Wld. tube	SA-789	...	S31500	...	...	10H	1
40	18Cr–5Ni–3Mo	Smls. pipe	SA-790	...	S31500	...	...	10H	1
41	18Cr–5Ni–3Mo	Wld. pipe	SA-790	...	S31500	...	...	10H	1

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only)		External Pressure Chart No.	Notes
			III	VIII-2		
1	70	30	800	NP	HA-2	G7
2	70	30	800	NP	HA-2	G7
3	75	30	800	NP	HA-2	G7
4	75	30	800	NP	HA-2	G7
5	75	30	800	NP	HA-2	G7
6	75	30	800	NP	HA-2	G7
7	75	30	800	NP	HA-2	G7
8	75	30	800	NP	HA-2	G7
9	75	30	800	NP	HA-2	G7
10	75	30	800	NP	HA-2	G7
11	75	30	800	NP	HA-2	G7
12	75	30	800	NP	...	G7
13	75	30	800	NP	HA-2	G7
14	75	30	800	NP	HA-2	G7
15	75	30	800	NP	HA-2	G7
16	75	35	800	800	HA-2	G7
17	80	35	800	NP	HA-2	G7
18	80	35	800	800	HA-2	G7
19	80	35	800	800	HA-2	G7
20	80	35	NP	800	HA-2	G7, G14
21	80	35	800	NP	HA-2	G7
22	80	35	800	800	HA-2	G7
23	80	35	NP	800	HA-2	G7, G14
24	80	35	800	800	HA-2	G7
25	80	35	800	NP	...	G7
26	80	35	800	800	HA-2	G7
27	80	35	800	NP	HA-2	G7
28	80	35	NP	800	HA-2	G7, G14
29	80	35	800	NP	HA-2	G7
30	80	35	NP	800	HA-2	G7, G14
31	80	35	NP	800	HA-2	G7, G14
32	80	35	800	NP	...	G7
33	80	35	800	NP	...	G7
34	80	35	800	NP	HA-2	G7
35	80	35	800	NP	HA-2	G7
36	100	55	NP	800	HA-2	G7
37	100	60	NP	800	HA-2	G7
38	92	64	NP	600	HA-5	G18
39	92	64	NP	600	HA-5	G14, G18
40	92	64	NP	600	HA-5	G18
41	92	64	NP	600	HA-5	G14, G18

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.9	...	...
2	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.9	...	...
3	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.9	...	...
4	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.9	...	...
5	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.9	...	...
6	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.9	...	...
7	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.9	...	...
8	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.9	...	...
9	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.9	...	...
10	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.9	...	...
11	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.9	...	...
12	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.9	...	...
13	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.9	...	...
14	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.9	...	...
15	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.9	...	...
16	23.3	...	23.3	...	23.3	23.3	22.2	21.0	20.5	20.1	19.6	19.3	...	...
17	23.3	...	23.3	...	23.3	23.3	22.2	21.0	20.5	20.1	19.6	19.3	...	...
18	23.3	...	23.3	...	23.3	23.3	22.2	21.0	20.5	20.1	19.6	19.3	...	...
19	23.3	...	23.3	...	23.3	23.3	22.2	21.0	20.5	20.1	19.6	19.3	...	...
20	19.8	...	19.8	...	19.8	19.8	18.9	17.9	17.4	17.1	16.7	16.3	...	...
21	23.3	...	23.3	...	23.3	23.3	22.2	21.0	20.5	20.1	19.6	19.3	...	...
22	23.3	...	23.3	...	23.3	23.3	22.2	21.0	20.5	20.1	19.6	19.3	...	...
23	19.8	...	19.8	...	19.8	19.8	18.9	17.9	17.4	17.1	16.7	16.3	...	...
24	23.3	...	23.3	...	23.3	23.3	22.2	21.0	20.5	20.1	19.6	19.3	...	...
25	23.3	...	23.3	...	23.3	23.3	22.2	21.0	20.5	20.1	19.6	19.3	...	...
26	23.3	...	23.3	...	23.3	23.3	22.2	21.0	20.5	20.1	19.6	19.3	...	...
27	23.3	...	23.3	...	23.3	23.3	22.2	21.0	20.5	20.1	19.6	19.3	...	...
28	23.3	...	23.3	...	23.3	23.3	22.2	21.0	20.5	20.1	19.6	19.3	...	...
29	23.3	...	23.3	...	23.3	23.3	22.2	21.0	20.5	20.1	19.6	19.3	...	...
30	23.3	...	23.3	...	23.3	23.3	22.2	21.0	20.5	20.1	19.6	19.3	...	...
31	23.3	...	23.3	...	23.3	23.3	22.2	21.0	20.5	20.1	19.6	19.3	...	...
32	23.3	...	23.3	...	23.3	23.3	22.2	21.0	20.5	20.1	19.6	19.3	...	...
33	23.3	...	23.3	...	23.3	23.3	22.2	21.0	20.5	20.1	19.6	19.3	...	...
34	21.3	...	21.3	...	21.3	21.3	20.3	19.2	18.7	18.4	17.9	17.6	...	...
35	21.3	...	21.3	...	21.3	21.3	20.3	19.2	18.7	18.4	17.9	17.6	...	...
36	33.3	...	32.7	...	30.2	28.9	27.1	26.0	25.5	24.9	24.5	23.9	...	...
37	33.3	...	32.7	...	30.2	28.9	28.5	27.9	27.5	26.7	26.0	25.3	...	...
38	30.7	...	29.6	...	28.4	28.3	28.3	28.3	...	...	...	...	...	...
39	26.1	...	25.2	...	24.1	24.1	24.1	24.1	...	...	...	...	...	...
40	30.7	...	29.6	...	28.4	28.3	28.3	28.3	...	...	...	...	...	...
41	26.1	...	25.2	...	24.1	24.1	24.1	24.1	...	...	...	...	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...	> 5	8	1
2	18Cr–8Ni	Forgings	SA-336	F304L	S30403	...	...	8	1
3	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...	≤ 5	8	1
4	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...	≤ 5	8	1
5	18Cr–8Ni	Smls. tube	SA-213	TP304L	S30403	...	...	8	1
6	18Cr–8Ni	Plate	SA-240	304L	S30403	...	...	8	1
7	18Cr–8Ni	Wld. tube	SA-249	TP304L	S30403	...	...	8	1
8	18Cr–8Ni	Wld. tube	SA-249	TP304L	S30403	...	...	8	1
9	18Cr–8Ni	Wld. pipe	SA-312	TP304L	S30403	...	...	8	1
10	18Cr–8Ni	Smls. pipe	SA-312	TP304L	S30403	...	...	8	1
11	18Cr–8Ni	Wld. pipe	SA-312	TP304L	S30403	...	...	8	1
12	18Cr–8Ni	Wld. pipe	SA-358	304L	S30403	1	...	8	1
13	18Cr–8Ni	Fittings	SA-403	304L	S30403	...	...	8	1
14	18Cr–8Ni	Fittings	SA-403	304L	S30403	WP-S	...	8	1
15	18Cr–8Ni	Wld. fittings	SA-403	304L	S30403	WP-W	...	8	1
16	18Cr–8Ni	Bar	SA-479	304L	S30403	...	...	8	1
17	18Cr–8Ni	Wld. tube	SA-688	TP304L	S30403	...	...	8	1
18	18Cr–8Ni	Wld. tube	SA-688	TP304L	S30403	...	...	8	1
19	18Cr–8Ni	Wld. pipe	SA-813	TP304L	S30403	...	...	8	1
20	18Cr–8Ni	Wld. pipe	SA-814	TP304L	S30403	...	...	8	1
21	18Cr–8Ni	Castings	SA-351	CF3	J92500	...	...	8	1
22	18Cr–8Ni	Castings	SA-351	CF3	J92500	...	...	8	1
23	18Cr–8Ni	Cast pipe	SA-451	CPF3	J92500	...	...	8	1
24	18Cr–8Ni	Castings	SA-351	CF10	J92590	...	...	8	1
25	18Cr–8Ni	Castings	SA-351	CF8	J92600	...	...	8	1
26	18Cr–8Ni	Castings	SA-351	CF8	J92600	...	...	8	1
27	18Cr–8Ni	Cast pipe	SA-451	CPF8	J92600	...	...	8	1
28	18Cr–8Ni	Forgings	SA-182	F304	S30400	...	> 5	8	1
29	18Cr–8Ni	Forgings	SA-336	F304	S30400	...	...	8	1
30	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...	...	8	1
31	18Cr–8Ni	Forged pipe	SA-430	FP304	S30400	...	...	8	1
32	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...	> 5	8	1
33	18Cr–8Ni	Forgings	SA-336	F304H	S30409	...	...	8	1
34	18Cr–8Ni	Forged pipe	SA-430	FP304H	S30409	...	...	8	1
35	18Cr–8Ni	Plate	SA-240	302	S30200	...	...	8	1
36	18Cr–8Ni	Bar	SA-479	302	S30200	...	...	8	1

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) III	VIII-2	External Pressure Chart No.	Notes
1	65	25	800	800	HA-3	G7
2	65	25	NP	800	HA-3	G7
3	70	25	800	NP	HA-3	G7
4	70	25	NP	800	HA-3	G7
5	70	25	800	800	HA-3	G7
6	70	25	800	800	HA-3	G7
7	70	25	800	NP	HA-3	G7
8	70	25	NP	800	HA-3	G7, G14
9	70	25	800	NP	HA-3	G7
10	70	25	800	800	HA-3	G7
11	70	25	NP	800	HA-3	G7, G14
12	70	25	800	NP	...	G7
13	70	25	800	NP	HA-3	G7
14	70	25	NP	800	HA-3	G7
15	70	25	800	NP	HA-3	G7
16	70	25	800	NP	HA-3	G7
17	70	25	800	NP	...	G7
18	70	25	NP	800	HA-3	G7, G14
19	70	25	800	NP	HA-3	G7
20	70	25	800	NP	HA-3	G7
21	70	30	800	NP	...	G7, G18
22	70	30	NP	800	HA-3	G7, G18
23	70	30	800	NP	...	G7, G18
24	70	30	NP	800	HA-3	G7, G11, G18
25	70	30	800	NP	...	G7, G18
26	70	30	NP	800	HA-3	G7, G10, G11, G18
27	70	30	800	NP	...	G7, G18
28	70	30	800	800	HA-1	G7, G10, G11
29	70	30	800	800	HA-1	G7, G10, G11
30	70	30	800	800	HA-1	G7, G10, G11, S3
31	70	30	800	NP	HA-1	G7
32	70	30	800	800	HA-1	G7
33	70	30	800	800	HA-1	G7
34	70	30	800	800	HA-1	G7
35	75	30	NP	800	HA-1	G7, G10
36	75	30	800	NP	...	G7

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.7	13.5	13.3	13.0	...	...
2	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.7	13.5	13.3	13.0	...	...
3	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.7	13.5	13.3	13.0	...	...
4	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.7	13.5	13.3	13.0	...	...
5	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.7	13.5	13.3	13.0	...	...
6	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.7	13.5	13.3	13.0	...	...
7	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.7	13.5	13.3	13.0	...	...
8	14.2	...	14.2	...	14.2	13.4	12.6	11.9	11.7	11.5	11.3	11.1	...	...
9	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.7	13.5	13.3	13.0	...	...
10	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.7	13.5	13.3	13.0	...	...
11	14.2	...	14.2	...	14.2	13.4	12.6	11.9	11.7	11.5	11.3	11.1	...	...
12	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.7	13.5	13.3	13.0	...	...
13	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.7	13.5	13.3	13.0	...	...
14	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.7	13.5	13.3	13.0	...	...
15	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.7	13.5	13.3	13.0	...	...
16	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.7	13.5	13.3	13.0	...	...
17	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.7	13.5	13.3	13.0	...	...
18	14.2	...	14.2	...	14.2	13.4	12.6	11.9	11.7	11.5	11.3	11.1	...	...
19	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.7	13.5	13.3	13.0	...	...
20	16.7	...	16.7	...	16.7	15.8	14.8	14.0	13.7	13.5	13.3	13.0	...	...
21	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
22	20.0	...	20.0	...	20.0	18.7	17.4	16.4	16.1	15.9	15.5	15.1	...	...
23	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
24	20.0	...	20.0	...	20.0	18.7	17.4	16.4	16.1	15.9	15.5	15.1	...	...
25	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
26	20.0	...	20.0	...	20.0	18.7	17.4	16.4	16.1	15.9	15.5	15.1	...	...
27	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
28	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
29	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
30	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
31	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
32	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
33	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
34	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
35	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
36	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	18Cr–8Ni	Forgings	SA-182	F304	S30400	...	≤ 5	8	1
2	18Cr–8Ni	Smls. tube	SA-213	TP304	S30400	...	...	8	1
3	18Cr–8Ni	Plate	SA-240	304	S30400	...	...	8	1
4	18Cr–8Ni	Wld. tube	SA-249	TP304	S30400	...	...	8	1
5	18Cr–8Ni	Wld. tube	SA-249	TP304	S30400	...	...	8	1
6	18Cr–8Ni	Wld. pipe	SA-312	TP304	S30400	...	...	8	1
7	18Cr–8Ni	Smls. pipe	SA-312	TP304	S30400	...	...	8	1
8	18Cr–8Ni	Wld. pipe	SA-312	TP304	S30400	...	...	8	1
9	18Cr–8Ni	Wld. pipe	SA-358	304	S30400	1	...	8	1
10	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...	...	8	1
11	18Cr–8Ni	Fittings	SA-403	304	S30400	...	...	8	1
12	18Cr–8Ni	Fittings	SA-403	304	S30400	CR	...	8	1
13	18Cr–8Ni	Fittings	SA-403	304	S30400	WP-S	...	8	1
14	18Cr–8Ni	Wld. fittings	SA-403	304	S30400	WP-W	...	8	1
15	18Cr–8Ni	Wld. fittings	SA-403	304	S30400	WP-W	...	8	1
16	18Cr–8Ni	Wld. fittings	SA-403	304	S30400	WP-WX	...	8	1
17	18Cr–8Ni	Bar	SA-479	304	S30400	...	...	8	1
18	18Cr–8Ni	Wld. tube	SA-688	TP304	S30400	...	...	8	1
19	18Cr–8Ni	Wld. tube	SA-688	TP304	S30400	...	...	8	1
20	18Cr–8Ni	Wld. tube	SA-813	TP304	S30400	...	...	8	1
21	18Cr–8Ni	Wld. tube	SA-814	TP304	S30400	...	...	8	1
22	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...	≤ 5	8	1
23	18Cr–8Ni	Smls. tube	SA-213	TP304H	S30409	...	...	8	1
24	18Cr–8Ni	Plate	SA-240	304H	S30409	...	...	8	1
25	18Cr–8Ni	Wld. tube	SA-249	TP304H	S30409	...	...	8	1
26	18Cr–8Ni	Wld. tube	SA-249	TP304H	S30409	...	...	8	1
27	18Cr–8Ni	Smls. pipe	SA-312	TP304H	S30409	...	...	8	1
28	18Cr–8Ni	Wld. pipe	SA-312	TP304H	S30409	...	...	8	1
29	18Cr–8Ni	Wld. pipe	SA-312	TP304H	S30409	...	...	8	1
30	18Cr–8Ni	Wld. pipe	SA-358	304H	S30409	1	...	8	1
31	18Cr–8Ni	Smls. pipe	SA-376	TP304H	S30409	...	...	8	1
32	18Cr–8Ni	Fittings	SA-403	304H	S30409	...	...	8	1
33	18Cr–8Ni	Fittings	SA-403	304H	S30409	CR	...	8	1
34	18Cr–8Ni	Fittings	SA-403	304H	S30409	WP-S	...	8	1
35	18Cr–8Ni	Wld. fittings	SA-403	304H	S30409	WP-W	...	8	1
36	18Cr–8Ni	Wld. fittings	SA-403	304H	S30409	WP-W	...	8	1
37	18Cr–8Ni	Wld. fittings	SA-403	304H	S30409	WP-WX	...	8	1
38	18Cr–8Ni	Cast pipe	SA-452	TP304H	S30409	...	...	8	1
39	18Cr–8Ni	Bar	SA-479	304H	S30409	...	...	8	1
40	18Cr–8Ni	Wld. tube	SA-813	TP304H	S30409	...	...	8	1
41	18Cr–8Ni	Wld. tube	SA-814	TP304H	S30409	...	...	8	1

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) III	VIII-2	External Pressure Chart No.	Notes
1	75	30	800	800	HA-1	G7, G10, G11
2	75	30	800	800	HA-1	G7, G10
3	75	30	800	800	HA-1	G7, G10, G11
4	75	30	800	NP	HA-1	G7
5	75	30	NP	800	HA-1	G7, G10, G14
6	75	30	800	NP	HA-1	G7
7	75	30	800	800	HA-1	G7, G10, G11
8	75	30	NP	800	HA-1	G7, G10, G14
9	75	30	800	NP	HA-1	G7
10	75	30	800	800	HA-1	G7, G10, G11, S3
11	75	30	800	NP	HA-1	G7
12	75	30	NP	800	HA-1	G7, G14
13	75	30	NP	800	HA-1	G7
14	75	30	800	NP	HA-1	G7
15	75	30	NP	800	HA-1	G7, G14
16	75	30	NP	800	HA-1	G7, G14
17	75	30	800	NP	...	G7
18	75	30	800	NP	...	G7
19	75	30	NP	800	HA-1	G7, G10, G14
20	75	30	800	NP	HA-1	G7
21	75	30	800	NP	HA-1	G7
22	75	30	800	800	HA-1	G7
23	75	30	800	800	HA-1	G7
24	75	30	800	NP	HA-1	G7
25	75	30	800	NP	HA-1	G7
26	75	30	NP	800	HA-1	G7, G14
27	75	30	800	800	HA-1	G7
28	75	30	NP	800	HA-1	G7, G14
29	75	30	800	NP	HA-1	G7
30	75	30	800	NP	...	G7
31	75	30	800	800	HA-1	G7
32	75	30	800	NP	HA-1	G7
33	75	30	NP	800	HA-1	G7, G14
34	75	30	NP	800	HA-1	G7
35	75	30	800	NP	HA-1	G7
36	75	30	NP	800	HA-1	G7, G14
37	75	30	NP	800	HA-1	G7, G14
38	75	30	800	NP	...	G7, G18
39	75	30	800	NP	...	G7
40	75	30	800	NP	HA-1	G7
41	75	30	800	NP	HA-1	G7

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
2	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
3	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
4	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
5	17.0	...	17.0	...	17.0	15.9	14.9	14.0	13.8	13.6	13.2	12.9	...	...
6	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
7	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
8	17.0	...	17.0	...	17.0	15.9	14.9	14.0	13.8	13.6	13.2	12.9	...	...
9	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
10	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
11	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
12	17.0	...	17.0	...	17.0	15.9	14.9	14.0	13.8	13.6	13.2	12.9	...	...
13	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
14	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
15	17.0	...	17.0	...	17.0	15.9	14.9	14.0	13.8	13.6	13.2	12.9	...	...
16	17.0	...	17.0	...	17.0	15.9	14.9	14.0	13.8	13.6	13.2	12.9	...	...
17	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
18	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
19	17.0	...	17.0	...	17.0	15.9	14.9	14.0	13.8	13.6	13.2	12.9	...	...
20	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
21	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
22	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
23	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
24	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
25	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
26	17.0	...	17.0	...	17.0	15.9	14.9	14.0	13.8	13.6	13.2	12.9	...	...
27	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
28	17.0	...	17.0	...	17.0	15.9	14.9	14.0	13.8	13.6	13.2	12.9	...	...
29	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
30	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
31	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
32	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
33	17.0	...	17.0	...	17.0	15.9	14.9	14.0	13.8	13.6	13.2	12.9	...	...
34	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
35	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
36	17.0	...	17.0	...	17.0	15.9	14.9	14.0	13.8	13.6	13.2	12.9	...	...
37	17.0	...	17.0	...	17.0	15.9	14.9	14.0	13.8	13.6	13.2	12.9	...	...
38	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
39	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
40	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
41	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	18Cr–8Ni	Castings	SA-351	CF3A	J92500	...	...	8	1
2	18Cr–8Ni	Cast pipe	SA-451	CPF3A	J92500	...	...	8	1
3	18Cr–8Ni	Castings	SA-351	CF8A	J92600	...	...	8	1
4	18Cr–8Ni	Cast pipe	SA-451	CPF8A	J92600	...	...	8	1
5	18Cr–8Ni–N	Forgings	SA-182	F304LN	S30453	...	> 5	8	1
6	18Cr–8Ni–N	Forgings	SA-336	F304LN	S30453	...	...	8	1
7	18Cr–8Ni–N	Forgings	SA-182	F304LN	S30453	...	≤ 5	8	1
8	18Cr–8Ni–N	Smls. tube	SA-213	TP304LN	S30453	...	...	8	1
9	18Cr–8Ni–N	Plate	SA-240	304LN	S30453	...	...	8	1
10	18Cr–8Ni–N	Wld. tube	SA-249	TP304LN	S30453	...	...	8	1
11	18Cr–8Ni–N	Smls. & wld. pipe	SA-312	TP304LN	S30453	...	...	8	1
12	18Cr–8Ni–N	Wld. pipe	SA-358	304LN	S30453	...	...	8	1
13	18Cr–8Ni–N	Smls. pipe	SA-376	TP304LN	S30453	...	...	8	1
14	18Cr–8Ni–N	Fittings	SA-403	304LN	S30453	...	...	8	1
15	18Cr–8Ni–N	Wld. fittings	SA-403	304LN	S30453	WP-W	...	8	1
16	18Cr–8Ni–N	Bar	SA-479	304LN	S30453	...	...	8	1
17	18Cr–8Ni–N	Wld. tube	SA-688	TP304LN	S30453	...	...	8	1
18	18Cr–8Ni–N	Wld. tube	SA-813	TP304LN	S30453	...	...	8	1
19	18Cr–8Ni–N	Wld. tube	SA-814	TP304LN	S30453	...	...	8	1
20	18Cr–8Ni–N	Forged pipe	SA-430	FP304N	S30451	...	...	8	1
21	18Cr–8Ni–N	Forgings	SA-182	F304N	S30451	...	...	8	1
22	18Cr–8Ni–N	Smls. tube	SA-213	TP304N	S30451	...	...	8	1
23	18Cr–8Ni–N	Plate	SA-240	304N	S30451	...	...	8	1
24	18Cr–8Ni–N	Wld. tube	SA-249	TP304N	S30451	...	...	8	1
25	18Cr–8Ni–N	Wld. pipe	SA-312	TP304N	S30451	...	...	8	1
26	18Cr–8Ni–N	Smls. pipe	SA-312	TP304N	S30451	...	...	8	1
27	18Cr–8Ni–N	Wld. pipe	SA-312	TP304N	S30451	...	...	8	1
28	18Cr–8Ni–N	Forgings	SA-336	F304N	S30451	...	...	8	1
29	18Cr–8Ni–N	Wld. pipe	SA-358	304N	S30451	1	...	8	1
30	18Cr–8Ni–N	Smls. pipe	SA-376	TP304N	S30451	...	...	8	1
31	18Cr–8Ni–N	Fittings	SA-403	304N	S30451	...	...	8	1
32	18Cr–8Ni–N	Fittings	SA-403	304N	S30451	CR	...	8	1
33	18Cr–8Ni–N	Wld. fittings	SA-403	304N	S30451	WP-W	...	8	1
34	18Cr–8Ni–N	Wld. fittings	SA-403	304N	S30451	WP-W	...	8	1
35	18Cr–8Ni–N	Wld. fittings	SA-403	304N	S30451	WP-WX	...	8	1
36	18Cr–8Ni–N	Bar	SA-479	304N	S30451	...	...	8	1
37	18Cr–8Ni–N	Wld. tube	SA-688	TP304N	S30451	...	...	8	1
38	18Cr–8Ni–N	Wld. pipe	SA-813	TP304N	S30451	...	...	8	1
39	18Cr–8Ni–N	Wld. pipe	SA-814	TP304N	S30451	...	...	8	1
40	18Cr–8Ni–4Si–N	Bar	SA-479	...	S21800	...	...	8	3

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) III	VIII-2	External Pressure Chart No.	Notes
1	77	35	700	NP	...	G7, G18
2	77	35	700	NP	...	G7, G18
3	77	35	700	NP	...	G7, G18
4	77	35	700	NP	...	G7, G18
5	70	30	800	NP	HA-1	G7
6	70	30	800	NP	HA-1	G7
7	75	30	800	NP	HA-1	G7
8	75	30	800	NP	HA-1	G7
9	75	30	800	NP	HA-1	G7
10	75	30	800	NP	HA-1	G7
11	75	30	800	NP	HA-1	G7
12	75	30	800	NP	HA-1	G7
13	75	30	800	NP	HA-1	G7
14	75	30	800	NP	HA-1	G7
15	75	30	800	NP	HA-1	G7
16	75	30	800	NP	HA-1	G7
17	75	30	800	NP	HA-1	G7
18	75	30	800	NP	HA-1	G7
19	75	30	800	NP	HA-1	G7
20	75	35	800	800	HA-1	G7
21	80	35	800	NP	HA-1	G7
22	80	35	800	800	HA-1	G7
23	80	35	800	800	HA-1	G7
24	80	35	NP	800	HA-1	G7, G14
25	80	35	800	NP	HA-1	G7
26	80	35	800	800	HA-1	G7
27	80	35	NP	800	HA-1	G7, G14
28	80	35	800	800	HA-1	G7
29	80	35	800	NP	...	G7
30	80	35	800	800	HA-1	G7
31	80	35	800	NP	HA-1	G7
32	80	35	NP	800	HA-1	G7, G14
33	80	35	800	NP	HA-1	G7
34	80	35	NP	800	HA-1	G7, G14
35	80	35	NP	800	HA-1	G7, G14
36	80	35	800	NP	...	G7
37	80	35	800	NP	...	G7
38	80	35	800	NP	HA-1	G7
39	80	35	800	NP	HA-1	G7
40	95	50	800	NP	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	23.3	...	23.3	...	22.6	21.8	20.5	19.3	18.9	17.6	...	...	...	...
2	23.3	...	23.3	...	22.6	21.8	20.5	19.3	18.9	17.6	...	...	...	...
3	23.3	...	23.3	...	22.6	21.8	20.5	19.3	18.9	17.6	...	...	...	...
4	23.3	...	23.3	...	22.6	21.8	20.5	19.3	18.9	17.6	...	...	...	...
5	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
6	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
7	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
8	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
9	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
10	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
11	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
12	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
13	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
14	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
15	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
16	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
17	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
18	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
19	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
20	23.3	...	23.3	...	22.5	20.3	18.8	17.8	17.6	17.2	16.9	16.7	...	...
21	23.3	...	23.3	...	22.5	20.3	18.8	17.8	17.6	17.2	16.9	16.7	...	...
22	23.3	...	23.3	...	22.5	20.3	18.8	17.8	17.6	17.2	16.9	16.7	...	...
23	23.3	...	23.3	...	22.5	20.3	18.8	17.8	17.6	17.2	16.9	16.7	...	...
24	19.8	...	19.8	...	19.2	17.3	15.9	15.1	14.9	14.6	14.4	14.1	...	...
25	23.3	...	23.3	...	22.5	20.3	18.8	17.8	17.6	17.2	16.9	16.7	...	...
26	23.3	...	23.3	...	22.5	20.3	18.8	17.8	17.6	17.2	16.9	16.7	...	...
27	19.8	...	19.8	...	19.2	17.3	15.9	15.1	14.9	14.6	14.4	14.1	...	...
28	23.3	...	23.3	...	22.5	20.3	18.8	17.8	17.6	17.2	16.9	16.7	...	...
29	23.3	...	23.3	...	22.5	20.3	18.8	17.8	17.6	17.2	16.9	16.7	...	...
30	23.3	...	23.3	...	22.5	20.3	18.8	17.8	17.6	17.2	16.9	16.7	...	...
31	23.3	...	23.3	...	22.5	20.3	18.8	17.8	17.6	17.2	16.9	16.7	...	...
32	19.8	...	19.8	...	19.2	17.3	15.9	15.1	14.9	14.6	14.4	14.1	...	...
33	23.3	...	23.3	...	22.5	20.3	18.8	17.8	17.6	17.2	16.9	16.7	...	...
34	19.8	...	19.8	...	19.2	17.3	15.9	15.1	14.9	14.6	14.4	14.1	...	...
35	19.8	...	19.8	...	19.2	17.3	15.9	15.1	14.9	14.6	14.4	14.1	...	...
36	23.3	...	23.3	...	22.5	20.3	18.8	17.8	17.6	17.2	16.9	16.7	...	...
37	23.3	...	23.3	...	22.5	20.3	18.8	17.8	17.6	17.2	16.9	16.7	...	...
38	21.3	...	21.3	...	20.6	18.6	17.2	16.3	16.1	15.7	15.5	15.3	...	...
39	21.3	...	21.3	...	20.6	18.6	17.2	16.3	16.1	15.7	15.5	15.3	...	...
40	31.7	...	25.9	...	22.1	19.7	18.5	17.6	17.3	17.1	16.9	16.7	...	...

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SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	18Cr–10Ni–Cb	Castings	SA-351	CF8C	J92710	...	...	8	1
2	18Cr–10Ni–Cb	Cast pipe	SA-451	CPF8C	J92710	...	...	8	1
3	18Cr–10Ni–Cb	Forgings	SA-182	F347	S34700	...	> 5	8	1
4	18Cr–10Ni–Cb	Forgings	SA-336	F347	S34700	...	...	8	1
5	18Cr–10Ni–Cb	Forged pipe	SA-430	FP347	S34700	...	...	8	1
6	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...	> 5	8	1
7	18Cr–10Ni–Cb	Forgings	SA-336	F347H	S34709	...	...	8	1
8	18Cr–10Ni–Cb	Forged pipe	SA-430	FP347H	S34709	...	...	8	1
9	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...	> 5	8	1
10	18Cr–10Ni–Cb	Forgings	SA-182	F348H	S34809	...	> 5	8	1
11	18Cr–10Ni–Cb	Forgings	SA-182	F347	S34700	...	≤ 5	8	1
12	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347	S34700	...	...	8	1
13	18Cr–10Ni–Cb	Plate	SA-240	347	S34700	...	...	8	1
14	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347	S34700	...	...	8	1
15	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347	S34700	...	...	8	1
16	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP347	S34700	...	...	8	1
17	18Cr–10Ni–Cb	Smls. pipe	SA-312	TP347	S34700	...	...	8	1
18	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP347	S34700	...	...	8	1
19	18Cr–10Ni–Cb	Wld. pipe	SA-358	347	S34700	1	...	8	1
20	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347	S34700	...	...	8	1
21	18Cr–10Ni–Cb	Fittings	SA-403	347	S34700	...	...	8	1
22	18Cr–10Ni–Cb	Fittings	SA-403	347	S34700	CR	...	8	1
23	18Cr–10Ni–Cb	Fittings	SA-403	347	S34700	WP-S	...	8	1
24	18Cr–10Ni–Cb	Wld. fittings	SA-403	347	S34700	WP-W	...	8	1
25	18Cr–10Ni–Cb	Wld. fittings	SA-403	347	S34700	WP-W	...	8	1
26	18Cr–10Ni–Cb	Wld. fittings	SA-403	347	S34700	WP-WX	...	8	1
27	18Cr–10Ni–Cb	Bar	SA-479	347	S34700	...	...	8	1
28	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP347	S34700	...	...	8	1
29	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP347	S34700	...	...	8	1
30	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...	≤ 5	8	1
31	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347H	S34709	...	...	8	1
32	18Cr–10Ni–Cb	Plate	SA-240	347H	S34709	...	...	8	1
33	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347H	S34709	...	...	8	1
34	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347H	S34709	...	...	8	1
35	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP347H	S34709	...	...	8	1
36	18Cr–10Ni–Cb	Smls. pipe	SA-312	TP347H	S34709	...	...	8	1
37	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP347H	S34709	...	...	8	1
38	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347H	S34709	...	...	8	1

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) III	VIII-2	External Pressure Chart No.	Notes
1	70	30	800	800	HA-3	G7, G10, G18
2	70	30	800	NP	...	G7, G18
3	70	30	800	800	HA-2	G7, G10
4	70	30	800	800	HA-2	G7, G10
5	70	30	800	NP	HA-2	G7
6	70	30	800	800	HA-2	G7
7	70	30	800	800	HA-2	G7, G10
8	70	30	800	800	HA-2	G7
9	70	30	NP	800	HA-2	G7, G10
10	70	30	NP	800	HA-2	G7
11	75	30	800	800	HA-2	G7, G10
12	75	30	800	800	HA-2	G7, G10
13	75	30	800	800	HA-2	G7, G10
14	75	30	800	NP	HA-2	G7
15	75	30	NP	800	HA-2	G7, G10, G14
16	75	30	800	NP	HA-2	G7
17	75	30	800	800	HA-2	G7, G10
18	75	30	NP	800	HA-2	G7, G10, G14
19	75	30	800	NP	HA-2	G7
20	75	30	800	800	HA-2	G7, G10
21	75	30	800	NP	HA-2	G7
22	75	30	NP	800	HA-2	G7, G14
23	75	30	NP	800	HA-2	G7
24	75	30	800	NP	HA-2	G7
25	75	30	NP	800	HA-2	G7, G14
26	75	30	NP	800	HA-2	G7, G14
27	75	30	800	NP	...	G7
28	75	30	800	NP	HA-2	G7
29	75	30	800	NP	HA-2	G7
30	75	30	800	800	HA-2	G7
31	75	30	800	800	HA-2	G7
32	75	30	800	800	HA-2	G7
33	75	30	800	NP	HA-2	G7
34	75	30	NP	800	HA-2	G7, G14
35	75	30	800	NP	HA-2	G7
36	75	30	800	800	HA-2	G7
37	75	30	NP	800	HA-2	G7, G14
38	75	30	800	800	HA-2	G7

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	20.0	19.3	18.6	18.5	18.4	18.2	18.2	18.2	...	...
2	20.0	...	20.0	...	20.0	19.3	18.6	18.5	18.4	18.2	18.2	18.2	...	...
3	20.0	...	20.0	...	20.0	19.3	18.6	18.5	18.4	18.2	18.2	18.2	...	...
4	20.0	...	20.0	...	20.0	19.3	18.6	18.5	18.4	18.2	18.2	18.2	...	...
5	20.0	...	20.0	...	20.0	19.3	18.6	18.5	18.4	18.2	18.2	18.2	...	...
6	20.0	...	20.0	...	20.0	19.3	18.6	18.5	18.4	18.2	18.2	18.2	...	...
7	20.0	...	20.0	...	20.0	19.3	18.6	18.5	18.4	18.2	18.2	18.2	...	...
8	20.0	...	20.0	...	20.0	19.3	18.6	18.5	18.4	18.2	18.2	18.2	...	...
9	20.0	...	20.0	...	20.0	19.3	18.6	18.5	18.4	18.2	18.2	18.2	...	...
10	20.0	...	20.0	...	20.0	19.3	18.6	18.5	18.4	18.2	18.2	18.2	...	...
11	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
12	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
13	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
14	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
15	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...
16	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
17	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
18	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...
19	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
20	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
21	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
22	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...
23	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
24	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
25	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...
26	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...
27	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
28	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
29	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
30	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
31	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
32	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
33	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
34	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...
35	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
36	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
37	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...
38	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	18Cr–10Ni–Cb	Fittings	SA-403	347H	S34709	...	...	8	1
2	18Cr–10Ni–Cb	Fittings	SA-403	347H	S34709	CR	...	8	1
3	18Cr–10Ni–Cb	Fittings	SA-403	347H	S34709	WP-S	...	8	1
4	18Cr–10Ni–Cb	Wld. fittings	SA-403	347H	S34709	WP-W	...	8	1
5	18Cr–10Ni–Cb	Wld. fittings	SA-403	347H	S34709	WP-W	...	8	1
6	18Cr–10Ni–Cb	Wld. fittings	SA-403	347H	S34709	WP-WX	...	8	1
7	18Cr–10Ni–Cb	Cast pipe	SA-452	TP347H	S34709	...	...	8	1
8	18Cr–10Ni–Cb	Bar	SA-479	347H	S34709	...	...	8	1
9	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP347H	S34709	...	...	8	1
10	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP347H	S34709	...	...	8	1
11	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...	≤ 5	8	1
12	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348	S34800	...	...	8	1
13	18Cr–10Ni–Cb	Plate	SA-240	348	S34800	...	...	8	1
14	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348	S34800	...	...	8	1
15	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348	S34800	...	...	8	1
16	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP348	S34800	...	...	8	1
17	18Cr–10Ni–Cb	Smls. pipe	SA-312	TP348	S34800	...	...	8	1
18	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP348	S34800	...	...	8	1
19	18Cr–10Ni–Cb	Wld. pipe	SA-358	348	S34800	1	...	8	1
20	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP348	S34800	...	...	8	1
21	18Cr–10Ni–Cb	Fittings	SA-403	348	S34800	...	...	8	1
22	18Cr–10Ni–Cb	Fittings	SA-403	348	S34800	CR	...	8	1
23	18Cr–10Ni–Cb	Fittings	SA-403	348	S34800	WP-S	...	8	1
24	18Cr–10Ni–Cb	Wld. fittings	SA-403	348	S34800	WP-W	...	8	1
25	18Cr–10Ni–Cb	Wld. fittings	SA-403	348	S34800	WP-W	...	8	1
26	18Cr–10Ni–Cb	Wld. fittings	SA-403	348	S34800	WP-WX	...	8	1
27	18Cr–10Ni–Cb	Bar	SA-479	348	S34800	...	...	8	1
28	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP348	S34800	...	...	8	1
29	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP348	S34800	...	...	8	1
30	18Cr–10Ni–Cb	Forgings	SA-182	F348H	S34809	...	≤ 5	8	1
31	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348H	S34809	...	...	8	1
32	18Cr–10Ni–Cb	Plate	SA-240	348H	S34809	...	...	8	1
33	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348H	S34809	...	...	8	1
34	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348H	S34809	...	...	8	1
35	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP348H	S34809	...	...	8	1
36	18Cr–10Ni–Cb	Smls. pipe	SA-312	TP348H	S34809	...	...	8	1
37	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP348H	S34809	...	...	8	1

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) III	VIII-2	External Pressure Chart No.	Notes
1	75	30	800	NP	HA-2	G7
2	75	30	NP	800	HA-2	G7, G14
3	75	30	NP	800	HA-2	G7
4	75	30	800	NP	HA-2	G7
5	75	30	NP	800	HA-2	G7, G14
6	75	30	NP	800	HA-2	G7, G14
7	75	30	800	NP	...	G7, G18
8	75	30	800	NP	...	G7
9	75	30	800	NP	HA-2	G7
10	75	30	800	NP	HA-2	G7
11	75	30	800	800	HA-2	G7, G10
12	75	30	800	800	HA-2	G7, G10
13	75	30	800	800	HA-2	G7, G10
14	75	30	800	NP	HA-2	G7
15	75	30	NP	800	HA-2	G7, G10, G14
16	75	30	800	NP	HA-2	G7
17	75	30	800	800	HA-2	G7, G10
18	75	30	NP	800	HA-2	G7, G10, G14
19	75	30	800	NP	HA-2	G7
20	75	30	800	800	HA-2	G7, G10
21	75	30	800	NP	HA-2	G7
22	75	30	NP	800	HA-2	G7, G14
23	75	30	NP	800	HA-2	G7
24	75	30	800	NP	HA-2	G7
25	75	30	NP	800	HA-2	G7, G14
26	75	30	NP	800	HA-2	G7, G14
27	75	30	800	NP	...	G7
28	75	30	800	NP	HA-2	G7
29	75	30	800	NP	HA-2	G7
30	75	30	800	800	HA-2	G7
31	75	30	800	800	HA-2	G7
32	75	30	800	NP	HA-2	G7
33	75	30	800	NP	HA-2	G7
34	75	30	NP	800	HA-2	G7, G14
35	75	30	800	NP	HA-2	G7
36	75	30	800	800	HA-2	G7
37	75	30	NP	800	HA-2	G7, G14

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
2	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...
3	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
4	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
5	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...
6	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...
7	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
8	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
9	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
10	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
11	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
12	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
13	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
14	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
15	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...
16	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
17	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
18	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...
19	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
20	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
21	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
22	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...
23	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
24	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
25	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...
26	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...
27	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
28	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
29	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
30	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
31	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
32	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
33	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
34	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...
35	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
36	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
37	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	18Cr–10Ni–Cb	Fittings	SA-403	348H	S34809	...	...	8	1
2	18Cr–10Ni–Cb	Fittings	SA-403	348H	S34809	CR	...	8	1
3	18Cr–10Ni–Cb	Fittings	SA-403	348H	S34809	WP-S	...	8	1
4	18Cr–10Ni–Cb	Wld. fittings	SA-403	348H	S34809	WP-W	...	8	1
5	18Cr–10Ni–Cb	Wld. fittings	SA-403	348H	S34809	WP-W	...	8	1
6	18Cr–10Ni–Cb	Wld. fittings	SA-403	348H	S34809	WP-WX	...	8	1
7	18Cr–10Ni–Cb	Bar	SA-479	348H	S34809	...	...	8	1
8	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP348H	S34809	...	...	8	1
9	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP348H	S34809	...	...	8	1
10	18Cr–10Ni–Ti	Smls. pipe	SA-312	TP321	S32100	...	> 3/8	8	1
11	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...	> 3/8	8	1
12	18Cr–10Ni–Ti	Smls. pipe	SA-312	TP321H	S32109	...	> 3/8	8	1
13	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321H	S32109	...	> 3/8	8	1
14	18Cr–10Ni–Ti	Forgings	SA-182	F321	S32100	...	> 5	8	1
15	18Cr–10Ni–Ti	Forgings	SA-336	F321	S32100	...	...	8	1
16	18Cr–10Ni–Ti	Forged pipe	SA-430	FP321	S32100	...	...	8	1
17	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...	> 5	8	1
18	18Cr–10Ni–Ti	Forgings	SA-336	F321H	S32109	...	...	8	1
19	18Cr–10Ni–Ti	Forged pipe	SA-430	FP321H	S32109	...	...	8	1
20	18Cr–10Ni–Ti	Forgings	SA-182	F321	S32100	...	≤ 5	8	1
21	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321	S32100	...	...	8	1
22	18Cr–10Ni–Ti	Plate	SA-240	321	S32100	...	...	8	1
23	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321	S32100	...	...	8	1
24	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321	S32100	...	...	8	1
25	18Cr–10Ni–Ti	Wld. pipe	SA-312	TP321	S32100	...	...	8	1
26	18Cr–10Ni–Ti	Smls. pipe	SA-312	TP321	S32100	...	≤ 3/8	8	1
27	18Cr–10Ni–Ti	Wld. pipe	SA-312	TP321	S32100	...	...	8	1
28	18Cr–10Ni–Ti	Wld. pipe	SA-358	321	S32100	1	...	8	1
29	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...	≤ 3/8	8	1
30	18Cr–10Ni–Ti	Fittings	SA-403	321	S32100	...	...	8	1
31	18Cr–10Ni–Ti	Fittings	SA-403	321	S32100	CR	...	8	1
32	18Cr–10Ni–Ti	Fittings	SA-403	321	S32100	WP-S	...	8	1
33	18Cr–10Ni–Ti	Wld. fittings	SA-403	321	S32100	WP-W	...	8	1
34	18Cr–10Ni–Ti	Wld. fittings	SA-403	321	S32100	WP-W	...	8	1
35	18Cr–10Ni–Ti	Wld. fittings	SA-403	321	S32100	WP-WX	...	8	1
36	18Cr–10Ni–Ti	Bar	SA-479	321	S32100	...	...	8	1
37	18Cr–10Ni–Ti	Wld. pipe	SA-813	TP321	S32100	...	...	8	1
38	18Cr–10Ni–Ti	Wld. pipe	SA-814	TP321	S32100	...	...	8	1

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only)		External Pressure Chart No.	Notes
			III	VIII-2		
1	75	30	800	NP	HA-2	G7
2	75	30	NP	800	HA-2	G7, G14
3	75	30	NP	800	HA-2	G7
4	75	30	800	NP	HA-2	G7
5	75	30	NP	800	HA-2	G7, G14
6	75	30	NP	800	HA-2	G7, G14
7	75	30	800	NP	...	G7
8	75	30	800	NP	HA-2	G7
9	75	30	800	NP	HA-2	G7
10	70	25	NP	800	HA-2	G7, G10
11	70	25	800	800	HA-2	G7, G10
12	70	25	NP	800	HA-2	G7
13	70	25	800	800	HA-2	G7
14	70	30	800	800	HA-2	G7, G10
15	70	30	800	800	HA-2	G7, G10
16	70	30	800	800	HA-2	G7, G10
17	70	30	800	800	HA-2	G7
18	70	30	800	800	HA-2	G7, G10
19	70	30	800	800	HA-2	G7
20	75	30	800	800	HA-2	G7, G10
21	75	30	800	800	HA-2	G7, G10
22	75	30	800	800	HA-2	G7, G10
23	75	30	800	NP	HA-2	G7
24	75	30	NP	800	HA-2	G7, G10, G14
25	75	30	800	NP	HA-2	G7
26	75	30	800	800	HA-2	G7, G10
27	75	30	NP	800	HA-2	G7, G10, G14
28	75	30	800	NP	HA-2	G7
29	75	30	800	800	HA-2	G7, G10
30	75	30	800	NP	HA-2	G7
31	75	30	NP	800	HA-2	G7, G14
32	75	30	NP	800	HA-2	G7
33	75	30	800	NP	HA-2	G7
34	75	30	NP	800	HA-2	G7, G14
35	75	30	NP	800	HA-2	G7, G14
36	75	30	800	NP	HA-2	G7
37	75	30	800	NP	HA-2	G7
38	75	30	800	NP	HA-2	G7

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
2	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...
3	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
4	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
5	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...
6	17.0	...	17.0	...	17.0	17.0	16.9	16.4	16.2	15.8	15.7	15.6	...	...
7	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
8	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
9	20.0	...	20.0	...	20.0	20.0	19.9	19.3	19.0	18.6	18.5	18.4	...	...
10	16.7	...	16.7	...	16.7	16.7	16.1	15.2	14.9	14.6	14.4	14.1	...	...
11	16.7	...	16.7	...	16.7	16.7	16.1	15.2	14.9	14.6	14.4	14.1	...	...
12	16.7	...	16.7	...	16.7	16.7	16.1	15.2	14.9	14.6	14.4	14.1	...	...
13	16.7	...	16.7	...	16.7	16.7	16.1	15.2	14.9	14.6	14.4	14.1	...	...
14	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
15	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
16	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
17	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
18	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
19	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
20	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
21	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
22	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
23	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
24	17.0	...	17.0	...	17.0	17.0	16.4	15.6	15.2	14.9	14.6	14.4	...	...
25	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
26	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
27	17.0	...	17.0	...	17.0	17.0	16.4	15.6	15.2	14.9	14.6	14.4	...	...
28	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
29	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
30	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
31	17.0	...	17.0	...	17.0	17.0	16.4	15.6	15.2	14.9	14.6	14.4	...	...
32	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
33	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
34	17.0	...	17.0	...	17.0	17.0	16.4	15.6	15.2	14.9	14.6	14.4	...	...
35	17.0	...	17.0	...	17.0	17.0	16.4	15.6	15.2	14.9	14.6	14.4	...	...
36	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
37	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
38	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...	≤ 5	8	1
2	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321H	S32109	...	...	8	1
3	18Cr–10Ni–Ti	Plate	SA-240	321H	S32109	...	...	8	1
4	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321H	S32109	...	...	8	1
5	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321H	S32109	...	...	8	1
6	18Cr–10Ni–Ti	Wld. pipe	SA-312	TP321H	S32109	...	...	8	1
7	18Cr–10Ni–Ti	Smls. pipe	SA-312	TP321H	S32109	...	≤ 3/8	8	1
8	18Cr–10Ni–Ti	Wld. pipe	SA-312	TP321H	S32109	...	...	8	1
9	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321H	S32109	...	≤ 3/8	8	1
10	18Cr–10Ni–Ti	Fittings	SA-403	321H	S32109	...	...	8	1
11	18Cr–10Ni–Ti	Fittings	SA-403	321H	S32109	CR	...	8	1
12	18Cr–10Ni–Ti	Fittings	SA-403	321H	S32109	WP-S	...	8	1
13	18Cr–10Ni–Ti	Wld. fittings	SA-403	321H	S32109	WP-W	...	8	1
14	18Cr–10Ni–Ti	Wld. fittings	SA-403	321H	S32109	WP-W	...	8	1
15	18Cr–10Ni–Ti	Wld. fittings	SA-403	321H	S32109	WP-WX	...	8	1
16	18Cr–10Ni–Ti	Bar	SA-479	321H	S32109	...	...	8	1
17	18Cr–10Ni–Ti	Wld. pipe	SA-813	TP321H	S32109	...	...	8	1
18	18Cr–10Ni–Ti	Wld. pipe	SA-814	TP321H	S32109	...	...	8	1
19	18Cr–11Ni	Plate	SA-240	305	S30500	...	...	8	1
20	18Cr–13Ni–3Mo	Plate	SA-240	317	S31700	...	≤ 5	8	1
21	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317	S31700	...	...	8	1
22	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317	S31700	...	...	8	1
23	18Cr–13Ni–3Mo	Smls. & wld. pipe	SA-312	TP317	S31700	...	...	8	1
24	18Cr–13Ni–3Mo	Smls. pipe	SA-312	TP317	S31700	...	≤ 5	8	1
25	18Cr–13Ni–3Mo	Wld. pipe	SA-312	TP317	S31700	...	≤ 5	8	1
26	18Cr–13Ni–3Mo	Fittings	SA-403	317	S31700	WP-S	...	8	1
27	18Cr–13Ni–3Mo	Plate	SA-240	317L	S31703	...	...	8	1
28	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	WP-S	...	8	1
29	18Cr–18Ni–2Si	Smls. tube	SA-213	XM-15	S38100	...	≤ 5	8	1
30	18Cr–18Ni–2Si	Plate	SA-240	XM-15	S38100	...	≤ 5	8	1
31	18Cr–18Ni–2Si	Wld. tube	SA-249	TPXM-15	S38100	...	≤ 5	8	1
32	18Cr–18Ni–2Si	Smls. pipe	SA-312	TPXM-15	S38100	...	≤ 5	8	1
33	18Cr–18Ni–2Si	Wld. pipe	SA-312	TPXM-15	S38100	...	≤ 5	8	1
34	20Cr–10Ni	Bar	SA-479	ER308	S30880	...	...	8	1
35	21Cr–6Ni–9Mn	Forgings	SA-182	FXM-11	S21904	...	...	8	3
36	21Cr–6Ni–9Mn	Smls. pipe	SA-312	TPXM-11	S21904	...	...	8	3
37	21Cr–6Ni–9Mn	Wld. pipe	SA-312	TPXM-11	S21904	...	...	8	3
38	21Cr–6Ni–9Mn	Forgings	SA-336	FXM-11	S21904	...	...	8	3
39	21Cr–6Ni–9Mn	Plate	SA-666	XM-11	S21904	...	...	8	3

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) III	VIII-2	External Pressure Chart No.	Notes
1	75	30	800	800	HA-2	G7
2	75	30	800	800	HA-2	G7
3	75	30	800	800	HA-2	G7
4	75	30	800	NP	HA-2	G7
5	75	30	NP	800	HA-2	G7, G14
6	75	30	800	NP	HA-2	G7
7	75	30	800	800	HA-2	G7
8	75	30	NP	800	HA-2	G7, G14
9	75	30	800	800	HA-2	G7
10	75	30	800	NP	HA-2	G7
11	75	30	NP	800	HA-2	G7, G14
12	75	30	NP	800	HA-2	G7
13	75	30	800	NP	HA-2	G7
14	75	30	NP	800	HA-2	G7, G14
15	75	30	NP	800	HA-2	G7, G14
16	75	30	800	NP	...	G7
17	75	30	800	NP	HA-2	G7
18	75	30	800	NP	HA-2	G7
19	75	30	800	NP	...	G7
20	75	30	NP	800	HA-2	G7, G10
21	75	30	800	NP	HA-2	G7
22	75	30	NP	800	HA-2	G7, G10, G14
23	75	30	800	NP	HA-2	G7
24	75	30	NP	800	HA-2	G7, G10
25	75	30	NP	800	HA-2	G7, G10, G14
26	75	30	NP	800	HA-2	G7
27	75	30	NP	800	HA-4	G7
28	75	30	NP	800	HA-4	G7
29	75	30	NP	800	HA-2	G7, G10
30	75	30	NP	800	HA-2	G7, G10
31	75	30	NP	800	HA-2	G7, G10, G14
32	75	30	NP	800	HA-2	G7, G10
33	75	30	NP	800	HA-2	G7, G10, G14
34	75	30	800	NP	...	G7
35	90	50	NP	600	HA-2	G7
36	90	50	NP	600	HA-2	G7
37	90	50	NP	600	HA-2	G7, G14
38	90	50	NP	600	HA-2	G7
39	90	50	NP	600	HA-2	G7

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
2	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
3	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
4	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
5	17.0	...	17.0	...	17.0	17.0	16.4	15.6	15.2	14.9	14.6	14.4	...	...
6	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
7	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
8	17.0	...	17.0	...	17.0	17.0	16.4	15.6	15.2	14.9	14.6	14.4	...	...
9	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
10	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
11	17.0	...	17.0	...	17.0	17.0	16.4	15.6	15.2	14.9	14.6	14.4	...	...
12	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
13	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
14	17.0	...	17.0	...	17.0	17.0	16.4	15.6	15.2	14.9	14.6	14.4	...	...
15	17.0	...	17.0	...	17.0	17.0	16.4	15.6	15.2	14.9	14.6	14.4	...	...
16	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
17	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
18	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
19	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
20	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
21	20.0	...	20.0	...	20.0	19.3	17.9	17.0	16.7	16.3	16.1	15.9	...	...
22	17.0	...	17.0	...	17.0	16.4	15.3	14.5	14.2	13.9	13.7	13.5	...	...
23	20.0	...	20.0	...	20.0	19.3	17.9	17.0	16.7	16.3	16.1	15.9	...	...
24	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
25	17.0	...	17.0	...	17.0	16.4	15.3	14.5	14.2	13.9	13.7	13.5	...	...
26	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
27	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
28	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.7	16.3	16.1	15.9	...	...
29	20.0	...	20.0	...	20.0	18.7	17.4	16.4	16.1	15.9	15.5	15.1	...	...
30	20.0	...	20.0	...	19.8	17.6	16.4	15.6	15.3	15.1	14.9	14.8	...	...
31	17.0	...	17.0	...	17.0	15.9	14.8	13.9	13.7	13.5	13.2	12.9	...	...
32	20.0	...	20.0	...	20.0	18.7	17.4	16.4	16.1	15.9	15.5	15.1	...	...
33	17.0	...	17.0	...	17.0	15.9	14.8	13.9	13.7	13.5	13.2	12.9	...	...
34	20.0	...	20.0	...	20.0	18.7	17.5	16.4	16.2	16.0	15.6	15.2	...	...
35	30.0	...	29.9	...	28.2	26.6	24.1	23.0	...	...	...	...	...	...
36	30.0	...	29.9	...	28.2	26.6	24.1	23.0	...	...	...	...	...	...
37	25.5	...	25.4	...	24.0	22.6	20.5	19.6	...	...	...	...	...	...
38	30.0	...	29.9	...	28.2	26.6	24.1	23.0	...	...	...	...	...	...
39	30.0	...	29.9	...	28.2	26.6	24.1	23.0	...	...	...	...	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	22Cr–13Ni–5Mn	Forgings	SA-182	FXM-19	S20910	...	...	8	3
2	22Cr–13Ni–5Mn	Plate	SA-240	XM-19	S20910	...	...	8	3
3	22Cr–13Ni–5Mn	Wld. tube	SA-249	TPXM-19	S20910	...	...	8	3
4	22Cr–13Ni–5Mn	Wld. tube	SA-249	TPXM-19	S20910	...	...	8	3
5	22Cr–13Ni–5Mn	Wld. pipe	SA-312	TPXM-19	S20910	...	...	8	3
6	22Cr–13Ni–5Mn	Smls. pipe	SA-312	TPXM-19	S20910	...	...	8	3
7	22Cr–13Ni–5Mn	Wld. pipe	SA-312	TPXM-19	S20910	...	...	8	3
8	22Cr–13Ni–5Mn	Forgings	SA-336	FXM-19	S20910	...	...	8	3
9	22Cr–13Ni–5Mn	Wld. pipe	SA-358	XM-19	S20910	1	...	8	3
10	22Cr–13Ni–5Mn	Fittings	SA-403	XM-19	S20910	...	...	8	3
11	22Cr–13Ni–5Mn	Fittings	SA-403	XM-19	S20910	CR	...	8	3
12	22Cr–13Ni–5Mn	Wld. fittings	SA-403	XM-19	S20910	WP-W	...	8	3
13	22Cr–13Ni–5Mn	Wld. fittings	SA-403	XM-19	S20910	WP-W	...	8	3
14	22Cr–13Ni–5Mn	Wld. fittings	SA-403	XM-19	S20910	WP-WX	...	8	3
15	22Cr–13Ni–5Mn	Bar	SA-479	XM-19	S20910	...	...	8	3
16	22Cr–13Ni–5Mn	Wld. pipe	SA-813	TPXM-19	S20910	...	...	8	3
17	22Cr–13Ni–5Mn	Wld. pipe	SA-814	TPXM-19	S20910	...	...	8	3
18	23Cr–4Ni–Mo–Cu	Plate	SA-240	...	S32304	...	...	10H	1
19	23Cr–12Ni	Fittings	SA-403	309	S30900	...	...	8	2
20	23Cr–12Ni	Fittings	SA-403	309	S30900	...	...	8	2
21	23Cr–12Ni	Fittings	SA-403	309	S30900	WP-S	...	8	2
22	23Cr–12Ni	Wld. fittings	SA-403	309	S30900	WP-W	...	8	2
23	23Cr–12Ni	Wld. fittings	SA-403	309	S30900	WP-W	...	8	2
24	23Cr–12Ni	Wld. fittings	SA-403	309	S30900	WP-WX	...	8	2
25	23Cr–12Ni	Smls. tube	SA-213	TP309S	S30908	...	...	8	2
26	23Cr–12Ni	Plate	SA-240	309S	S30908	...	...	8	2
27	23Cr–12Ni	Wld. tube	SA-249	TP309S	S30908	...	...	8	2
28	23Cr–12Ni	Smls. pipe	SA-312	TP309S	S30908	...	...	8	2
29	23Cr–12Ni	Wld. pipe	SA-312	TP309S	S30908	...	...	8	2
30	23Cr–12Ni	Wld. pipe	SA-358	309S	S30908	...	...	8	2
31	23Cr–12Ni	Bar	SA-479	309S	S30908	...	...	8	2
32	23Cr–12Ni	Wld. pipe	SA-813	TP309S	S30908	...	...	8	2
33	23Cr–12Ni	Wld. pipe	SA-814	TP309S	S30908	...	...	8	2
34	23Cr–12Ni	Smls. tube	SA-213	TP309H	S30909	...	...	8	2
35	23Cr–12Ni	Plate	SA-240	309H	S30909	...	...	8	2
36	23Cr–12Ni	Wld. tube	SA-249	TP309H	S30909	...	...	8	2
37	23Cr–12Ni	Smls. pipe	SA-312	TP309H	S30909	...	...	8	2
38	23Cr–12Ni	Wld. pipe	SA-312	TP309H	S30909	...	...	8	2
39	23Cr–12Ni	Bar	SA-479	309H	S30909	...	...	8	2

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) III	VIII-2	External Pressure Chart No.	Notes
1	100	55	800	800	HA-2	G7, G13
2	100	55	800	800	HA-2	G7, G13
3	100	55	800	NP	HA-2	G7, G13
4	100	55	NP	800	HA-2	G7, G13, G14
5	100	55	800	NP	HA-2	G7, G13
6	100	55	800	800	HA-2	G7, G13
7	100	55	NP	800	HA-2	G7, G13, G14
8	100	55	NP	800	HA-2	G7, G13
9	100	55	800	NP	HA-2	G7, G13
10	100	55	800	NP	HA-2	G7, G13
11	100	55	NP	800	HA-2	G7, G14
12	100	55	800	NP	HA-2	G7, G13
13	100	55	NP	800	HA-2	G7, G14
14	100	55	NP	800	HA-2	G7, G14
15	100	55	800	800	HA-2	G7, G13
16	100	55	800	NP	HA-2	G7, G13
17	100	55	800	NP	HA-2	G7, G13
18	87	58	NP	600	HA-5	G7, G18
19	75	30	800	NP	HA-2	G7
20	75	30	NP	800	HA-2	G7, G14
21	75	30	NP	800	HA-2	G7
22	75	30	800	NP	HA-2	G7
23	75	30	NP	800	HA-2	G7, G14
24	75	30	NP	800	HA-2	G7, G14
25	75	30	NP	800	HA-2	G7, G10
26	75	30	NP	800	HA-2	G7, G10
27	75	30	NP	800	HA-2	G7, G14
28	75	30	NP	800	HA-2	G7, G10
29	75	30	NP	800	HA-2	G7, G10, G14
30	75	30	800	NP	HA-2	G7
31	75	30	800	NP	...	G7
32	75	30	NP	800	HA-2	G7, G10, G14
33	75	30	NP	800	HA-2	G7, G10, G14
34	75	30	NP	800	HA-2	G7
35	75	30	NP	800	HA-2	G7
36	75	30	NP	800	HA-2	G7, G14
37	75	30	NP	800	HA-2	G7
38	75	30	NP	800	HA-2	G7, G14
39	75	30	NP	800	HA-2	G7

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	33.3	...	33.2	...	31.4	30.2	29.7	29.2	29.0	28.8	28.5	28.2	...	...
2	33.3	...	33.2	...	31.4	30.2	29.7	29.2	29.0	28.8	28.5	28.2	...	...
3	33.3	...	33.2	...	31.4	30.2	29.7	29.2	29.0	28.8	28.5	28.2	...	...
4	28.3	...	28.2	...	26.7	25.7	25.2	24.8	24.7	24.5	24.2	24.0	...	...
5	33.3	...	33.2	...	31.4	30.2	29.7	29.2	29.0	28.8	28.5	28.2	...	...
6	33.3	...	33.2	...	31.4	30.2	29.7	29.2	29.0	28.8	28.5	28.2	...	...
7	28.3	...	28.2	...	26.7	25.7	25.2	24.8	24.7	24.5	24.2	24.0	...	...
8	33.3	...	33.2	...	31.4	30.2	29.7	29.2	29.0	28.8	28.5	28.2	...	...
9	33.3	...	33.2	...	31.4	30.2	29.7	29.2	29.0	28.8	28.5	28.2	...	...
10	33.3	...	33.2	...	31.4	30.2	29.7	29.2	29.0	28.8	28.5	28.2	...	...
11	28.3	...	28.2	...	26.7	25.7	25.2	24.8	24.7	24.5	24.2	24.0	...	...
12	33.3	...	33.2	...	31.4	30.2	29.7	29.2	29.0	28.8	28.5	28.2	...	...
13	28.3	...	28.2	...	26.7	25.7	25.2	24.8	24.7	24.5	24.2	24.0	...	...
14	28.3	...	28.2	...	26.7	25.7	25.2	24.8	24.7	24.5	24.2	24.0	...	...
15	33.3	...	33.2	...	31.4	30.2	29.7	29.2	29.0	28.8	28.5	28.2	...	...
16	33.3	...	33.2	...	31.4	30.2	29.7	29.2	29.0	28.8	28.5	28.2	...	...
17	33.3	...	33.2	...	31.4	30.2	29.7	29.2	29.0	28.8	28.5	28.2	...	...
18	29.0	...	27.9	...	26.3	25.3	24.9	24.5	...	...	...	...	...	...
19	20.0	...	20.0	...	20.0	20.0	19.4	18.7	18.5	18.2	18.0	17.7	...	...
20	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.0	...	...
21	20.0	...	20.0	...	20.0	20.0	19.4	18.7	18.5	18.2	18.0	17.7	...	...
22	20.0	...	20.0	...	20.0	20.0	19.4	18.7	18.5	18.2	18.0	17.7	...	...
23	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.0	...	...
24	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.0	...	...
25	20.0	...	20.0	...	20.0	20.0	19.4	18.7	18.5	18.2	18.0	17.7	...	...
26	20.0	...	20.0	...	20.0	20.0	19.4	18.7	18.5	18.2	18.0	17.7	...	...
27	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.0	...	...
28	20.0	...	20.0	...	20.0	20.0	19.4	18.7	18.5	18.2	18.0	17.7	...	...
29	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.0	...	...
30	20.0	...	20.0	...	20.0	20.0	19.4	18.7	18.5	18.2	18.0	17.7	...	...
31	20.0	...	20.0	...	20.0	20.0	19.4	18.7	18.5	18.2	18.0	17.7	...	...
32	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.0	...	...
33	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.0	...	...
34	20.0	...	20.0	...	20.0	20.0	20.0	19.2	18.8	18.3	18.0	17.5	...	...
35	20.0	...	20.0	...	20.0	20.0	20.0	19.2	18.8	18.3	18.0	17.5	...	...
36	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.0	...	...
37	20.0	...	20.0	...	20.0	20.0	19.4	18.7	18.5	18.2	18.0	17.7	...	...
38	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.0	...	...
39	20.0	...	20.0	...	20.0	20.0	20.0	19.2	18.8	18.3	18.0	17.5	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	23Cr–12Ni–Cb	Smls. tube	SA-213	TP309Cb	S30940	...	...	8	2
2	23Cr–12Ni–Cb	Plate	SA-240	309Cb	S30940	...	...	8	2
3	23Cr–12Ni–Cb	Wld. tube	SA-249	TP309Cb	S30940	...	...	8	2
4	23Cr–12Ni–Cb	Smls. pipe	SA-312	TP309Cb	S30940	...	...	8	2
5	23Cr–12Ni–Cb	Wld. pipe	SA-312	TP309Cb	S30940	...	...	8	2
6	23Cr–12Ni–Cb	Wld. pipe	SA-813	TP309Cb	S30940	...	...	8	2
7	23Cr–12Ni–Cb	Wld. pipe	SA-814	TP309Cb	S30940	...	...	8	2
8	25Cr–6Ni–Mo–N	Plate	SA-240	...	S31200	...	...	10H	1
9	25Cr–12Ni	Castings	SA-351	CH8	J93400	...	...	8	2
10	25Cr–12Ni	Cast pipe	SA-451	CPH8	J93400	...	...	8	2
11	25Cr–12Ni	Castings	SA-351	CH20	J93402	...	...	8	2
12	25Cr–12Ni	Cast pipe	SA-451	CPH20	J93402	...	...	8	2
13	25Cr–20Ni	Castings	SA-351	CK20	J94202	...	...	8	2
14	25Cr–20Ni	Cast pipe	SA-451	CPK20	J94202	...	...	8	2
15	25Cr–20Ni	Forgings	SA-182	F310	S31000	...	≤ 5	8	2
16	25Cr–20Ni	Forgings	SA-336	F310	S31000	...	...	8	2
17	25Cr–20Ni	Fittings	SA-403	310	S31000	...	...	8	2
18	25Cr–20Ni	Fittings	SA-403	310	S31000	CR	...	8	2
19	25Cr–20Ni	Fittings	SA-403	310	S31000	WP-S	...	8	2
20	25Cr–20Ni	Wld. fittings	SA-403	310	S31000	WP-W	...	8	2
21	25Cr–20Ni	Wld. fittings	SA-403	310	S31000	WP-W	...	8	2
22	25Cr–20Ni	Wld. fittings	SA-403	310	S31000	WP-WX	...	8	2
23	25Cr–20Ni	Smls. tube	SA-213	TP310S	S31008	...	...	8	2
24	25Cr–20Ni	Plate	SA-240	310S	S31008	...	...	8	2
25	25Cr–20Ni	Wld. tube	SA-249	TP310S	S31008	...	...	8	2
26	25Cr–20Ni	Smls. pipe	SA-312	TP310S	S31008	...	...	8	2
27	25Cr–20Ni	Wld. pipe	SA-312	TP310S	S31008	...	...	8	2
28	25Cr–20Ni	Wld. pipe	SA-358	310S	S31008	1	...	8	2
29	25Cr–20Ni	Wld. pipe	SA-813	TP310S	S31008	...	...	8	2
30	25Cr–20Ni	Wld. pipe	SA-814	TP310S	S31008	...	...	8	2
31	25Cr–20Ni	Smls. tube	SA-213	TP310H	S31009	...	...	8	2
32	25Cr–20Ni	Plate	SA-240	310H	S31009	...	...	8	2
33	25Cr–20Ni	Wld. tube	SA-249	TP310H	S31009	...	...	8	2
34	25Cr–20Ni	Smls. pipe	SA-312	TP310H	S31009	...	...	8	2
35	25Cr–20Ni	Wld. pipe	SA-312	TP310H	S31009	...	...	8	2
36	25Cr–20Ni–Cb	Wld. tube	SA-249	TP310Cb	S31040	...	...	8	2
37	25Cr–20Ni–Cb	Wld. pipe	SA-312	TP310Cb	S31040	...	...	8	2
38	25Cr–20Ni–Cb	Wld. pipe	SA-813	TP310Cb	S31040	...	...	8	2
39	25Cr–20Ni–Cb	Wld. pipe	SA-814	TP310Cb	S31040	...	...	8	2

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) III	VIII-2	External Pressure Chart No.	Notes
1	75	30	NP	800	HA-2	G7, G10
2	75	30	NP	800	HA-2	G7, G10
3	75	30	NP	800	HA-2	G7, G10, G14
4	75	30	NP	800	HA-2	G7, G10
5	75	30	NP	800	HA-2	G7, G10, G14
6	75	30	NP	800	HA-2	G7, G10, G14
7	75	30	NP	800	HA-2	G7, G10, G14
8	100	65	NP	600	HA-5	G7, G18
9	65	28	800	800	HA-3	G7, G10, G11, G18
10	65	28	800	NP	...	G7, G18
11	70	30	800	800	HA-2	G7
12	70	30	800	NP	...	G7
13	65	28	800	800	HA-3	G7
14	65	28	800	NP	...	G7
15	75	30	NP	800	HA-2	G7, G10, G12, G17
16	75	30	800	800	HA-2	G7, G10, G12, G17
17	75	30	800	NP	HA-2	G7
18	75	30	NP	800	HA-2	G7, G14
19	75	30	NP	800	HA-2	G7
20	75	30	800	NP	HA-2	G7
21	75	30	NP	800	HA-2	G7, G14
22	75	30	NP	800	HA-2	G7, G14
23	75	30	NP	800	HA-2	G7, G10, G12, G17
24	75	30	NP	800	HA-2	G7, G10, G12, G17
25	75	30	NP	800	HA-2	G7, G10, G12, G14, G17
26	75	30	NP	800	HA-2	G7, G10, G12, G17
27	75	30	NP	800	HA-2	G7, G10, G12, G14, G17
28	75	30	800	NP	HA-2	G7
29	75	30	NP	800	HA-2	G7, G10, G12, G14, G17
30	75	30	NP	800	HA-2	G7, G10, G12, G14, G17
31	75	30	NP	800	HA-2	G7
32	75	30	NP	800	HA-2	G7
33	75	30	NP	800	HA-2	G7, G14
34	75	30	NP	800	HA-2	G7
35	75	30	NP	800	HA-2	G7, G14
36	75	30	NP	800	HA-2	G7, G10, G12, G14, G17
37	75	30	NP	800	HA-2	G7, G10, G12, G14, G17
38	75	30	NP	800	HA-2	G7, G10, G12, G14, G17
39	75	30	NP	800	HA-2	G7, G10, G12, G14, G17

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	20.0	...	20.0	...	20.0	20.0	19.4	18.7	18.5	18.2	18.0	17.7	...	...
2	20.0	...	20.0	...	20.0	20.0	19.4	18.7	18.5	18.2	18.0	17.7	...	...
3	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.0	...	...
4	20.0	...	20.0	...	20.0	20.0	19.4	18.7	18.5	18.2	18.0	17.7	...	...
5	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.0	...	...
6	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.0	...	...
7	17.0	...	17.0	...	17.0	17.0	16.5	15.9	15.7	15.5	15.3	15.0	...	...
8	33.3	...	33.3	...	31.6	30.6	30.3	29.1	...	...	...	...	...	...
9	18.7	...	18.7	...	18.7	18.7	18.1	17.5	17.2	17.0	16.8	16.5	...	...
10	18.7	...	18.7	...	18.7	18.7	18.1	17.5	17.2	17.0	16.8	16.5	...	...
11	20.0	...	20.0	...	20.0	20.0	19.4	18.7	18.5	18.2	18.0	17.7	...	...
12	20.0	...	20.0	...	20.0	20.0	19.4	18.7	18.5	18.2	18.0	17.7	...	...
13	18.7	...	18.7	...	18.7	18.7	18.0	17.3	17.0	17.1	16.8	16.4	...	...
14	18.7	...	18.7	...	18.7	18.7	18.0	17.3	17.0	17.1	16.8	16.4	...	...
15	20.0	...	20.0	...	20.0	20.0	19.3	18.5	18.2	17.9	17.7	17.4	...	...
16	20.0	...	20.0	...	20.0	20.0	19.3	18.5	18.2	17.9	17.7	17.4	...	...
17	20.0	...	20.0	...	20.0	20.0	19.3	18.5	18.2	17.9	17.7	17.4	...	...
18	17.0	...	17.0	...	17.0	17.0	16.4	15.7	15.5	15.2	15.0	14.8	...	...
19	20.0	...	20.0	...	20.0	20.0	19.3	18.5	18.2	17.9	17.7	17.4	...	...
20	20.0	...	20.0	...	20.0	20.0	19.3	18.5	18.2	17.9	17.7	17.4	...	...
21	17.0	...	17.0	...	17.0	17.0	16.4	15.7	15.5	15.2	15.0	14.8	...	...
22	17.0	...	17.0	...	17.0	17.0	16.4	15.7	15.5	15.2	15.0	14.8	...	...
23	20.0	...	20.0	...	20.0	20.0	20.0	19.2	18.8	18.3	18.0	17.5	...	...
24	20.0	...	20.0	...	20.0	20.0	19.3	18.5	18.2	17.9	17.7	17.4	...	...
25	17.0	...	17.0	...	17.0	17.0	16.4	15.7	16.5	15.2	15.0	14.8	...	...
26	20.0	...	20.0	...	20.0	20.0	20.0	19.2	18.8	18.3	18.0	17.5	...	...
27	17.0	...	17.0	...	17.0	17.0	16.4	15.7	16.5	15.2	15.0	14.8	...	...
28	20.0	...	20.0	...	20.0	20.0	19.3	18.5	18.2	17.9	17.7	17.4	...	...
29	17.0	...	17.0	...	17.0	17.0	16.4	15.7	15.5	15.2	15.0	14.8	...	...
30	17.0	...	17.0	...	17.0	17.0	16.4	15.7	15.5	15.2	15.0	14.8	...	...
31	20.0	...	20.0	...	20.0	20.0	19.3	18.5	18.2	17.9	17.7	17.4	...	...
32	20.0	...	20.0	...	20.0	20.0	20.0	19.2	18.8	18.3	18.0	17.5	...	...
33	17.0	...	17.0	...	17.0	17.0	16.4	15.7	16.5	15.2	15.0	14.8	...	...
34	20.0	...	20.0	...	20.0	20.0	20.0	19.2	18.8	18.3	18.0	17.5	...	...
35	17.0	...	17.0	...	17.0	17.0	16.4	15.7	16.5	15.2	15.0	14.8	...	...
36	17.0	...	17.0	...	17.0	17.0	16.4	15.7	15.5	15.2	15.0	14.8	...	...
37	17.0	...	17.0	...	17.0	17.0	16.4	15.7	15.5	15.2	15.0	14.8	...	...
38	17.0	...	17.0	...	17.0	17.0	16.4	15.7	15.5	15.2	15.0	14.8	...	...
39	17.0	...	17.0	...	17.0	17.0	16.4	15.7	15.5	15.2	15.0	14.8	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.	Group No.
1	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...	$0.250 < t \leq 1.250$	8	2
2	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...	$0.250 < t \leq 1.250$	8	2
3	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...	$0.250 < t \leq 1.250$	8	2
4	25Cr–22Ni–2Mo–N	Plate	SA-240	310MoLN	S31050	...	...	8	2
5	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...	≤ 0.250, wall	8	2
6	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...	≤ 0.250, wall	8	2
7	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...	≤ 0.250, wall	8	2

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only)		External Pressure Chart No.	Notes
			III	VIII-2		
1	78	37	NP	800	HA-2	...
2	78	37	NP	800	HA-2	G14
3	78	37	NP	800	HA-2	G14
4	80	35	NP	600	HA-2	...
5	84	39	NP	800	HA-2	...
6	84	39	NP	800	HA-2	G14
7	84	39	NP	800	HA-2	G14

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TABLE 2A (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	24.7	...	24.7	...	24.3	23.3	22.7	21.5	21.0	20.4	19.9	19.4	...	...
2	21.0	...	21.0	...	20.7	19.8	19.3	18.3	17.9	17.3	16.9	16.5	...	...
3	21.0	...	21.0	...	20.7	19.8	19.3	18.3	17.9	17.3	16.9	16.5	...	...
4	23.3	...	23.3	...	23.3	22.7	21.4	20.3	...	...	...	...	...	...
5	26.0	...	26.0	...	26.0	25.1	23.9	22.7	22.1	21.5	21.0	20.5	...	...
6	22.1	...	22.1	...	22.1	21.3	20.3	19.3	18.8	18.3	17.9	17.4	...	...
7	22.1	...	22.1	...	22.1	21.3	20.3	19.3	18.8	18.3	17.9	17.4	...	...

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NOTES TO TABLE 2A

GENERAL NOTE:

The following abbreviations are used: Applic., Applicability; Cond., Condition; Desig., Designation; Smls., Seamless; Temp., Temperature; and Wld., Welded.

NOTES — GENERAL REQUIREMENTS:

G1 Material that conforms to Class 10, 13, 20, 23, 30, 33, 40, 43, 50, or 53 is not permitted.
G2 Material that conforms to Class 11 or 12 is not permitted.
G3 Material that conforms to Class 11 or 12 is not permitted when the nominal thickness of the material exceeds $^{3}/_{4}$ in.
G4 Material that conforms to Class 11 or 12 is not permitted when the nominal thickness of the material exceeds $1^{1}/_{4}$ in.
01 G5 ...
G6 SA-723 shall not be used for minimum permissible temperature below +40°F.
G7 Due to the relatively low yield strength of these materials, these higher stress values were established at temperatures where the short time tensile properties govern to permit the use of these alloys where slightly greater deformation is acceptable. The stress values in this range exceed $66^{2}/_{3}$% but do not exceed 90% of the yield strength at temperature. Use of these stresses may result in dimensional changes due to permanent strain. These stress values are not recommended for the flanges of gasketed joints or other applications where slight amounts of distortion can cause leakage or malfunction. Table Y-2 lists multiplying factors which, when applied to the yield strength values shown in Table Y-1, will give allowable stress values that will result in lower levels of permanent strain.
G8 This material has reduced toughness at room temperature after exposure at high temperature. The degree of embrittlement depends on composition, heat treatment, time, and temperature. The lowest temperature of concern is about 500°F. See Appendix 6, 6-360.
G9 The stress–rupture test is not required for design temperatures 800°F and below.
G10 At temperatures over 1000°F, these stress intensity values apply only when the carbon is 0.04% or higher. This note is applicable only when stresses above 800°F are published.
G11 For temperatures above 1000°F, these stress intensity values may be used only if the material has been heat treated by heating to a minimum temperature of 1900°F and quenching in water or rapidly cooling by other means. This note is applicable only when stresses above 800°F are published.
G12 These stress intensity values at temperatures of 1050°F and above should be used only when assurance is provided that the steel has a predominant grain size not finer than ASTM No. 6. This note is applicable only when stresses above 800°F are published.
G13 The S_y values of this material vary with annealing temperature. See Table Y-1.
G14 A quality factor of 0.85 has been applied in arriving at the design stress intensity values for this material.
G15 Impact testing in accordance with Section III Subarticle NX-2300 is not required.
G16 G-2110(b) of Section III is mandatory for this material.
G17 These stress intensity values shall be considered basic values to be used when no effort is made to control or check the grain size of the steel.
G18 This steel may be expected to develop embrittlement after service at moderately elevated temperature; see Appendix 6. For P-No. 10H Gr. 1 materials, exposure to temperatures in the range of 1100°F to 1700°F for relatively short periods of time may result in severe loss of ductility due to sigma formation; see 6-340 and 6-360.
G19 The tensile strength shall not be in excess of 20,000 psi above the specified minimum.
G20 All forgings shall have a maximum tensile strength not in excess of 25 ksi above the specified minimum.
G21 For Section VIII applications, SA-723 is exempt from the requirement in AF-730.3(b) that the average of the individual Brinell hardness numbers shall not be more than 10% below or 25% above the number corresponding to the tensile strength.
G22 Fabricated from SA-387 Grade 12 Class 1 plate.
G23 Fabricated from SA-387 Grade 12 Class 2 plate.
G24 See Appendix 26 of Section VIII, Division 2.

NOTES — HEAT TREATMENT REQUIREMENTS:

H1 Annealed.
H2 Normalized and tempered.
H3 Quenched and tempered.
H4 Liquid quenched and tempered.
H5 Normalized, normalized and tempered, or quenched and tempered.
H6 Normalized at 1900–2000°F and tempered at 1350°F, minimum.
H7 For Section III applications (if any), if heat treatment is performed after forming or fabrication, it shall be performed at 1500–1850°F for a period of time not to exceed 10 min at temperature, followed by rapid cooling. For Section VIII applications involving consideration of heat treatment after forming or welding, see Table AF-402.1 for P-No. 10K, Group No. 1 materials.

NOTES — SIZE REQUIREMENTS:

S1 The maximum thickness of forgings shall not exceed $3^{3}/_{4}$ in. (4 in. as heat treated).
S2 The maximum section thickness shall not exceed 3 in. for double-normalized-and-tempered forgings, or 5 in. for quenched-and-tempered forgings.
S3 Both NPS 8 and larger, and schedule 140 and heavier.
S4 The minimum thickness of pressure retaining parts shall be $^{1}/_{4}$ in.

NOTES — WELDING REQUIREMENTS:

W1 Not for welded construction.
W2 For Section VIII applications, welding not permitted when carbon content exceeds 0.35% by ladle analysis except for limited types of welding, as allowed in Part AF.
W3 Nonwelded, or welded if the tensile strength of the Section IX reduced section tension test is not less than 100 ksi.

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NOTES TO TABLE 2A (CONT'D)

NOTES — WELDING REQUIREMENTS (CONT'D):

W4 Welded, with the tensile strength of the Section IX reduced section tension test less than 100 ksi but not less than 95 ksi.

W5 In welded construction, for temperatures above 850°F, the weld metal shall have a carbon content of greater than 0.05%.

W6 For Section VIII applications, Section IX, QW-250 Variables QW-404.12, QW-406.3, QW-407.2, and QW-409.1 shall also apply to this material. These variables shall be applied in accordance with the rules for welding of Part AF.

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TABLE 2B
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.
1	...	Smls. drawn tube	SB-210	Alclad 3003	O	0.010–0.500	21
2	...	Smls. drawn tube	SB-210	Alclad 3003	H113	0.050–0.500	21
3	...	Smls. extr. tube	SB-241	Alclad 3003	O	...	21
4	...	Smls. extr. tube	SB-241	Alclad 3003	H112	...	21
5	...	Plate, sheet	SB-209	A93003	O	0.006–3.000	21
6	...	Plate, sheet	SB-209	A93003	H112	0.250–0.499	21
7	...	Plate, sheet	SB-209	A93003	H112	0.500–2.000	21
8	...	Plate, sheet	SB-209	A93003	H112	2.001–3.000	21
9	...	Drawn smls. tube	SB-210	A93003	O	0.010–0.500	21
10	...	Drawn smls. tube	SB-210	A93003	H113	0.010–0.500	21
11	...	Bar, rod, shapes	SB-221	A93003	O	...	21
12	...	Bar, rod, shapes	SB-221	A93003	H112	...	21
13	...	Smls. extr. tube	SB-241	A93003	O	...	21
14	...	Smls. pipe	SB-241	A93003	H112	≥ 1.000	21
15	...	Smls. extr. tube	SB-241	A93003	H112	...	21
16	...	Plate, sheet	SB-209	A93004	O	0.006–3.000	22
17	...	Plate, sheet	SB-209	A93004	H112	0.250–3.000	22
18	...	Plate, sheet	SB-209	A95052	O	0.051–3.000	22
19	...	Plate, sheet	SB-209	A95052	H112	0.250–0.499	22
20	...	Plate, sheet	SB-209	A95052	H112	0.500–3.000	22
21	...	Plate, sheet	SB-209	A95083	O	0.051–1.500	25
22	...	Plate, sheet	SB-209	A95083	O	1.501–3.000	25
23	...	Plate, sheet	SB-209	A95083	O	3.001–5.000	25
24	...	Plate, sheet	SB-209	A95083	O	5.001–7.000	25
25	...	Plate, sheet	SB-209	A95083	O	7.001–8.000	25
26	...	Plate, sheet	SB-209	A95083	H112	0.250–1.500	25
27	...	Plate, sheet	SB-209	A95083	H112	1.501–3.000	25
28	...	Bar, rod, shapes	SB-221	A95083	H111	≤ 5.000	25
29	...	Smls. extr. tube	SB-241	A95083	H111	...	25
30	...	Plate, sheet	SB-209	A95086	O	0.051–2.000	25
31	...	Plate, sheet	SB-209	A95086	H112	0.063–0.499	25
32	...	Plate, sheet	SB-209	A95086	H112	0.500–1.000	25
33	...	Plate, sheet	SB-209	A95086	H112	1.001–2.000	25
34	...	Plate, sheet	SB-209	A95086	H112	2.001–3.000	25
35	...	Plate, sheet	SB-209	A95454	O	0.051–3.000	22
36	...	Plate, sheet	SB-209	A95454	H112	0.250–0.499	22
37	...	Plate, sheet	SB-209	A95454	H112	0.500–3.000	22
38	...	Bar, rod, shapes	SB-221	A95454	O	≤ 5.000	22
39	...	Bar, rod, shapes	SB-221	A95454	H112	≤ 5.000	22
40	...	Smls. extr. tube	SB-241	A95454	O	≤ 5.000	22
41	...	Smls. extr. tube	SB-241	A95454	H112	≤ 5.000	22

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TABLE 2B
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) III	VIII-2	External Pressure Chart No.	Notes
1	13	4.5	NP	250	NFA-7	G5
2	13	4.5	NP	250	NFA-7	G5, W2
3	13	4.5	NP	250	NFA-7	G5
4	13	4.5	NP	250	NFA-7	G5, W2
5	14	5	NP	250	NFA-1	G5
6	17	10	NP	250	NFA-1	G5, W2
7	15	6	NP	200	NFA-1	G5, W2
8	14.5	6	NP	200	NFA-1	G5, W2
9	14	5	NP	250	NFA-1	G5
10	14	5	NP	250	NFA-1	G5, W2
11	14	5	NP	250	NFA-1	G2, G5
12	14	5	NP	250	NFA-1	G2, G5, W2
13	14	5	NP	250	NFA-1	G5
14	14	5	NP	250	NFA-1	G5
15	14	5	NP	250	NFA-1	G5, W2
16	22	8.5	NP	250	NFA-3	G5
17	23	9	NP	250	NFA-3	G5, W2
18	25	9.5	NP	200	NFA-8	G5
19	28	16	NP	200	NFA-8	G5, W2
20	25	9.5	NP	200	NFA-8	G5, W2
21	40	18	NP	150	NFA-11	G5, G7
22	39	17	NP	150	NFA-11	G5, G7
23	38	16	NP	150	NFA-11	G5, G7
24	37	15	NP	150	NFA-11	G5, G7
25	36	14	NP	150	NFA-11	G5, G7
26	40	18	NP	150	NFA-11	G5, G7, W2
27	39	17	NP	150	NFA-11	G5, G7, W2
28	40	24	NP	150	NFA-11	G2, G5, G7, W2
29	40	24	NP	150	NFA-11	G5, G7, W2
30	35	14	NP	150	NFA-9	G5, G7
31	36	18	NP	150	NFA-9	G5, G7, W2
32	35	16	NP	150	NFA-9	G5, G7, W2
33	35	14	NP	150	NFA-9	G5, G7, W2
34	34	14	NP	150	NFA-9	G5, G7, W2
35	31	12	NP	250	NFA-14	G5
36	32	18	NP	250	NFA-14	G5, W2
37	31	12	NP	250	NFA-14	G5, W2
38	31	12	NP	250	NFA-14	G2, G5
39	31	12	NP	250	NFA-14	G2, G5, W2
40	31	12	NP	250	NFA-14	G5
41	31	12	NP	250	NFA-14	G5, W2

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TABLE 2B
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	−20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
1	3.0	3.0	3.0	3.0	...	...	...	...	...	...	...	...	...	...	...
2	3.0	3.0	3.0	3.0	...	...	...	...	...	...	...	...	...	...	...
3	3.0	3.0	3.0	3.0	...	...	...	...	...	...	...	...	...	...	...
4	3.0	3.0	3.0	3.0	...	...	...	...	...	...	...	...	...	...	...
5	3.4	3.4	3.4	3.3	...	...	...	...	...	...	...	...	...	...	...
6	5.7	5.7	5.7	5.3	...	...	...	...	...	...	...	...	...	...	...
7	4.0	4.0	4.0	...	...	...	...	...	...	...	...	...	...	...	...
8	4.0	4.0	4.0	...	...	...	...	...	...	...	...	...	...	...	...
9	3.3	3.3	3.3	3.3	...	...	...	...	...	...	...	...	...	...	...
10	3.3	3.3	3.3	3.3	...	...	...	...	...	...	...	...	...	...	...
11	3.3	3.3	3.3	3.3	...	...	...	...	...	...	...	...	...	...	...
12	3.3	3.3	3.3	3.3	...	...	...	...	...	...	...	...	...	...	...
13	3.3	3.3	3.3	3.3	...	...	...	...	...	...	...	...	...	...	...
14	3.3	3.3	3.3	3.2	...	...	...	...	...	...	...	...	...	...	...
15	3.3	3.3	3.3	3.3	...	...	...	...	...	...	...	...	...	...	...
16	5.7	5.7	5.7	5.7	...	...	...	...	...	...	...	...	...	...	...
17	6.0	6.0	6.0	6.0	...	...	...	...	...	...	...	...	...	...	...
18	6.3	6.3	6.3	...	...	...	...	...	...	...	...	...	...	...	...
19	9.3	9.3	9.3	...	...	...	...	...	...	...	...	...	...	...	...
20	6.3	6.3	6.3	...	...	...	...	...	...	...	...	...	...	...	...
21	12.0	12.0	...	...	...	...	...	...	...	...	...	...	...	...	...
22	11.4	11.4	...	...	...	...	...	...	...	...	...	...	...	...	...
23	10.7	10.7	...	...	...	...	...	...	...	...	...	...	...	...	...
24	10.0	10.0	...	...	...	...	...	...	...	...	...	...	...	...	...
25	9.3	9.3	...	...	...	...	...	...	...	...	...	...	...	...	...
26	12.0	12.0	...	...	...	...	...	...	...	...	...	...	...	...	...
27	11.3	11.3	...	...	...	...	...	...	...	...	...	...	...	...	...
28	13.3	13.3	...	...	...	...	...	...	...	...	...	...	...	...	...
29	13.3	13.3	...	...	...	...	...	...	...	...	...	...	...	...	...
30	9.3	9.2	...	...	...	...	...	...	...	...	...	...	...	...	...
31	12.0	11.9	...	...	...	...	...	...	...	...	...	...	...	...	...
32	10.7	10.5	...	...	...	...	...	...	...	...	...	...	...	...	...
33	9.3	9.2	...	...	...	...	...	...	...	...	...	...	...	...	...
34	9.3	9.2	...	...	...	...	...	...	...	...	...	...	...	...	...
35	8.0	8.0	8.0	8.0	...	...	...	...	...	...	...	...	...	...	...
36	10.7	10.7	10.7	10.7	...	...	...	...	...	...	...	...	...	...	...
37	8.0	8.0	8.0	8.0	...	...	...	...	...	...	...	...	...	...	...
38	8.0	8.0	8.0	8.0	...	...	...	...	...	...	...	...	...	...	...
39	8.0	8.0	8.0	8.0	...	...	...	...	...	...	...	...	...	...	...
40	8.0	8.0	8.0	8.0	...	...	...	...	...	...	...	...	...	...	...
41	8.0	8.0	8.0	8.0	...	...	...	...	...	...	...	...	...	...	...

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TABLE 2B (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.
1	...	Plate, sheet	SB-209	A96061	T4	0.051–0.249	23
2	...	Plate, sheet	SB-209	A96061	T451	0.250–3.000	23
3	...	Plate, sheet	SB-209	A96061	T6	0.051–0.249	23
4	...	Plate, sheet	SB-209	A96061	T651	0.250–4.000	23
5	...	Plate, sheet	SB-209	A96061	T651	4.001–6.000	23
6	...	Drawn smls. tube	SB-210	A96061	T4	0.025–0.500	23
7	...	Drawn smls. tube	SB-210	A96061	T6	0.025–0.500	23
8	...	Bar, rod, shapes	SB-221	A96061	T4	...	23
9	...	Bar, rod, shapes	SB-221	A96061	T6	...	23
10	...	Smls. extr. tube	SB-241	A96061	T4	...	23
11	...	Smls. extr. tube	SB-241	A96061	T6	≤ 1.000	23
12	...	Smls. extr. tube	SB-241	A96061	T6	> 1.000	23
13	...	Smls. extr. tube	SB-241	A96061	T6	...	23
14	...	Shapes	SB-308	A96061	T6	...	23
15	...	Drawn smls. tube	SB-210	A96063	T6	0.025–0.500	23
16	...	Bar, rod, shapes	SB-221	A96063	T5	≤ 0.500	23
17	...	Bar, rod, shapes	SB-221	A96063	T5	0.501–1.000	23
18	...	Bar, rod, shapes	SB-221	A96063	T6	≤ 1.000	23
19	...	Smls. extr. tube	SB-241	A96063	T5	≤ 0.500	23
20	...	Smls. extr. tube	SB-241	A96063	T5	0.501–1.000	23
21	...	Smls. extr. tube	SB-241	A96063	T6	≤ 1.000	23
22	...	Bar, rod	SB-187	C10200	O60	...	31
23	...	Bar, rod	SB-187	C11000	O60	...	31
24	...	Smls. tube	SB-111	C28000	O61	...	32
25	...	Smls. tube	SB-111	C44300	O61	...	32
26	...	Smls. tube	SB-111	C44400	O61	...	32
27	...	Smls. tube	SB-111	C44500	O61	...	32
28	...	Plate	SB-171	C46400	O25	$3 < t \leq 5$	32
29	...	Plate	SB-171	C46400	O25	≤ 3	32
30	...	Smls. tube	SB-111	C60800	O61	...	35
31	...	Plate, sheet	SB-169	C61400	O25 or O60	$2 < t \leq 5$	35
32	...	Plate, sheet	SB-169	C61400	O25 or O60	≤ 2	35
33	...	Plate, sheet	SB-96	C65500	O61	...	33
34	...	Plate	SB-171	C70600	O25	≤ $2\frac{1}{2}$	34
35	...	Cond. tube	SB-111	C70600	O61	...	34
36	...	Smls. U-bend tube	SB-395	C70600	O61	...	34

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TABLE 2B (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only)		External Pressure Chart No.	Notes
			III	VIII-2		
1	30	16	NP	300	NFA-12	G5, G9, W3
2	30	16	NP	300	NFA-12	G5, G9, W3
3	42	35	NP	300	NFA-12	G5, G9, W3
4	42	35	NP	300	NFA-12	G5, G9, W3
5	40	35	NP	300	NFA-12	G5, G9, W3
6	30	16	NP	300	NFA-13	G5, W3
7	42	35	NP	300	NFA-13	G5, W3
8	26	16	NP	300	NFA-13	G2, G5, G9, W3
9	38	35	NP	300	NFA-12	G2, G5, G9, W3
10	26	16	NP	300	NFA-13	G5, G9, W3
11	42	35	NP	300	NFA-12	G5, W3
12	38	35	NP	300	NFA-12	G5, W3
13	38	35	NP	300	NFA-12	G5, G9, W3
14	38	35	NP	300	NFA-12	G2, G5, W3
15	33	28	NP	300	NFA-1	G5, W3
16	22	16	NP	300	NFA-1	G2, G5, W3
17	21	15	NP	300	NFA-1	G2, G5, W3
18	30	25	NP	300	NFA-1	G2, G5, W3
19	22	16	NP	300	NFA-1	G5, W3
20	21	15	NP	300	NFA-1	G5, W3
21	30	25	NP	300	NFA-1	G5, W3
22	30	10	NP	300	...	G4
23	30	10	NP	300	...	G4
24	50	20	NP	500	NFC-3	G4, G6
25	45	15	NP	500	NFC-3	G4, G6
26	45	15	NP	500	NFC-3	G4, G6
27	45	15	NP	500	NFC-3	G4, G6
28	50	18	NP	100	NFC-2	G4
29	50	20	NP	100	NFC-2	G4
30	50	19	NP	100	NFC-3	G4, G6
31	65	28	NP	500	NFA-6	G4
32	70	30	NP	500	NFA-6	G4
33	50	18	NP	350	NFC-2	G4, G10
34	40	15	NP	450	NFC-3	G4
35	40	15	NP	450	NFC-3	G4
36	40	15	NP	450	NFC-3	G4

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TABLE 2B (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
1	10.0	10.0	10.0	9.9	9.2	...	...	...	...	...	...	...	...	...	...
2	10.0	10.0	10.0	9.9	9.2	...	...	...	...	...	...	...	...	...	...
3	14.0	14.0	14.0	13.4	11.3	...	...	...	...	...	...	...	...	...	...
4	14.0	14.0	14.0	13.4	11.3	...	...	...	...	...	...	...	...	...	...
5	13.3	13.3	13.3	13.0	11.1	...	...	...	...	...	...	...	...	...	...
6	10.0	10.0	10.0	9.9	9.2	...	...	...	...	...	...	...	...	...	...
7	14.0	14.0	14.0	13.4	11.3	...	...	...	...	...	...	...	...	...	...
8	8.7	8.7	8.7	8.5	8.0	...	...	...	...	...	...	...	...	...	...
9	12.7	12.7	12.7	12.3	10.5	...	...	...	...	...	...	...	...	...	...
10	8.7	8.7	8.7	8.5	8.0	...	...	...	...	...	...	...	...	...	...
11	14.0	14.0	14.0	13.4	11.3	...	...	...	...	...	...	...	...	...	...
12	12.7	12.7	12.7	12.3	10.5	...	...	...	...	...	...	...	...	...	...
13	12.7	12.7	12.7	12.3	10.5	...	...	...	...	...	...	...	...	...	...
14	12.7	12.7	12.7	12.3	10.5	...	...	...	...	...	...	...	...	...	...
15	11.0	11.0	10.6	9.5	7.0	...	...	...	...	...	...	...	...	...	...
16	7.3	7.3	7.2	6.8	6.1	...	...	...	...	...	...	...	...	...	...
17	7.0	7.0	6.9	6.5	5.8	...	...	...	...	...	...	...	...	...	...
18	10.0	10.0	9.9	9.0	6.6	...	...	...	...	...	...	...	...	...	...
19	7.3	7.3	7.2	6.8	6.1	...	...	...	...	...	...	...	...	...	...
20	7.0	7.0	6.9	6.5	5.8	...	...	...	...	...	...	...	...	...	...
21	10.0	10.0	9.9	9.0	6.6	...	...	...	...	...	...	...	...	...	...
22	6.7	5.8	5.5	5.2	5.1	...	...	...	...	...	...	...	...	...	...
23	6.7	5.8	5.5	5.2	5.1	...	...	...	...	...	...	...	...	...	...
24	12.0	12.0	12.0	12.0	12.0	12.0	12.0	11.3	10.5	...	...	...	...	...	...
25	10.0	10.0	10.0	10.0	10.0	10.0	9.3	9.0	8.3	...	...	...	...	...	...
26	10.0	10.0	10.0	10.0	10.0	10.0	9.3	9.0	8.3	...	...	...	...	...	...
27	10.0	10.0	10.0	10.0	10.0	10.0	9.3	9.0	8.3	...	...	...	...	...	...
28	12.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	13.4	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	12.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	18.7	18.7	18.6	18.5	18.3	18.1	17.9	17.8	17.7	...	...	...	...	...	...
32	20.0	20.0	19.9	19.8	19.6	19.4	19.2	19.1	19.0	...	...	...	...	...	...
33	12.0	12.0	11.9	11.7	10.1	5.0	...	...	...	...	...	...	...	...	...
34	10.0	9.7	9.5	9.3	9.0	8.7	8.7	8.6	...	...	...	...	...	...	...
35	10.0	9.7	9.5	9.3	9.0	8.7	8.7	8.6	...	...	...	...	...	...	...
36	10.0	9.7	9.5	9.3	9.0	8.7	8.7	8.6	...	...	...	...	...	...	...

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TABLE 2B (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.
1	...	Plate	SB-171	C71500	025	$2\frac{1}{2} < t \leq 5$	34
2	...	Plate	SB-171	C71500	025	...	34
3	...	Plate	SB-171	C71500	025	$\leq 2\frac{1}{2}$	34
4	...	Plate	SB-171	C71500	025	$\leq 2\frac{1}{2}$	34
5	...	Smls. tube	SB-111	C71500	061	...	34
6	...	Cond. tube	SB-111	C71500	061	...	34
7	...	Smls. U-bend tube	SB-395	C71500	061	...	34
8	...	Smls. tube	SB-111	C71500	HR50	...	34
9	...	Castings	SB-584	C93700	M01 or M07	...	...
10	99Ni	Smls. pipe & tube	SB-161	N02200	Annealed	> 5 O.D.	41
11	99Ni	Bar, rod	SB-160	N02200	Annealed	...	41
12	99Ni	Smls. pipe & tube	SB-161	N02200	Annealed	≤ 5 O.D.	41
13	99Ni	Plate, sheet, strip	SB-162	N02200	Annealed	...	41
14	99Ni	Smls. tube	SB-163	N02200	Annealed	...	41
15	99Ni	Plate, sheet, strip	SB-162	N02200	As rolled	...	41
16	99Ni–Low C	Bar, rod	SB-160	N02201	Annealed	...	41
17	99Ni–Low C	Smls. pipe & tube	SB-161	N02201	Annealed	> 5 O.D.	41
18	99Ni–Low C	Bar, rod	SB-160	N02201	Hot fin.	...	41
19	99Ni–Low C	Smls. pipe & tube	SB-161	N02201	Annealed	≤ 5 O.D.	41
20	99Ni–Low C	Plate, sheet, strip	SB-162	N02201	Annealed	...	41
21	99Ni–Low C	Smls. tube	SB-163	N02201	Annealed	...	41
22	67Ni–30Cu	Bar, rod	SB-164	N04400	Annealed	...	42
23	67Ni–30Cu	Smls. pipe & tube	SB-165	N04400	Annealed	> 5 O.D.	42
24	67Ni–30Cu	Forgings	SB-564	N04400	Annealed	...	42
25	67Ni–30Cu	Plate	SB-127	N04400	Annealed	...	42
26	67Ni–30Cu	Smls. tube	SB-163	N04400	Annealed	...	42
27	67Ni–30Cu	Smls. pipe & tube	SB-165	N04400	Annealed	≤ 5 O.D.	42
28	67Ni–30Cu	Bar, rod	SB-164	N04400	Hot worked	...	42
29	67Ni–30Cu	Plate	SB-127	N04400	As rolled	...	42
30	67Ni–30Cu	Bar	SB-164	N04400	Hot worked	...	42
31	67Ni–30Cu	Smls. tube	SB-163	N04400	Stress rel.	...	42
32	67Ni–30Cu	Smls. pipe & tube	SB-165	N04400	Stress rel.	...	42
33	67Ni–30Cu–S	Bar, rod	SB-164	N04405	Annealed	...	42
34	67Ni–30Cu–S	Bar, rod	SB-164	N04405	Hot worked	...	42
35	47Ni–22Cr–9Mo–18Fe	Plate	SB-435	N06002	Annealed	$\frac{3}{16} < t \leq 2\frac{1}{2}$	43
36	47Ni–22Cr–9Mo–18Fe	Sheet	SB-435	N06002	Annealed	$\frac{1}{16} < t \leq \frac{3}{16}$	43
37	47Ni–22Cr–9Mo–18Fe	Rod	SB-572	N06002	Solution ann.	$\geq \frac{3}{16}$	43

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TABLE 2B (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only)		External Pressure Chart No.	Notes
			III	VIII-2		
1	45	18	NP	650	NFC-4	G4
2	45	18	500	NP	NFC-4	G1
3	50	20	500	NP	NFC-4	G1
4	50	20	NP	650	NFC-4	G4
5	52	18	500	NP	...	G1
6	52	18	NP	650	NFC-4	G4
7	52	18	NP	650	NFC-4	G4
8	72	50	500	NP	NFC-6	G1
9	30	12	400 (SPT)	NP	...	...
10	55	12	NP	600	NFN-2	G4
11	55	15	NP	600	NFN-2	G2, G4
12	55	15	NP	600	NFN-2	G4
13	55	15	NP	600	NFN-2	G4
14	55	15	NP	600	NFN-2	G4
15	55	20	NP	600	NFN-2	G4
16	50	10	NP	800	NFN-1	G2, G4
17	50	10	NP	800	NFN-1	G4
18	50	10	NP	800	NFN-1	G2, G4
19	50	12	NP	800	NFN-1	G4
20	50	12	NP	800	NFN-1	G4
21	50	12	NP	800	NFN-1	G4
22	70	25	800	800	NFN-3	G1, G2, G4
23	70	25	800	800	NFN-3	G1, G4
24	70	25	800	800	NFN-3	G1, G2, G4
25	70	28	800	800	NFN-3	G1, G4
26	70	28	800	800	NFN-3	G1, G4
27	70	28	800	800	NFN-3	G1, G4
28	75	30	800	NP	...	G1
29	75	40	800	800	NFN-3	G1, G4
30	75	40	800	NP	...	G1
31	85	55	500	800	NFN-3	G1, G4, W1
32	85	55	500	NP	NFN-3	G1
33	70	25	800	800	NFN-3	G1, G2, G4
34	75	35	800	NP	...	G1
35	95	35	800	800	NFN-15	G1, G4
36	95	35	800	800	NFN-15	G1, G4
37	95	35	800	800	NFN-16	G1, G2, G4

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TABLE 2B (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
1	12.0	11.3	11.0	10.7	10.5	10.3	10.2	10.1	10.1	10.0	10.0	10.0	...	...	...
2	12.0	...	11.3	...	10.8	...	10.3	...	9.9	...	...	...	...	...	...
3	13.3	...	12.6	...	12.0	...	11.5	...	11.1	...	...	...	...	...	...
4	13.4	12.7	12.3	12.1	11.8	11.7	11.6	11.5	11.4	11.3	11.2	11.1	...	...	...
5	12.0	...	11.3	...	10.8	...	10.3	...	9.9	...	...	...	...	...	...
6	12.0	11.3	11.0	10.7	10.5	10.3	10.2	10.1	10.1	10.0	10.0	10.0	...	...	...
7	12.0	11.3	11.0	10.7	10.5	10.3	10.2	10.1	10.1	10.0	10.0	10.0	...	...	...
8	24.0	...	22.8	...	21.8	...	20.9	...	20.1	...	...	...	...	...	...
9	8.0	...	7.8	...	7.0	...	6.8	...	...	...	...	...	...	...	...
10	8.0	...	8.0	...	8.0	...	8.0	...	8.0	...	8.0	...	...	...	...
11	10.0	...	10.0	...	10.0	...	10.0	...	10.0	...	10.0	...	...	...	...
12	10.0	...	10.0	...	10.0	...	10.0	...	10.0	...	10.0	...	...	...	...
13	10.0	...	10.0	...	10.0	...	10.0	...	10.0	...	10.0	...	...	...	...
14	10.0	...	10.0	...	10.0	...	10.0	...	10.0	...	10.0	...	...	...	...
15	13.4	...	13.4	...	13.4	...	13.3	...	12.5	...	11.5	...	...	...	...
16	6.7	...	6.4	...	6.3	...	6.2	...	6.2	...	6.2	6.2	6.2	6.1	5.9
17	6.7	...	6.4	...	6.3	...	6.2	...	6.2	...	6.2	6.2	6.2	6.1	5.9
18	6.7	...	6.4	...	6.3	...	6.2	...	6.2	...	6.2	6.2	6.2	6.1	5.9
19	8.0	...	7.7	...	7.5	...	7.5	...	7.5	...	7.5	7.5	7.4	7.3	7.2
20	8.0	...	7.7	...	7.5	...	7.5	...	7.5	...	7.5	7.5	7.4	7.3	7.2
21	8.0	...	7.7	...	7.5	...	7.5	...	7.5	...	7.5	7.5	7.4	7.3	7.2
22	16.7	...	14.7	...	13.7	...	13.2	...	13.2	...	13.2	13.2	13.2	13.0	12.7
23	16.7	...	14.7	...	13.7	...	13.2	...	13.2	...	13.2	13.2	13.2	13.0	12.7
24	16.7	...	14.7	...	13.7	...	13.2	...	13.2	...	13.2	13.2	13.2	13.0	12.7
25	18.7	...	16.4	...	15.4	...	14.8	...	14.8	...	14.8	14.8	14.8	14.6	14.2
26	18.7	...	16.4	...	15.4	...	14.8	...	14.8	...	14.8	14.8	14.8	14.6	14.2
27	18.7	...	16.4	...	15.4	...	14.8	...	14.8	...	14.8	14.8	14.8	14.6	14.2
28	20.0	...	17.6	...	16.5	...	15.9	...	15.9	...	15.9	15.9	15.9	15.6	15.2
29	25.0	...	23.5	...	21.9	...	21.2	...	21.2	...	21.2	21.2	21.2	20.9	20.3
30	25.0	...	23.5	...	21.9	...	21.2	...	21.2	...	21.2	21.2	21.2	20.9	20.3
31	28.3	...	28.3	...	28.3	...	28.3	...	28.3	...	28.3	28.1	27.5	26.6	25.6
32	28.3	...	28.3	...	28.3	...	28.3	...	28.3	...	...	...	...	...	...
33	16.7	...	14.7	...	13.7	...	13.2	...	13.2	...	13.2	13.2	13.2	13.0	12.7
34	23.3	...	20.6	...	19.2	...	18.5	...	18.5	...	18.5	18.5	18.5	18.2	17.6
35	23.3	...	21.1	...	18.9	...	16.6	...	16.0	...	15.5	15.5	15.5	15.5	15.5
36	26.7	...	24.1	...	21.5	...	18.9	...	18.3	...	17.7	17.7	17.7	17.7	17.7
37	23.3	...	21.1	...	18.9	...	16.6	...	16.0	...	15.5	15.5	15.5	15.5	15.5

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TABLE 2B (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.
1	47Ni–22Cr–9Mo–18Fe	Wld. pipe	SB-619	N06002	Solution ann.	...	43
2	47Ni–22Cr–9Mo–18Fe	Wld. pipe	SB-619	N06002	Solution ann.	...	43
3	47Ni–22Cr–9Mo–18Fe	Smls. pipe & tube	SB-622	N06002	Solution ann.	...	43
4	47Ni–22Cr–9Mo–18Fe	Wld. tube	SB-626	N06002	Solution ann.	...	43
5	47Ni–22Cr–9Mo–18Fe	Wld. tube	SB-626	N06002	Solution ann.	...	43
6	47Ni–22Cr–19Fe–6Mo	Rod	SB-581	N06007	Solution ann.	$> 3/4$	45
7	47Ni–22Cr–19Fe–6Mo	Plate, sheet, strip	SB-582	N06007	Solution ann.	$> 3/4$	45
8	47Ni–22Cr–19Fe–6Mo	Rod	SB-581	N06007	Solution ann.	$5/16 < t \leq 3/4$	45
9	47Ni–22Cr–19Fe–6Mo	Plate, sheet, strip	SB-582	N06007	Solution ann.	$3/16 < t \leq 3/4$	45
10	47Ni–22Cr–19Fe–6Mo	Wld. pipe	SB-619	N06007	Solution ann.	...	45
11	47Ni–22Cr–19Fe–6Mo	Smls. pipe & tube	SB-622	N06007	Solution ann.	...	45
12	47Ni–22Cr–19Fe–6Mo	Wld. tube	SB-626	N06007	Solution ann.	...	45
13	61Ni–16Mo–16Cr	Rod	SB-574	N06455	Solution ann.	...	44
14	61Ni–16Mo–16Cr	Plate, sheet, strip	SB-575	N06455	Solution ann.	...	44
15	61Ni–16Mo–16Cr	Wld. pipe	SB-619	N06455	Solution ann.	...	44
16	61Ni–16Mo–16Cr	Wld. pipe & tube	SB-622	N06455	Solution ann.	...	44
17	61Ni–16Mo–16Cr	Wld. tube	SB-626	N06455	Solution ann.	...	44
18	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	N06600	Hot fin.	> 5 O.D.	43
19	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	N06600	Annealed	> 5 O.D.	43
20	72Ni–15Cr–8Fe	Smls. tube	SB-163	N06600	Annealed	...	43
21	72Ni–15Cr–8Fe	Bar, rod	SB-166	N06600	Annealed	...	43
22	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	N06600	Annealed	≤ 5 O.D.	43
23	72Ni–15Cr–8Fe	Plate	SB-168	N06600	Annealed	...	43
24	72Ni–15Cr–8Fe	Forgings	SB-564	N06600	Annealed	...	43
25	72Ni–15Cr–8Fe	Wld. tube	SB-516	N06600	Cold drawn/ann.	≤ $4\frac{1}{2}$ O.D.	43
26	72Ni–15Cr–8Fe	Wld. pipe	SB-517	N06600	Cold drawn/ann.	≤ $4\frac{1}{2}$ O.D.	43
27	72Ni–15Cr–8Fe	Smls. tube	SB-163	N06600	Annealed	$1/4 <$ O.D. $\leq 7/8$	43
28	60Ni–22Cr–9Mo–3.5Cb	Bar, rod	SB-446	N06625	Hot fin.	> 4	43
29	60Ni–22Cr–9Mo–3.5Cb	Plate	SB-443	N06625	Annealed	...	43
30	60Ni–22Cr–9Mo–3.5Cb	Smls. pipe & tube	SB-444	N06625	Annealed	...	43
31	60Ni–22Cr–9Mo–3.5Cb	Bar, rod	SB-446	N06625	Hot fin.	≤ 4	43
32	58Ni–29Cr–9Fe	Smls. tube	SB-163	N06690	Annealed	...	43
33	58Ni–29Cr–9Fe	Smls. pipe & tube	SB-167	N06690	Annealed	≤ 5 O.D.	43
34	58Ni–29Cr–9Fe	Plate	SB-168	N06690	Annealed	...	43
35	58Ni–29Cr–9Fe	Forgings	SB-564	N06690	Annealed	...	43
36	58Ni–29Cr–9Fe	Bar, rod	SB-166	N06690	Cold worked/ann.	...	43
37	58Ni–29Cr–9Fe	Bar, rod	SB-166	N06690	Hot worked	...	43
38	58Ni–29Cr–9Fe	Bar, rod	SB-166	N06690	Hot worked/ann.	...	43
39	58Ni–29Cr–9Fe	Smls. tube	SB-163	N06690	Annealed	$1/4 <$ O.D. $\leq 7/8$	43

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TABLE 2B (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) III	VIII-2	External Pressure Chart No.	Notes
1	100	40	800	NP	NFN-15	G1
2	100	40	NP	800	NFN-16	G1, G4, G8
3	100	40	800	800	NFN-15	G1, G4
4	100	40	800	NP	NFN-15	G1
5	100	40	NP	800	NFN-16	G1, G4, G8
6	85	30	NP	800	NFN-11	G1, G2, G4
7	85	30	NP	800	NFN-11	G1, G4
8	90	35	NP	800	NFN-11	G1, G2, G4
9	90	35	NP	800	NFN-11	G1, G4
10	90	35	NP	800	NFN-11	G1, G4, G8
11	90	35	NP	800	NFN-11	G1, G4
12	90	35	NP	800	NFN-11	G1, G4, G8
13	100	40	NP	800	NFN-14	G1, G2, G4
14	100	40	NP	800	NFN-14	G1, G4
15	100	40	NP	800	NFN-14	G1, G4, G8
16	100	40	NP	800	NFN-14	G1, G4
17	100	40	NP	800	NFN-14	G1, G4, G8
18	75	25	800	NP	NFN-4	G1
19	80	30	800	800	NFN-4	G1, G4
20	80	35	800	800	NFN-4	G1, G4
21	80	35	800	800	NFN-4	G1, G2, G4
22	80	35	800	800	NFN-4	G1, G4
23	80	35	800	800	NFN-4	G1, G4
24	80	35	800	800	NFN-4	G1, G2, G4
25	80	35	NP	800	NFN-4	G1, G4
26	80	35	NP	800	NFN-4	G1, G4
27	80	40	800	NP	NFN-21	G1, G3, S1
28	110	50	800	NP	...	G1
29	110	55	800	NP	...	G1
30	120	60	800	NP	...	G1
31	120	60	800	NP	...	G1
32	85	35	800	NP	NFN-7	G1
33	85	35	800	NP	NFN-4	G1
34	85	35	800	NP	NFN-4	G1
35	85	35	800	NP	NFN-4	G1
36	85	35	800	NP	NFN-4	G1
37	85	35	800	NP	NFN-4	G1
38	85	35	800	NP	NFN-4	G1
39	85	40	800	NP	NFN-21	G1, G3, S1

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TABLE 2B (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
1	26.6	...	24.1	...	21.5	...	18.9	...	18.3	...	17.7	17.7	17.7	17.7	17.7
2	22.6	...	20.5	...	18.3	...	16.1	...	15.6	...	15.0	...	15.0	...	15.0
3	26.6	...	24.1	...	21.5	...	18.9	...	18.3	...	17.7	17.7	17.7	17.7	17.7
4	26.6	...	24.1	...	21.5	...	18.9	...	18.3	...	17.7	17.7	17.7	17.7	17.7
5	22.6	...	20.5	...	18.3	...	16.1	...	15.6	...	15.0	...	15.0	...	15.0
6	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	19.4	19.2	19.0	18.8	18.6
7	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	19.4	19.2	19.0	18.8	18.6
8	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	22.7	22.5	22.3	22.0	21.8
9	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	22.7	22.5	22.3	22.0	21.8
10	19.8	...	19.8	...	19.8	...	19.8	...	19.8	...	19.3	19.1	18.9	18.7	18.5
11	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	22.7	22.5	22.3	22.0	21.8
12	19.8	...	19.8	...	19.8	...	19.8	...	19.8	...	19.3	19.1	18.9	18.7	18.5
13	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.7	26.7	26.5	26.1	25.8
14	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.7	26.7	26.5	26.1	25.8
15	22.7	...	22.7	...	22.7	...	22.7	...	22.7	...	22.7	22.7	22.5	22.2	21.9
16	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.7	26.7	26.5	26.1	25.8
17	22.7	...	22.7	...	22.7	...	22.7	...	22.7	...	22.7	22.7	22.5	22.2	21.9
18	16.6	...	16.6	...	16.6	...	16.6	...	16.6	...	16.6	16.6	16.6	16.6	16.6
19	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0
20	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	23.3	23.3	23.3	23.3	23.3
21	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	23.3	23.3	23.3	23.3	23.3
22	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	23.3	23.3	23.3	23.3	23.3
23	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	23.3	23.3	23.3	23.3	23.3
24	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	23.3	23.3	23.3	23.3	23.3
25	19.8	...	19.8	...	19.8	...	19.8	...	19.8	...	19.8	19.8	19.8	19.8	19.8
26	19.8	...	19.8	...	19.8	...	19.8	...	19.8	...	19.8	19.8	19.8	19.8	19.8
27	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.7	26.7	26.7	26.7	26.7
28	33.3	...	32.3	...	31.3	...	30.4	...	29.6	...	28.7	28.3	28.1	27.8	27.4
29	36.6	...	35.5	...	34.5	...	33.4	...	32.5	...	31.6	31.1	30.7	30.4	30.2
30	36.6	...	36.6	...	36.6	...	35.7	...	34.8	...	33.9	33.5	33.3	32.9	32.8
31	36.6	...	36.6	...	36.6	...	35.7	...	34.8	...	33.9	33.5	33.3	32.9	32.8
32	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	23.3	23.3	23.3	23.3	23.3
33	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3
34	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3
35	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3
36	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3
37	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3
38	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3
39	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.7	26.7	26.6	26.5	26.4

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TABLE 2B (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.
1	35Ni–19Cr–1¼Si	Bar	SB-511	N08330	Annealed	...	46
2	35Ni–19Cr–1¼Si	Smls. & wld. pipe	SB-535	N08330	Annealed	...	46
3	35Ni–19Cr–1¼Si	Plate, sheet, strip	SB-536	N08330	Annealed	...	46
4	42Fe–33Ni–21Cr	Smls. tube	SB-163	N08800	Annealed	...	45
5	42Fe–33Ni–21Cr	Smls. pipe & tube	SB-407	N08800	Annealed	...	45
6	42Fe–33Ni–21Cr	Plate	SB-409	N08800	Annealed	...	45
7	42Fe–33Ni–21Cr	Wld. pipe	SB-514	N08800	Annealed	...	45
8	42Fe–33Ni–21Cr	Wld. tube	SB-515	N08800	Annealed	...	45
9	42Fe–33Ni–21Cr	Forgings	SB-564	N08800	Annealed	...	45
10	42Fe–33Ni–21Cr	Bar, rod	SB-408	N08800	Hot fin.	...	45
11	42Fe–33Ni–21Cr	Smls. tube	SB-163	N08800	Cold worked	...	45
12	42Fe–33Ni–21Cr	Smls. tube	SB-163	N08800	Annealed	$1/4 < O.D. \le 7/8$	45
13	42Fe–33Ni–21Cr	Smls. tube	SB-163	N08810	Annealed	...	45
14	42Fe–33Ni–21Cr	Smls. tube	SB-163	N08810	Annealed	...	45
15	42Fe–33Ni–21Cr	Smls. pipe & tube	SB-407	N08810	Annealed	...	45
16	42Fe–33Ni–21Cr	Smls. pipe & tube	SB-407	N08810	Annealed	...	45
17	42Fe–33Ni–21Cr	Bar, rod	SB-408	N08810	Annealed	...	45
18	42Fe–33Ni–21Cr	Bar, rod	SB-408	N08810	Annealed	...	45
19	42Fe–33Ni–21Cr	Plate	SB-409	N08810	Annealed	...	45
20	42Fe–33Ni–21Cr	Plate	SB-409	N08810	Annealed	...	45
21	42Fe–33Ni–21Cr	Wld. pipe	SB-514	N08810	Annealed	...	45
22	42Fe–33Ni–21Cr	Wld. tube	SB-515	N08810	Annealed	...	45
23	42Fe–33Ni–21Cr	Forgings	SB-564	N08810	Annealed	...	45
24	42Fe–33Ni–21Cr	Forgings	SB-564	N08810	Annealed	...	45
25	42Ni–21.5Cr–5Mo–2.3Cu	Smls. tube	SB-163	N08825	Annealed	...	45
26	42Ni–21.5Cr–5Mo–2.3Cu	Smls. pipe & tube	SB-423	N08825	Annealed	...	45
27	42Ni–21.5Cr–5Mo–2.3Cu	Plate, sheet, strip	SB-424	N08825	Annealed	...	45
01 28	42Ni–21.5Cr–5Mo–2.3Cu	Bar, rod	SB-425	N08825	Annealed	...	45
29	62Ni–28Mo–5Fe	Plate, strip	SB-333	N10001	Solution ann.	$3/16 \le t \le 2\frac{1}{2}$	44
30	62Ni–28Mo–5Fe	Wld. pipe	SB-619	N10001	Solution ann.	...	44
31	62Ni–28Mo–5Fe	Smls. pipe & tube	SB-622	N10001	Solution ann.	...	44
32	62Ni–28Mo–5Fe	Wld. tube	SB-626	N10001	Solution ann.	...	44
33	62Ni–28Mo–5Fe	Rod	SB-335	N10001	Solution ann.	$1\frac{1}{2} < t \le 3\frac{1}{2}$	44
34	62Ni–28Mo–5Fe	Rod	SB-335	N10001	Solution ann.	$5/16 \le t \le 1\frac{1}{2}$	44
35	62Ni–28Mo–5Fe	Plate, strip	SB-333	N10001	Solution ann.	$< 3/16$	44
36	70Ni–16Mo–7Cr–5Fe	Plate, sheet, strip	SB-434	N10003	Annealed	$< 2\frac{1}{2}$	44
37	70Ni–16Mo–7Cr–5Fe	Rod	SB-573	N10003	Solution ann.	...	44

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TABLE 2B (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) III	VIII-2	External Pressure Chart No.	Notes	
1	70	30	NP	800	NFN-13	G1, G2, G4	
2	70	30	NP	800	NFN-13	G1, G4, G8	
3	70	30	NP	800	NFN-13	G1, G4	
4	75	30	800	800	NFN-8	G1, G4	
5	75	30	800	800	NFN-8	G1, G4	
6	75	30	800	800	NFN-8	G1, G4	
7	75	30	NP	800	NFN-8	G1, G4	
8	75	30	NP	800	NFN-8	G1, G4	
9	75	30	800	800	NFN-8	G1, G2, G4	
10	75	30	800	800	NFN-8	G1, G2, G4	
11	83	47	650	NP	NFN-23	G1	
12	80	40	800	NP	NFN-8	G1, G3, S1	
13	65	25	800	NP	...	G1	
14	65	25	NP	800	NFN-9	G4	
15	65	25	800	NP	...	G1	
16	65	25	NP	800	NFN-9	G4	
17	65	25	800	NP	...	G1	
18	65	25	NP	800	NFN-9	G2, G4	
19	65	25	800	NP	...	G1	
20	65	25	NP	800	NFN-9	G4	
21	65	25	NP	800	NFN-9	G1, G4, G8	
22	65	25	NP	800	NFN-9	G1, G4, G8	
23	65	25	800	NP	...	G1	
24	65	25	NP	800	NFN-9	G2, G4	
25	85	35	800	800	NFN-7	G1, G4	
26	85	35	NP	800	NFN-7	G1, G4	
27	85	35	NP	800	NFN-7	G4	
28	85	35	800	800	NFN-7	G2, G4	01
29	100	45	NP	800	NFN-5	G1, G4	
30	100	45	NP	800	NFN-5	G1, G4, G8	
31	100	45	NP	800	NFN-5	G1, G4	
32	100	45	NP	800	NFN-5	G1, G4, G8	
33	100	46	NP	800	NFN-5	G1, G2, G4	
34	115	46	NP	800	NFN-5	G1, G2, G4	
35	115	50	NP	800	NFN-5	G1, G4	
36	100	40	NP	800	NFN-6	G4	
37	100	40	NP	800	...	G1, G2, G4	

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TABLE 2B (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
1	20.0	...	20.0	...	20.0	...	20.0	...	19.7	...	18.8	18.3	18.1	17.6	17.4
2	17.0	...	17.0	...	17.0	...	17.0	...	16.7	...	16.0	15.6	15.4	15.0	14.8
3	20.0	...	20.0	...	20.0	...	20.0	...	19.7	...	18.8	18.3	18.1	17.6	17.4
4	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0
5	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0
6	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0
7	17.0	...	17.0	...	17.0	...	17.0	...	17.0	...	17.0	17.0	17.0	17.0	17.0
8	17.0	...	17.0	...	17.0	...	17.0	...	17.0	...	17.0	17.0	17.0	17.0	17.0
9	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0
10	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0
11	27.7	...	27.7	...	27.7	...	27.5	...	26.9	...	26.6	26.6	...	...	...
12	25.0	...	25.0	...	25.0	...	25.0	...	25.0	...	24.9	24.8	24.8	24.7	24.6
13	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	15.9	15.7	15.5	15.3
14	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	16.0	15.7	15.4	15.0
15	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	15.9	15.7	15.5	15.3
16	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	16.0	15.7	15.4	15.0
17	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	15.9	15.7	15.5	15.3
18	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	16.0	15.7	15.4	15.0
19	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	15.9	15.7	15.5	15.3
20	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	16.0	15.7	15.4	15.0
21	14.2	...	14.2	...	13.8	...	13.4	...	12.7	...	12.4	12.2	12.1	12.1	11.9
22	14.2	...	14.2	...	13.8	...	13.4	...	12.7	...	12.4	12.2	12.1	12.1	11.9
23	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	15.9	15.7	15.5	15.3
24	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.5	16.0	15.7	15.4	15.0
25	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	23.3	23.3	23.3	23.2	23.0
26	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	23.3	23.3	23.3	23.2	23.0
27	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	23.3	23.3	23.3	23.2	23.0
01 28	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	23.3	23.3	23.3	23.2	23.0
29	30.0	...	30.0	...	30.0	...	30.0	...	30.0	...	30.0	30.0	30.0	30.0	29.8
30	25.5	...	25.5	...	25.5	...	25.5	...	25.5	...	25.5	25.5	25.5	...	25.3
31	30.0	...	30.0	...	30.0	...	30.0	...	30.0	...	30.0	...	30.0	...	29.8
32	25.5	...	25.5	...	25.5	...	25.5	...	25.5	...	25.5	25.5	25.5	...	25.3
33	30.7	...	30.7	...	30.7	...	30.7	...	30.7	...	30.7	30.7	30.7	30.7	30.3
34	30.7	...	30.7	...	30.7	...	30.7	...	30.7	...	30.7	30.7	30.7	30.7	30.3
35	33.3	...	33.3	...	33.3	...	33.3	...	33.3	...	33.3	33.3	33.3	33.3	33.1
36	26.7	...	24.0	...	23.0	...	21.0	...	20.0	...	20.0	...	19.0	...	18.0
37	26.7	...	24.0	...	23.0	...	21.0	...	20.0	...	20.0	...	19.0	...	18.0

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TABLE 2B (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.
	1	54Ni–16Mo–15Cr	Rod	SB-574	N10276	Solution ann.	...	44
	2	54Ni–16Mo–15Cr	Plate, sheet, strip	SB-575	N10276	Solution ann.	...	44
	3	54Ni–16Cr–16Mo–5.5Fe	Wld. pipe	SB-619	N10276	Solution ann.	...	44
	4	54Ni–16Cr–16Mo–5.5Fe	Smls. pipe & tube	SB-622	N10276	Solution ann.	...	44
	5	54Ni–16Cr–16Mo–5.5Fe	Wld. tube	SB-626	N10276	Solution ann.	...	44
	6	65Ni–28Mo–2Fe	Plate, strip	SB-333	N10665	Solution ann.	...	44
	7	65Ni–28Mo–2Fe	Rod	SB-335	N10665	Solution ann.	...	44
	8	65Ni–28Mo–2Fe	Wld. pipe	SB-619	N10665	Solution ann.	...	44
	9	65Ni–28Mo–2Fe	Smls. pipe & tube	SB-622	N10665	Solution ann.	...	44
	10	65Ni–28Mo–2Fe	Wld. tube	SB-626	N10665	Solution ann.	...	44
	11	Ti	Plate, sheet, strip	SB-265	R50250	Annealed	...	51
01	12	Ti	Bar, billet	SB-348	R50250	Annealed	...	51
	13	Ti	Forgings	SB-381	R50250	Annealed	...	51
	14	Ti	Smls. tube	SB-338	R50250	Smls. ann.	...	51
01	15	Ti	Smls. pipe	SB-861	R50250	Smls. ann.	...	51
01	16	Ti	Wld. tube	SB-338	R50250	Wld. ann.	...	51
01	17	Ti	Wld. pipe	SB-862	R50250	Wld. ann.	...	51
	18	Ti	Plate, sheet, strip	SB-265	R50400	Annealed	...	51
01	19	Ti	Bar, billet	SB-348	R50400	Annealed	...	51
	20	Ti	Forgings	SB-381	R50400	Annealed	...	51
	21	Ti	Smls. tube	SB-338	R50400	Smls. ann.	...	51
01	22	Ti	Smls. pipe	SB-861	R50400	Smls. ann.	...	51
01	23	Ti	Wld. tube	SB-338	R50400	Wld. ann.	...	51
01	24	Ti	Wld. pipe	SB-862	R50400	Wld. ann.	...	51
	25	Ti	Plate, sheet, strip	SB-265	R50550	Annealed	...	52
01	26	Ti	Bar, billet	SB-348	R50550	Annealed	...	52
	27	Ti	Forgings	SB-381	R50550	Annealed	...	52
	28	Ti	Smls. tube	SB-338	R50550	Smls. ann.	...	52
01	29	Ti	Smls. pipe	SB-861	R50550	Smls. ann.	...	52
01	30	Ti	Wld. tube	SB-338	R50550	Wld. ann.	...	52
01	31	Ti	Wld. pipe	SB-862	R50550	Wld. ann.	...	52
	32	Ti–Pd	Plate, sheet, strip	SB-265	R52400	Annealed	...	51
01	33	Ti–Pd	Bar, billet	SB-348	R52400	Annealed	...	51
	34	Ti–Pd	Forgings	SB-381	R52400	Annealed	...	51
	35	Ti–Pd	Smls. tube	SB-338	R52400	Smls. ann.	...	51
01	36	Ti–Pd	Smls. pipe	SB-861	R52400	Smls. ann.	...	51
01	37	Ti–Pd	Wld. tube	SB-338	R52400	Wld. ann.	...	51
01	38	Ti–Pd	Wld. pipe	SB-862	R52400	Wld. ann.	...	51
	39	Ti–Pd	Plate, sheet, strip	SB-265	R52402	Annealed	...	51

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TABLE 2B (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only) III	VIII-2	External Pressure Chart No.	Notes	
1	100	41	NP	800	NFN-10	G1, G2, G4	
2	100	41	NP	800	NFN-10	G1, G4	
3	100	41	NP	800	NFN-10	G1, G4, G8	
4	100	41	NP	800	NFN-10	G1, G4	
5	100	41	NP	800	NFN-10	G1, G4, G8	
6	110	51	NP	800	NFN-16	G1, G4	
7	110	51	NP	800	NFN-5	G1, G2, G4	
8	110	51	NP	800	NFN-16	G1, G4, G8	
9	110	51	NP	800	NFN-16	G1, G4	
10	110	51	NP	800	NFN-16	G1, G4, G8	
11	35	25	NP	600	NFT-3	...	
12	35	25	NP	600	NFT-3	...	**01**
13	35	25	NP	600	NFT-3	...	
14	35	25	NP	600	NFT-3	...	
15	35	25	NP	600	NFT-3	...	**01**
16	35	25	NP	600	NFT-3	G8	**01**
17	35	25	NP	600	NFT-3	G8	**01**
18	50	40	NP	600	NFT-2	...	
19	50	40	NP	600	NFT-2	...	**01**
20	50	40	NP	600	NFT-2	...	
21	50	40	NP	600	NFT-2	...	
22	50	40	NP	600	NFT-2	...	**01**
23	50	40	NP	600	NFT-2	G8	**01**
24	50	40	NP	600	NFT-2	G8	**01**
25	65	55	NP	600	NFT-1	...	
26	65	55	NP	600	NFT-1	...	**01**
27	65	55	NP	600	NFT-1	...	
28	65	55	NP	600	NFT-1	...	
29	65	55	NP	600	NFT-1	...	**01**
30	65	55	NP	600	NFT-1	G8	**01**
31	65	55	NP	600	NFT-1	G8	**01**
32	50	40	NP	600	NFT-2	...	
33	50	40	NP	600	NFT-2	...	**01**
34	50	40	NP	600	NFT-2	...	
35	50	40	NP	600	NFT-2	...	
36	50	40	NP	600	NFT-2	...	**01**
37	50	40	NP	600	NFT-2	G8	**01**
38	50	40	NP	600	NFT-2	G8	**01**
39	50	40	NP	600	NFT-2	...	

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TABLE 2B (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

	Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
		–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
	1	27.3	...	27.3	...	27.3	...	27.3	...	26.9	...	25.4	...	24.0	...	23.0
	2	27.3	...	27.3	...	27.3	...	27.3	...	26.9	...	25.4	...	24.0	...	23.0
	3	23.2	...	23.2	...	23.2	...	23.2	...	22.9	...	21.6	...	20.4	...	19.5
	4	27.3	...	27.3	...	27.3	...	27.3	...	26.9	...	25.4	...	24.0	...	23.0
	5	23.2	...	23.2	...	23.2	...	23.2	...	22.9	...	21.6	...	20.4	...	19.5
	6	34.0	...	34.0	...	34.0	...	34.0	...	34.0	...	34.0	34.0	34.0	34.0	34.0
	7	34.0	...	34.0	...	34.0	...	34.0	...	34.0	...	34.0	34.0	34.0	34.0	34.0
	8	28.9	...	28.9	...	28.9	...	28.9	...	28.9	...	28.9	28.9	28.9	28.9	28.9
	9	34.0	...	34.0	...	34.0	...	34.0	...	34.0	...	34.0	34.0	34.0	34.0	34.0
	10	28.9	...	28.9	...	28.9	...	28.9	...	28.9	...	28.9	28.9	28.9	28.9	28.9
	11	11.7	10.8	9.7	8.6	7.7	6.9	6.4	6.0	5.3	4.7	4.2	...	...	...	...
01	12	11.7	10.8	9.7	8.6	7.7	6.9	6.4	6.0	5.3	4.7	4.2	...	...	...	...
	13	11.7	10.8	9.7	8.6	7.7	6.9	6.4	6.0	5.3	4.7	4.2	...	...	...	...
	14	11.7	10.8	9.7	8.6	7.7	6.9	6.4	6.0	5.3	4.7	4.2	...	...	...	...
01	15	11.7	10.8	9.7	8.6	7.7	6.9	6.4	6.0	5.3	4.7	4.2	...	...	...	...
01	16	9.9	9.2	8.3	7.3	6.5	5.9	5.4	5.1	4.5	4.0	3.6	...	...	...	...
01	17	9.9	9.2	8.3	7.3	6.5	5.9	5.4	5.1	4.5	4.0	3.6	...	...	...	...
	18	16.7	16.7	16.7	13.7	12.3	10.9	9.8	8.8	8.0	7.5	7.3	...	...	...	...
01	19	16.7	16.7	16.7	13.7	12.3	10.9	9.8	8.8	8.0	7.5	7.3	...	...	...	...
	20	16.7	16.7	16.7	13.7	12.3	10.9	9.8	8.8	8.0	7.5	7.3	...	...	...	...
	21	16.7	16.7	16.7	13.7	12.3	10.9	9.8	8.8	8.0	7.5	7.3	...	...	...	...
01	22	16.7	16.7	16.7	13.7	12.3	10.9	9.8	8.8	8.0	7.5	7.3	...	...	...	...
01	23	14.2	14.2	14.2	11.6	10.5	9.3	8.3	7.5	6.8	6.4	6.2	...	...	...	...
01	24	14.2	14.2	14.2	11.6	10.5	9.3	8.3	7.5	6.8	6.4	6.2	...	...	...	...
	25	21.7	20.8	19.0	17.3	15.6	13.9	12.3	11.1	9.9	8.9	8.0	...	...	...	...
01	26	21.7	20.8	19.0	17.3	15.6	13.9	12.3	11.1	9.9	8.9	8.0	...	...	...	...
	27	21.7	20.8	19.0	17.3	15.6	13.9	12.9	11.1	9.9	8.9	8.0	...	...	...	...
	28	21.7	20.8	19.0	17.3	15.6	13.9	12.3	11.1	9.9	8.9	8.0	...	...	...	...
01	29	21.7	20.8	19.0	17.3	15.6	13.9	12.3	11.1	9.9	8.9	8.0	...	...	...	...
01	30	18.4	17.7	16.2	14.7	13.3	11.8	10.5	9.4	8.4	7.6	6.8	...	...	...	...
01	31	18.4	17.7	16.2	14.7	13.3	11.8	10.5	9.4	8.4	7.6	6.8	...	...	...	...
	32	16.7	16.7	16.7	13.7	12.3	10.9	9.8	8.8	8.0	7.5	7.3	...	...	...	...
01	33	16.7	16.7	16.7	13.7	12.3	10.9	9.8	8.8	8.0	7.5	7.3	...	...	...	...
	34	16.7	16.7	16.7	13.7	12.3	10.9	9.8	8.8	8.0	7.5	7.3	...	...	...	...
	35	16.7	16.7	16.7	13.7	12.3	10.9	9.8	8.8	8.0	7.5	7.3	...	...	...	...
01	36	16.7	16.7	16.7	13.7	12.3	10.9	9.8	8.8	8.0	7.5	7.3	...	...	...	...
01	37	14.2	14.2	14.2	11.6	10.5	9.3	8.3	7.5	6.8	6.4	6.2	...	...	...	...
01	38	14.2	14.2	14.2	11.6	10.5	9.3	8.3	7.5	6.8	6.4	6.2	...	...	...	...
	39	16.7	16.7	16.7	13.7	12.3	10.9	9.8	8.8	8.0	7.5	7.3	...	...	...	...

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TABLE 2B (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	P-No.
	1	Ti–0.3Mo–0.8Ni	Plate, sheet, strip	SB-265	R53400	Annealed	...	52
	2	Ti–0.3Mo–0.8Ni	Bar, billet	SB-348	R53400	Annealed	...	52
	3	Ti–0.3Mo–0.8Ni	Forgings	SB-381	R53400	Annealed	...	52
	4	Ti–0.3Mo–0.8Ni	Smls. tube	SB-338	R53400	Smls. ann.	...	52
01	5	Ti–0.3Mo–0.8Ni	Smls. pipe	SB-861	R53400	Smls. ann.	...	52
01	6	Ti–0.3Mo–0.8Ni	Wld. tube	SB-338	R53400	Wld. ann.	...	52
01	7	Ti–0.3Mo–0.8Ni	Wld. pipe	SB-862	R53400	Wld. ann.	...	52
	8	Ti–3Al–2.5 V	Plate, sheet, strip	SB-265	R56320	Annealed	...	53
	9	Ti–3Al–2.5 V	Bar, billet	SB-348	R56320	Annealed	...	53
	10	Ti–3Al–2.5 V	Forgings	SB-381	R56320	Annealed	...	53
	11	Ti–3Al–2.5 V	Smls. & wld. tube	SB-338	R56320	Smls. ann.	...	53
	12	Ti–3Al–2.5 V	Wld. fittings	SB-363	R56320	Smls. ann.	...	53
01	13	Ti–3Al–2.5 V	Smls. pipe	SB-861	R56320	Smls. ann.	...	53
01	14	Ti–3Al–2.5 V	Smls. & wld. tube	SB-338	R56320	Wld. ann.	...	53
01	15	Ti–3Al–2.5 V	Wld. fittings	SB-363	R56320	Wld. ann.	...	53
01	16	Ti–3Al–2.5 V	Wld. pipe	SB-862	R56320	Wld. ann.	...	53

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TABLE 2B (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applic. and Max. Temp. Limits (NP = Not Permitted) (SPT = Supports Only)		External Pressure Chart No.	Notes	
			III	VIII-2			
1	70	50	NP	600	NFT-1	...	
2	70	50	NP	600	NFT-1	...	
3	70	50	NP	600	NFT-1	...	
4	70	50	NP	600	NFT-1	...	
5	70	50	NP	600	NFT-1	...	**01**
6	70	50	NP	600	NFT-1	G8	**01**
7	70	50	NP	600	NFT-1	G8	**01**
8	90	70	600	NP	NFT-1	...	
9	90	70	600	NP	NFT-1	...	
10	90	70	600	NP	NFT-1	...	
11	90	70	600	NP	NFT-1	...	
12	90	70	600	NP	NFT-1	...	
13	90	70	600	NP	NFT-1	...	**01**
14	90	70	600	NP	NFT-1	G8	**01**
15	90	70	600	NP	NFT-1	G8	**01**
16	90	70	600	NP	NFT-1	G8	**01**

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TABLE 2B (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2
DESIGN STRESS INTENSITY VALUES S_m FOR NONFERROUS MATERIALS

	Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
		–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
	1	23.3	23.3	21.8	20.3	18.9	17.7	16.7	15.8	15.2	14.8	14.4	...	...	...	...
	2	23.3	23.3	21.8	20.3	18.9	17.7	16.7	15.8	15.2	14.8	14.4	...	...	...	...
	3	23.3	23.3	21.8	20.3	18.9	17.7	16.7	15.8	15.2	14.8	14.4	...	...	...	...
	4	23.3	23.3	21.8	20.3	18.9	17.7	16.7	15.8	15.2	14.8	14.4	...	...	...	...
01	5	23.3	23.3	21.8	20.3	18.9	17.7	16.7	15.8	15.2	14.8	14.4	...	...	...	...
01	6	19.8	19.8	18.5	17.3	16.1	15.0	14.2	13.4	12.9	12.6	12.2	...	...	...	...
01	7	19.8	19.8	18.5	17.3	16.1	15.0	14.2	13.4	12.9	12.6	12.2	...	...	...	...
	8	30.0	30.0	29.0	27.7	26.4	24.8	23.4	22.4	21.1	20.5	20.1	...	...	...	...
	9	30.0	30.0	29.0	27.7	26.4	24.8	23.4	22.4	21.1	20.5	20.1	...	...	...	...
	10	30.0	30.0	29.0	27.7	26.4	24.8	23.4	22.4	21.1	20.5	20.1	...	...	...	...
	11	30.0	30.0	29.0	27.7	26.4	24.8	23.4	22.4	21.1	20.5	20.1	...	...	...	...
	12	30.0	30.0	29.0	27.7	26.4	24.8	23.4	22.4	21.1	20.5	20.1	...	...	...	...
01	13	30.0	30.0	29.0	27.7	26.4	24.8	23.4	22.4	21.1	20.5	20.1	...	...	...	...
01	14	25.5	25.5	24.7	23.5	22.4	21.1	19.9	19.0	17.9	17.4	17.1	...	...	...	...
01	15	25.5	25.5	24.7	23.5	22.4	21.1	19.9	19.0	17.9	17.4	17.1	...	...	...	...
01	16	25.5	25.5	24.7	23.5	22.4	21.1	19.9	19.0	17.9	17.4	17.1	...	...	...	...

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NOTES TO TABLE 2B

GENERAL NOTE:

The following abbreviations are used: ann., annealed; Applic., Applicability; Cond., Condition (in column heading) or Condenser; Desig., Designation; extr., extruded; fin., finished; rel., relieved; Smls., Seamless; and Wld., Welded.

NOTES — GENERAL REQUIREMENTS:

G1 Due to the relatively low yield strength of these materials, these higher stress values were established at temperatures where the short time tensile properties govern to permit the use of these alloys where slightly greater deformation is acceptable. The stress values in this range exceed $66\frac{2}{3}$% but do not exceed 90% of the yield strength at temperature. Use of these stresses may result in dimensional changes due to permanent strain. These stress values are not recommended for the flanges of gasketed joints or other applications where slight amounts of distortion can cause leakage or malfunction. Table Y-2 lists multiplying factors which, when applied to the yield strength values shown in Table Y-1, will give allowable stress values that will result in lower levels of permanent strain.

G2 Use of external pressure charts for material in the form of barstock is permitted for stiffening rings only.

G3 SB-163 Supplementary Requirement S2 shall be met.

G4 Design stress intensity values for 100°F may be used at temperatures down to –325°F without additional specification requirements.

G5 Design stress intensity values for 100°F may be used at temperatures down to –452°F without additional specification requirements.

G6 Maximum temperature for external pressure design not to exceed 350°F.

G7 These alloys are occasionally subject to the hazard of stress corrosion cracking. Even though they are suitable for engineering use under a wide variety of corrosive conditions, with no particular hazard with respect to stress corrosion, the supplier of the material should be consulted before applying them.

G8 A joint efficiency factor of 0.85 has been applied in arriving at the maximum allowable design stress intensity values for this material.

G9 For stress relieved tempers (T451, T4510, T4511, T651, T6510, T6511), stress values for materials in the basic temper shall be used.

G10 Copper–silicon alloys are not always suitable when exposed to certain media and high temperature, particularly steam above 212°F. The user should satisfy himself that the alloy selected is satisfactory for the service for which it is to be used.

NOTES — SIZE REQUIREMENTS:

S1 Thickness ≤ 0.100 in.

NOTES — WELDING REQUIREMENTS:

W1 Welding except for seal welds is not permitted.

W2 For welded construction, stress intensity values for material of O temper shall be used.

W3 The stress intensity values given for this material are not applicable when either welding or thermal cutting is employed.

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TABLE 3
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.
	Ferrous Materials						
1	Carbon steel	Bolting	SA-307	B	...	...	...
2	Carbon steel	Bolting	SA-449	...	K04200	...	$1\frac{1}{2} < t \le 3$
3	Carbon steel	Bolting	SA-325	...	...	...	...
4	Carbon steel	Bolting	SA-325	1	K02706	...	$1\frac{1}{8} < t \le 1\frac{1}{2}$
5	Carbon steel	Bolting	SA-449	...	K04200	...	$1 < t < 1\frac{1}{2}$
6	Carbon steel	Bolting	SA-354	BC	K04100	...	$2\frac{1}{2} < t \le 4$
7	Carbon steel	Bolting	SA-325	1	K02706	...	$\frac{1}{2} < t \le 1$
8	Carbon steel	Bolting	SA-325	2	K11900	...	$\frac{1}{2} < t \le 1$
9	Carbon steel	Bolting	SA-449	...	K04200	...	≤ 1
10	Carbon steel	Bolting	SA-354	BC	K04100	...	$\frac{1}{4} < t \le 2\frac{1}{2}$
11	Carbon steel	Bolting	SA-354	BD	K04100	...	$2\frac{1}{2} < t \le 4$
12	Carbon steel	Bolting	SA-354	BD	K04100	...	$\frac{1}{4} < t \le 2\frac{1}{2}$
13	C–$\frac{1}{4}$Mo	Bolting	SA-320	L7A	G40370	...	$\le 2\frac{1}{2}$
14	C–$\frac{1}{4}$Mo	Bolting	SA-574	4037	G40370	...	$\ge \frac{5}{8}$
15	C–$\frac{1}{4}$Mo	Bolting	SA-574	4042	G40420	...	$\ge \frac{5}{8}$
16	C–$\frac{1}{4}$Mo	Bolting	SA-574	4140	G41400	...	$\ge \frac{5}{8}$
17	C–$\frac{1}{4}$Mo	Bolting	SA-574	...	...	...	$\frac{1}{2} < t \le 4$
18	C–$\frac{1}{4}$Mo	Bolting	SA-574	4037	G40370	...	$\le \frac{1}{2}$
19	C–$\frac{1}{4}$Mo	Bolting	SA-574	4042	G40420	...	$\le \frac{1}{2}$
20	C–$\frac{1}{4}$Mo	Bolting	SA-574	...	...	...	$\le \frac{1}{2}$
21	$\frac{3}{4}$Cr	Bolting	SA-574	5137M	...	...	$\ge \frac{5}{8}$
22	$\frac{3}{4}$Cr	Bolting	SA-574	51B37M	...	...	$\ge \frac{5}{8}$
23	$\frac{3}{4}$Cr	Bolting	SA-574	5137M	...	...	$\le \frac{1}{2}$
24	$\frac{3}{4}$Cr	Bolting	SA-574	51B37M	...	...	$\le \frac{1}{2}$
25	$\frac{3}{4}$Cr	Bolting	SA-574	8740	G87400	...	$\le \frac{1}{2}$
26	1Cr–1Mn–$\frac{1}{4}$Mo	Bolting	SA-540	B22	H41420	5	$2 < t \le 4$
27	1Cr–1Mn–$\frac{1}{4}$Mo	Bolting	SA-540	B22	H41420	5	≤ 2
28	1Cr–1Mn–$\frac{1}{4}$Mo	Bolting	SA-540	B22	H41420	4	≤ 4
29	1Cr–1Mn–$\frac{1}{4}$Mo	Bolting	SA-540	B22	H41420	3	≤ 4
30	1Cr–1Mn–$\frac{1}{4}$Mo	Bolting	SA-540	B22	H41420	2	≤ 3
31	1Cr–1Mn–$\frac{1}{4}$Mo	Bolting	SA-540	B22	H41420	1	$\le 1\frac{1}{2}$
32	1Cr–$\frac{1}{5}$Mo	Bolting	SA-193	B7	G41400	...	$4 < t \le 7$
33	1Cr–$\frac{1}{5}$Mo	Bolting	SA-193	B7	G41400	...	> 4
34	1Cr–$\frac{1}{5}$Mo	Bolting	SA-193	B7M	G41400	...	$\le 2\frac{1}{2}$
35	1Cr–$\frac{1}{5}$Mo	Bolting	SA-320	L7M	G41400	...	$\le 2\frac{1}{2}$
36	1Cr–$\frac{1}{5}$Mo	Bolting	SA-193	B7	G41400	...	$2\frac{1}{2} < t \le 4$
37	1Cr–$\frac{1}{5}$Mo	Bolting	SA-193	B7	G41400	...	$\le 2\frac{1}{2}$
38	1Cr–$\frac{1}{5}$Mo	Bolting	SA-320	L7	G41400	...	$\le 2\frac{1}{2}$

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TABLE 3
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applicability and Max. Temp. Limits (NP = Not Permitted) III	VIII-1	VIII-2	Notes
						Ferrous Materials
1	60	...	400	450	NP	...
2	90	58	700	650	650	G1
3	105	81	650	650	650	G1
4	105	81	NP	650	650	...
5	105	81	700	700	700	G1
6	115	99	650	650	650	G1
7	120	92	NP	650	650	...
8	120	92	NP	650	650	...
9	120	92	700	650	650	G1
10	125	109	650	650	650	G1
11	140	115	650	650	650	G1
12	150	130	650	650	650	G1
13	125	105	NP	650	650	W3
14	170	135	550	NP	NP	G7, G11, W1
15	170	135	550	NP	NP	G7, G11, W1
16	170	135	550	NP	NP	G7, G11, W1
17	170	...	NP	200	NP	G7
18	180	140	550	NP	NP	G7, G11, W1
19	180	140	550	NP	NP	G7, G11, W1
20	180	...	NP	200	NP	G7
21	170	135	550	NP	NP	G7, G11, W1
22	170	135	550	NP	NP	G7, G11, W1
23	180	140	550	NP	NP	G7, G11, W1
24	180	140	550	NP	NP	G7, G11, W1
25	180	140	550	NP	NP	G7, G11, W1
26	115	100	700	NP	NP	G1
27	120	105	700	NP	NP	G1
28	135	120	700	NP	NP	G1
29	145	130	700	700	NP	G1
30	155	140	700	NP	NP	G1
31	165	150	700	NP	NP	G1
32	100	75	800	NP	NP	G1
33	100	75	NP	1000	800	...
34	100	80	NP	1000	700	...
35	100	80	NP	1000	700	...
36	115	95	800	1000	800	G1
37	125	105	800	1000	800	G1
38	125	105	400	700	700	G1

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TABLE 3
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
	Ferrous Materials																
1	7.0	...	7.0	...	7.0	...	7.0	7.0	...	...	...	...	...	...	...	...	...
2	14.5	14.5	14.5	...	14.5	...	14.5	...	14.5	14.5	14.5	14.5	14.5	...	...	...	...
3	20.2	...	20.2	...	20.2	...	20.2	...	20.2	...	20.2	20.2	...	...	...	...	...
4	20.2	20.2	20.2	...	20.2	...	20.2	...	20.2	20.2	20.2	20.2	...	...	...	...	...
5	20.2	...	20.2	...	20.2	...	20.2	...	20.2	...	20.2	20.2	20.2	...	...	...	...
6	23.0	23.0	23.0	...	23.0	...	23.0	...	23.0	23.0	23.0	23.0	...	...	...	...	...
7	23.0	23.0	23.0	...	23.0	...	23.0	...	23.0	23.0	23.0	23.0	...	...	...	...	...
8	23.0	23.0	23.0	...	23.0	...	23.0	...	23.0	23.0	23.0	23.0	...	...	...	...	...
9	23.0	23.0	23.0	...	23.0	...	23.0	...	23.0	23.0	23.0	23.0	23.0	...	...	...	...
10	25.0	25.0	25.0	...	25.0	...	25.0	...	25.0	25.0	25.0	25.0	...	...	...	...	...
11	28.0	28.0	28.0	...	28.0	...	28.0	...	28.0	...	28.0	28.0	...	...	...	...	...
12	30.0	30.0	30.0	...	30.0	...	30.0	...	30.0	30.0	30.0	30.0	...	...	...	...	...
13	25.0	25.0	25.0	...	25.0	...	25.0	...	25.0	25.0	25.0	25.0	...	...	...	...	...
14	33.8	...	33.8	...	33.8	...	33.8	...	33.8	33.8	...	...	...	...	...	...	...
15	33.8	...	33.8	...	33.8	...	33.8	...	33.8	33.8	...	...	...	...	...	...	...
16	33.8	...	33.8	...	33.8	...	33.8	...	33.8	33.8	...	...	...	...	...	...	...
17	33.8	33.8	33.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	35.0	...	35.0	...	35.0	...	35.0	...	35.0	35.0	...	...	...	...	...	...	...
19	35.0	...	35.0	...	35.0	...	35.0	...	35.0	35.0	...	...	...	...	...	...	...
20	35.0	35.0	35.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	33.8	...	33.8	...	33.8	...	33.8	...	33.8	33.8	...	...	...	...	...	...	...
22	33.8	...	33.8	...	33.8	...	33.8	...	33.8	33.8	...	...	...	...	...	...	...
23	35.0	...	35.0	...	35.0	...	35.0	...	35.0	35.0	...	...	...	...	...	...	...
24	35.0	...	35.0	...	35.0	...	35.0	...	35.0	35.0	...	...	...	...	...	...	...
25	35.0	...	35.0	...	35.0	...	35.0	...	35.0	35.0	...	...	...	...	...	...	...
26	23.0	...	23.0	...	23.0	...	23.0	...	23.0	...	23.0	23.0	23.0	...	...	...	...
27	24.0	...	24.0	...	24.0	...	24.0	...	24.0	...	24.0	24.0	24.0	...	...	...	...
28	27.0	...	27.0	...	27.0	...	27.0	...	27.0	...	27.0	27.0	27.0	...	...	...	...
29	29.0	...	29.0	...	29.0	...	29.0	...	29.0	...	29.0	29.0	29.0	...	...	...	...
30	31.0	...	31.0	...	31.0	...	31.0	...	31.0	...	31.0	31.0	31.0	...	...	...	...
31	33.0	...	33.0	...	33.0	...	33.0	...	33.0	...	33.0	33.0	33.0	...	...	...	...
32	18.7	...	18.7	...	18.7	...	18.7	...	18.7	...	18.7	18.7	18.7	18.7	18.0	...	...
33	18.8	18.8	18.8	...	18.8	...	18.8	...	18.8	18.8	18.8	18.8	18.8	18.8	18.0	16.3	12.5
34	20.0	20.0	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	18.5	16.2	12.5
35	20.0	20.0	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	18.5	16.2	12.5
36	23.0	23.0	23.0	...	23.0	...	23.0	...	23.0	23.0	23.0	23.0	23.0	22.2	20.0	16.3	12.5
37	25.0	25.0	25.0	...	25.0	...	25.0	...	25.0	25.0	25.0	25.0	25.0	23.6	21.0	17.0	12.5
38	25.0	25.0	25.0	...	25.0	...	25.0	...	25.0	25.0	25.0	25.0	25.0	...	...	...	...

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TABLE 3
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
															Ferrous Materials
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	8.5	4.5	...	...	...	...	...	...	...	...	...	...	...	...	...
34	8.5	4.5	...	...	...	...	...	...	...	...	...	...	...	...	...
35	8.5	4.5	...	...	...	...	...	...	...	...	...	...	...	...	...
36	8.5	4.5	...	...	...	...	...	...	...	...	...	...	...	...	...
37	8.5	4.5	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.
	Ferrous Materials (Cont'd)						
1	1Cr–1/5Mo	Bolting	SA-574	4137	G41370	...	≥ 5/8
2	1Cr–1/5Mo	Bolting	SA-574	4142	G41420	...	≥ 5/8
3	1Cr–1/5Mo	Bolting	SA-574	4145	G41450	...	≥ 5/8
4	1Cr–1/5Mo	Bolting	SA-574	4137	G41370	...	≤ 1/2
5	1Cr–1/5Mo	Bolting	SA-574	4140	G41400	...	≤ 1/2
6	1Cr–1/5Mo	Bolting	SA-574	4142	G41420	...	≤ 1/2
7	1Cr–1/5Mo	Bolting	SA-574	4145	G41450	...	≤ 1/2
8	1Cr–1/2Mo–V	Bolting	SA-193	B16	K14072	...	$4 < t \le 7$
9	1Cr–1/2Mo–V	Bolting	SA-193	B16	K14072	...	$2\frac{1}{2} < t \le 4$
10	1Cr–1/2Mo–V	Bolting	SA-540	B21	K14073	5	$2 < t \le 8$
11	1Cr–1/2Mo–V	Bolting	SA-540	B21	K14073	5	≤ 2
12	1Cr–1/2Mo–V	Bolting	SA-193	B16	K14072	...	≤ 2 1/2
13	1Cr–1/2Mo–V	Bolting	SA-540	B21	K14073	4	≤ 6
14	1Cr–1/2Mo–V	Bolting	SA-540	B21	K14073	3	≤ 6
15	1Cr–1/2Mo–V	Bolting	SA-540	B21	K14073	2	≤ 4
16	1Cr–1/2Mo–V	Bolting	SA-540	B21	K14073	1	≤ 4
17	5Cr–1/2Mo	Bolting	SA-193	B5	K50100	...	≤ 4
18	12Cr–1Mo–V–W	Bolting	SA-437	B4C	K91352	...	...
19	12Cr–1Mo–V–W	Bolting	SA-437	B4B	K91352	...	...
20	13Cr	Bolting	SA-193	B6	S41000	...	≤ 4
21	17Cr–4Ni–4Cu	Bolting	SA-564	630	S17400	H1100	≤ 8
22	17Cr–4Ni–4Cu	Bolting	SA-705	630	S17400	H1100	≤ 8
23	1/2Ni–1/2Cr–1/4Mo	Bolting	SA-574	8740	G87400	...	≥ 5/8
24	1 3/4Ni–3/4Cr–1/4Mo	Bolting	SA-320	L43	G43400	...	≤ 4
25	1 3/4Ni–3/4Cr–1/4Mo	Bolting	SA-574	4340	G43400	...	≥ 5/8
26	1 3/4Ni–3/4Cr–1/4Mo	Bolting	SA-574	4340	G43400	...	≤ 1/2
27	2Ni–3/4Cr–1/4Mo	Bolting	SA-540	B23	H43400	5	...
28	2Ni–3/4Cr–1/4Mo	Bolting	SA-540	B23	H43400	5	...
29	2Ni–3/4Cr–1/4Mo	Bolting	SA-540	B23	H43400	4	...
30	2Ni–3/4Cr–1/4Mo	Bolting	SA-540	B23	H43400	3	...
31	2Ni–3/4Cr–1/4Mo	Bolting	SA-540	B23	H43400	2	...
32	2Ni–3/4Cr–1/4Mo	Bolting	SA-540	B23	H43400	1	...
33	2Ni–3/4Cr–1/3Mo	Bolting	SA-540	B24	K24064	5	...
34	2Ni–3/4Cr–1/3Mo	Bolting	SA-540	B24	K24064	5	...
35	2Ni–3/4Cr–1/3Mo	Bolting	SA-540	B24	K24064	4	...
36	2Ni–3/4Cr–1/3Mo	Bolting	SA-540	B24	K24064	3	...
37	2Ni–3/4Cr–1/3Mo	Bolting	SA-540	B24	K24064	2	...
38	2Ni–3/4Cr–1/3Mo	Bolting	SA-540	B24	K24064	1	...

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applicability and Max. Temp. Limits (NP = Not Permitted) III	VIII-1	VIII-2	Notes
						Ferrous Materials (Cont'd)
1	170	135	550	NP	NP	G7, G11, W1
2	170	135	550	NP	NP	G7, G11, W1
3	170	135	550	NP	NP	G7, G11, W1
4	180	140	550	NP	NP	G7, G11, W1
5	180	140	550	NP	NP	G7, G11, W1
6	180	140	550	NP	NP	G7, G11, W1
7	180	140	550	NP	NP	G7, G11, W1
8	100	85	800	1100	800	G1
9	110	95	800	1100	800	G1
10	115	100	700	700	700	G1
11	120	105	700	700	700	G1
12	125	105	800	1100	800	G1
13	135	120	700	700	700	G1
14	145	130	700	700	700	G1
15	155	140	700	700	700	G1
16	165	150	700	700	700	G1
17	100	80	800	1200	800	G1
18	115	85	700	700	700	...
19	145	105	700	700	700	...
20	110	85	800	900	800	...
21	140	115	650	650	650	G4
22	140	115	650	650	650	G4
23	170	135	550	NP	NP	G7, G11, W1
24	125	105	400	400	700	G1
25	170	135	550	NP	NP	G7, G11, W1
26	180	140	550	NP	NP	G7, G11, W1
27	115	100	700	700	700	G1
28	120	105	700	700	700	G1
29	135	120	700	700	700	G1
30	145	130	700	700	700	G1
31	155	140	700	700	700	G1
32	165	150	700	700	700	G1
33	115	100	700	700	700	G1
34	120	105	700	700	700	G1
35	135	120	700	700	700	G1
36	145	130	700	700	700	G1
37	155	140	700	700	700	G1
38	165	150	700	700	700	G1

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
	Ferrous Materials (Cont'd)																
1	33.8	...	33.8	...	33.8	...	33.8	...	33.8	33.8	...	...	...	...	...	...	...
2	33.8	...	33.8	...	33.8	...	33.8	...	33.8	33.8	...	...	...	...	...	...	...
3	33.8	...	33.8	...	33.8	...	33.8	...	33.8	33.8	...	...	...	...	...	...	...
4	35.0	...	35.0	...	35.0	...	35.0	...	35.0	35.0	...	...	...	...	...	...	...
5	35.0	...	35.0	...	35.0	...	35.0	...	35.0	35.0	...	...	...	...	...	...	...
6	35.0	...	35.0	...	35.0	...	35.0	...	35.0	35.0	...	...	...	...	...	...	...
7	35.0	...	35.0	...	35.0	...	35.0	...	35.0	35.0	...	...	...	...	...	...	...
8	20.0	20.0	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0	18.8	16.7
9	22.0	22.0	22.0	...	22.0	...	22.0	...	22.0	...	22.0	22.0	22.0	22.0	22.0	21.0	18.5
10	23.0	...	23.0	...	23.0	...	23.0	...	23.0	...	23.0	23.0	23.0	...	...	...	...
11	24.0	...	24.0	...	24.0	...	24.0	...	24.0	...	24.0	24.0	24.0	...	...	...	...
12	25.0	25.0	25.0	...	25.0	...	25.0	...	25.0	25.0	25.0	25.0	25.0	25.0	25.0	23.5	20.5
13	27.0	...	27.0	...	27.0	...	27.0	...	27.0	...	27.0	27.0	27.0	...	...	...	...
14	29.0	...	29.0	...	29.0	...	29.0	...	29.0	...	29.0	29.0	29.0	...	...	...	...
15	31.0	...	31.0	...	31.0	...	31.0	...	31.0	...	31.0	31.0	31.0	...	...	...	...
16	33.0	...	33.0	...	33.0	...	33.0	...	33.0	...	33.0	33.0	33.0	...	...	...	...
17	20.0	20.0	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	18.5	14.5	10.4
18	21.2	...	21.2	...	21.2	...	21.2	...	21.2	...	21.2	21.2	21.2	...	...	...	...
19	26.2	...	26.2	...	26.2	...	26.2	...	26.2	...	26.2	26.2	26.2	...	...	...	...
20	21.2	...	21.2	...	21.2	...	21.2	...	21.2	...	21.2	21.2	21.2	21.2	19.5	15.6	12.0
21	28.0	...	28.0	...	28.0	...	28.0	...	28.0	...	28.0	28.0	...	...	...	...	...
22	28.0	...	28.0	...	28.0	...	28.0	...	28.0	...	28.0	28.0	...	...	...	...	...
23	33.8	...	33.8	...	33.8	...	33.8	...	33.8	33.8	...	...	...	...	...	...	...
24	25.0	...	25.0	...	25.0	...	25.0	...	25.0	...	25.0	25.0	25.0	...	...	...	...
25	33.8	...	33.8	...	33.8	...	33.8	...	33.8	33.8	...	...	...	...	...	...	...
26	35.0	...	35.0	...	35.0	...	35.0	...	35.0	35.0	...	...	...	...	...	...	...
27	23.0	23.0	23.0	...	23.0	...	23.0	...	23.0	23.0	23.0	23.0	23.0	...	...	...	...
28	24.0	24.0	24.0	...	24.0	...	24.0	...	24.0	24.0	24.0	24.0	24.0	...	...	...	...
29	27.0	27.0	27.0	...	27.0	...	27.0	...	27.0	27.0	27.0	27.0	27.0	...	...	...	...
30	29.0	29.0	29.0	...	29.0	...	29.0	...	29.0	29.0	29.0	29.0	29.0	...	...	...	...
31	31.0	...	31.0	...	31.0	...	31.0	...	31.0	...	31.0	31.0	31.0	...	...	...	...
32	33.0	...	33.0	...	33.0	...	33.0	...	33.0	...	33.0	33.0	33.0	...	...	...	...
33	23.0	23.0	23.0	...	23.0	...	23.0	...	23.0	23.0	23.0	23.0	23.0	...	...	...	...
34	24.0	24.0	24.0	...	24.0	...	24.0	...	24.0	24.0	24.0	24.0	24.0	...	...	...	...
35	27.0	27.0	27.0	...	27.0	...	27.0	...	27.0	27.0	27.0	27.0	27.0	...	...	...	...
36	29.0	29.0	29.0	...	29.0	...	29.0	...	29.0	29.0	29.0	29.0	29.0	...	...	...	...
37	31.0	...	31.0	...	31.0	...	31.0	...	31.0	...	31.0	31.0	31.0	...	...	...	...
38	33.0	...	33.0	...	33.0	...	33.0	...	33.0	...	33.0	33.0	33.0	...	...	...	...

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
															Ferrous Materials (Cont'd)
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	14.3	11.0	6.3	2.8	...	...	...	...	...	...	...	...	...	...	...
9	15.3	11.0	6.3	2.8	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	16.0	11.0	6.3	2.8	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	7.6	5.6	4.2	3.1	2.0	1.3	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.
	Ferrous Materials (Cont'd)						
1	2Ni–¾Cr–⅓Mo–V	Bolting	SA-540	B24V	K24070	3	≤ 11
2	3½Ni–1¾Cr–½Mo–V	Forgings	SA-508	5	K42365	2	...
3	25Ni–15Cr–2Ti	Bolting	SA-453	660	S66286	A	...
4	25Ni–15Cr–2Ti	Bolting	SA-453	660	S66286	B	...
5	16Cr–12Ni–2Mo	Bolting	SA-193	B8M	S31600	1	...
6	16Cr–12Ni–2Mo	Bolting	SA-320	B8M	S31600	1	...
7	16Cr–12Ni–2Mo	Bolting	SA-320	B8MA	S31600	1A	...
8	16Cr–12Ni–2Mo	Bolting	SA-193	B8M2	S31600	...	$2\frac{1}{2} < t \le 3$
9	16Cr–12Ni–2Mo	Bolting	SA-193	B8M	S31600	2	$1\frac{1}{4} < t \le 1\frac{1}{2}$
10	16Cr–12Ni–2Mo	Bolting	SA-320	B8M	S31600	2	$1\frac{1}{4} < t \le 1\frac{1}{2}$
11	16Cr–12Ni–2Mo	Bolting	SA-193	B8M2	S31600	...	$2 < t \le 2\frac{1}{2}$
12	16Cr–12Ni–2Mo	Bolting	SA-193	B8M	S31600	2	$1 < t \le 1\frac{1}{4}$
13	16Cr–12Ni–2Mo	Bolting	SA-320	B8M	S31600	2	$1 < t \le 1\frac{1}{4}$
14	16Cr–12Ni–2Mo	Bolting	SA-193	B8M2	S31600	...	≤ 2
15	16Cr–12Ni–2Mo	Bolting	SA-193	B8M	S31600	2	$\frac{3}{4} < t \le 1$
16	16Cr–12Ni–2Mo	Bolting	SA-320	B8M	S31600	2	$\frac{3}{4} < t \le 1$
17	16Cr–12Ni–2Mo	Bolting	SA-193	B8M	S31600	2	≤ ¾
18	16Cr–12Ni–2Mo	Bolting	SA-320	B8M	S31600	2	≤ ¾
19	16Cr–12Ni–2Mo–N	Bolting	SA-193	B8MNA	S31651	1A	...
20	18Cr–8Ni	Bolting	SA-193	B8	S30400	1	...
21	18Cr–8Ni	Bolting	SA-320	B8	S30400	1	...
22	18Cr–8Ni	Bolting	SA-320	B8A	S30400	1A	...
23	18Cr–8Ni	Bolting	SA-193	B8	S30400	2	$1\frac{1}{4} < t \le 1\frac{1}{2}$
24	18Cr–8Ni	Bolting	SA-320	B8	S30400	2	$1\frac{1}{4} < t \le 1\frac{1}{2}$
25	18Cr–8Ni	Bolting	SA-193	B8	S30400	2	$1 < t \le 1\frac{1}{4}$
26	18Cr–8Ni	Bolting	SA-320	B8	S30400	2	$1 < t \le 1\frac{1}{4}$
27	18Cr–8Ni	Bolting	SA-193	B8	S30400	2	$\frac{3}{4} < t \le 1$
28	18Cr–8Ni	Bolting	SA-320	B8	S30400	2	$\frac{3}{4} < t \le 1$
29	18Cr–8Ni	Bolting	SA-193	B8	S30400	2	≤ ¾
30	18Cr–8Ni	Bolting	SA-320	B8	S30400	2	≤ ¾
31	18Cr–8Ni–N	Bolting	SA-193	B8NA	S30451	1A	...
32	18Cr–8Ni–S	Bolting	SA-320	B8F	S30323	1	...
33	18Cr–8Ni–S	Bolting	SA-320	B8FA	S30323	1A	...
34	18Cr–8Ni–4Si–N	Bolting	SA-193	B8S	S21800	...	...
35	18Cr–8Ni–4Si–N	Bolting	SA-193	B8SA	S21800	...	...
01 36	...	...	...	...	...	...	...
01 37	18Cr–10Ni–Cb	Bolting	SA-193	B8C	S34700	1	...
38	18Cr–10Ni–Cb	Bolting	SA-320	B8C	S34700	1	...
39	18Cr–10Ni–Cb	Bolting	SA-320	B8CA	S34700	1A	...

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applicability and Max. Temp. Limits (NP = Not Permitted) III	VIII-1	VIII-2	Notes	
							Ferrous Materials (Cont'd)
1	145	130	700	700	700	G1	
2	115	100	NP	100	100	...	
3	130	85	800	1000	800	G10	
4	130	85	800	1000	800	G10	
5	75	30	800	1500	800	G5, G6	
6	75	30	400	100	100	...	
7	75	30	NP	100	100	...	
8	80	55	NP	1000	800	G9	
9	90	50	800	800	NP	G8	
10	90	50	NP	100	100	G8, G9	
11	90	65	NP	1000	800	G9	
12	95	65	800	800	NP	G8	
13	95	65	NP	100	100	G8	
14	95	75	NP	1000	800	G9	
15	100	80	800	800	NP	G8	
16	100	80	NP	100	100	G8	
17	110	95	800	800	NP	G8	
18	110	95	NP	100	100	G8	
19	75	30	800	1000	800	G5	
20	75	30	800	1500	800	G5, G6	
21	75	30	400	100	100	...	
22	75	30	NP	100	100	...	
23	100	50	NP	1000	800	G8, G9	
24	100	50	NP	100	100	G8	
25	105	65	NP	1000	800	G8, G9	
26	105	65	NP	100	100	G8	
27	115	80	NP	1000	800	G8, G9	
28	115	80	NP	100	100	G8	
29	125	100	NP	1000	800	G8, G9	
30	125	100	NP	100	100	G8	
31	75	30	800	1000	800	G5	
32	75	30	400	100	100	...	
33	75	30	NP	100	100	...	
34	95	50	NP	950	800	...	
35	95	50	NP	950	800	...	
36	...	...	...	...	...	...	**01**
37	75	30	800	1500	800	G5, G6	**01**
38	75	30	400	100	100	...	
39	75	30	NP	100	100	...	

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
	Ferrous Materials (Cont'd)																
1	29.0	...	29.0	...	29.0	...	29.0	...	29.0	...	29.0	29.0	29.0	...	...	...	...
2	23.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	21.3	...	21.3	...	21.3	...	21.3	...	21.3	...	21.3	21.3	21.3	21.3	21.3	21.3	21.3
4	21.3	...	21.3	...	21.3	...	21.3	...	21.3	...	21.3	21.3	21.3	21.3	21.3	21.3	21.3
5	18.8	...	17.7	...	15.6	...	14.3	...	13.3	...	12.6	12.3	12.1	11.9	11.7	11.6	11.5
6	18.8	...	17.7	...	15.6	...	14.3	...	...	...	...	...	...	...	...	...	...
7	18.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	18.8	...	17.7	...	15.6	...	14.3	...	13.8	...	13.8	13.8	13.8	13.8	13.8	13.8	13.8
9	18.8	...	17.7	...	15.6	...	14.3	...	13.3	...	12.6	12.5	12.5	12.5	12.5	...	...
10	18.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	18.8	...	17.7	...	16.3	...	16.3	...	16.3	...	16.3	16.3	16.3	16.3	16.3	16.3	16.3
12	18.8	...	17.7	...	16.3	...	16.3	...	16.3	...	16.3	16.3	16.3	16.3	16.3	...	...
13	18.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	18.8	...	18.8	...	18.8	...	18.8	...	18.8	...	18.8	18.8	18.8	18.8	18.8	18.8	18.8
15	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	...	...
16	20.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	22.0	...	22.0	...	22.0	...	22.0	...	22.0	...	22.0	22.0	22.0	22.0	22.0	...	...
18	22.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	18.8	...	17.8	...	16.3	...	15.2	...	14.2	...	13.4	13.1	12.8	12.5	12.3	12.0	11.8
20	18.8	...	16.7	...	15.0	...	13.8	...	12.9	...	12.1	12.0	11.8	11.5	11.2	11.0	10.8
21	18.8	...	16.7	...	15.0	...	13.8	...	...	...	...	...	...	...	...	...	...
22	18.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	18.8	...	16.7	...	15.0	...	13.8	...	12.9	...	12.5	12.5	12.5	12.5	12.5	12.5	12.5
24	18.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	18.8	...	16.7	...	16.3	...	16.3	...	16.3	...	16.3	16.3	16.3	16.3	16.3	16.3	16.3
26	18.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0
28	20.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	25.0	...	25.0	...	25.0	...	25.0	...	25.0	...	25.0	25.0	25.0	25.0	25.0	25.0	25.0
30	25.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	18.8	...	16.5	...	14.4	...	12.9	...	12.0	...	11.4	11.2	11.0	10.8	10.6	10.4	10.2
32	18.8	...	15.0	...	13.6	...	12.6	...	...	...	...	...	...	...	...	...	...
33	18.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	23.8	...	23.4	...	21.8	...	19.7	...	18.5	...	17.6	17.3	17.1	16.9	16.7	16.7	16.7
35	23.8	...	23.4	...	21.8	...	19.7	...	18.5	...	17.6	17.3	17.1	16.9	16.7	16.7	16.7
01 36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
01 37	18.8	...	17.9	...	16.4	...	15.5	...	15.0	...	14.3	14.1	13.8	13.7	13.6	13.5	13.5
38	18.8	...	17.9	...	16.4	...	15.5	...	...	...	...	...	...	...	...	...	...
39	18.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding															
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	
															Ferrous Materials (Cont'd)	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	21.3	21.3	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	21.3	21.3	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	11.4	11.3	11.2	11.0	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	13.8	13.8	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	16.3	16.3	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	18.8	18.8	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	11.6	11.4	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	10.6	10.4	10.1	9.8	7.7	6.0	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	12.5	12.5	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	16.3	16.3	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	20.0	20.0	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	24.8	24.1	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	9.9	9.7	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	16.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	16.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	01
37	13.4	13.4	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	...	...	...	01
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.
	Ferrous Materials (Cont'd)						
1	18Cr–10Ni–Cb	Bolting	SA-193	B8C	S34700	2	$1\frac{1}{4} < t \le 1\frac{1}{2}$
2	18Cr–10Ni–Cb	Bolting	SA-320	B8C	S34700	2	$1\frac{1}{4} < t \le 1\frac{1}{2}$
3	18Cr–10Ni–Cb	Bolting	SA-193	B8C	S34700	2	$1 < t \le 1\frac{1}{4}$
4	18Cr–10Ni–Cb	Bolting	SA-320	B8C	S34700	2	$1 < t \le 1\frac{1}{4}$
5	18Cr–10Ni–Cb	Bolting	SA-193	B8C	S34700	2	$\frac{3}{4} < t \le 1$
6	18Cr–10Ni–Cb	Bolting	SA-320	B8C	S34700	2	$\frac{3}{4} < t \le 1$
7	18Cr–10Ni–Cb	Bolting	SA-193	B8C	S34700	2	$\le \frac{3}{4}$
8	18Cr–10Ni–Cb	Bolting	SA-320	B8C	S34700	2	$\le \frac{3}{4}$
9	18Cr–10Ni–Ti	Bolting	SA-193	B8T	S32100	1	...
10	18Cr–10Ni–Ti	Bolting	SA-320	B8T	S32100	1	...
11	18Cr–10Ni–Ti	Bolting	SA-320	B8TA	S32100	1A	...
12	18Cr–10Ni–Ti	Bolting	SA-193	B8T	S32100	2	$1\frac{1}{4} < t \le 1\frac{1}{2}$
13	18Cr–10Ni–Ti	Bolting	SA-320	B8T	S32100	2	$1\frac{1}{4} < t \le 1\frac{1}{2}$
14	18Cr–10Ni–Ti	Bolting	SA-193	B8T	S32100	2	$1 < t \le 1\frac{1}{4}$
15	18Cr–10Ni–Ti	Bolting	SA-320	B8T	S32100	2	$1 < t \le 1\frac{1}{4}$
16	18Cr–10Ni–Ti	Bolting	SA-193	B8T	S32100	2	$\frac{3}{4} < t \le 1$
17	18Cr–10Ni–Ti	Bolting	SA-320	B8T	S32100	2	$\frac{3}{4} < t \le 1$
18	18Cr–10Ni–Ti	Bolting	SA-193	B8T	S32100	2	$\le \frac{3}{4}$
19	18Cr–10Ni–Ti	Bolting	SA-320	B8T	S32100	2	$\le \frac{3}{4}$
20	18Cr–11Ni	Bolting	SA-193	B8P	S30500	1	...
21	18Cr–11Ni	Bolting	SA-193	B8P	S30500	2	$1\frac{1}{4} < t \le 1\frac{1}{2}$
22	18Cr–11Ni	Bolting	SA-193	B8P	S30500	2	$1 < t \le 1\frac{1}{4}$
23	18Cr–11Ni	Bolting	SA-193	B8P	S30500	2	$\frac{3}{4} < t \le 1$
24	18Cr–11Ni	Bolting	SA-193	B8P	S30500	2	$\le \frac{3}{4}$
25	19Cr–9Ni–Mo–W	Bolting	SA-453	651	S63198	B	> 3
26	19Cr–9Ni–Mo–W	Bolting	SA-453	651	S63198	B	> 3
27	19Cr–9Ni–Mo–W	Bolting	SA-453	651	S63198	B	≤ 3
28	19Cr–9Ni–Mo–W	Bolting	SA-453	651	S63198	B	≤ 3
29	19Cr–9Ni–Mo–W	Bolting	SA-453	651	S63198	A	> 3
30	19Cr–9Ni–Mo–W	Bolting	SA-453	651	S63198	A	> 3
31	19Cr–9Ni–Mo–W	Bolting	SA-453	651	S63198	A	≤ 3
32	19Cr–9Ni–Mo–W	Bolting	SA-453	651	S63198	A	≤ 3
33	22Cr–13Ni–5Mn	Bolting	SA-479	XM-19	S20910	Annealed	...
34	22Cr–13Ni–5Mn	Bolting	SA-479	XM-19	S20910	Hot rolled	$3 < t \le 8$
35	22Cr–13Ni–5Mn	Bolting	SA-479	XM-19	S20910	Hot rolled	$2 < t \le 3$
36	22Cr–13Ni–5Mn	Bolting	SA-479	XM-19	S20910	Hot rolled	≤ 2

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applicability and Max. Temp. Limits (NP = Not Permitted) III	VIII-1	VIII-2	Notes
						Ferrous Materials (Cont'd)
1	100	50	NP	100	100	G8
2	100	50	NP	100	100	G8
3	105	65	NP	100	100	G8
4	105	65	NP	100	100	G8
5	115	80	NP	100	100	G8
6	115	80	NP	100	100	G8
7	125	100	NP	100	100	G8
8	125	100	NP	100	100	G8
9	75	30	800	1500	800	G5, G6
10	75	30	400	100	100	...
11	75	30	NP	100	100	...
12	100	50	NP	1000	800	G8
13	100	50	NP	100	100	G8
14	105	65	NP	1000	800	G8
15	105	65	NP	100	100	G8
16	115	80	NP	1000	800	G8
17	115	80	NP	100	100	G8
18	125	100	NP	1000	800	G8
19	125	100	NP	100	100	G8
20	75	30	NP	1500	800	...
21	100	50	NP	1000	800	G8
22	105	65	NP	1000	800	G8
23	115	80	NP	1000	800	G8
24	125	100	NP	1000	800	G8
25	95	50	800	NP	NP	...
26	95	50	NP	1000	800	...
27	95	60	800	NP	NP	...
28	95	60	NP	1000	800	...
29	100	60	800	NP	NP	...
30	100	60	NP	1000	800	...
31	100	70	800	NP	NP	...
32	100	70	NP	1000	800	...
33	100	55	NP	1150	800	...
34	100	60	NP	1150	800	...
35	115	75	NP	1150	800	...
36	135	105	NP	1150	800	...

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
	Ferrous Materials (Cont'd)																
1	18.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	18.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	18.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	18.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	20.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	20.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	25.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	25.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	18.8	...	17.8	...	16.5	...	15.3	...	14.3	...	13.5	13.3	12.9	12.7	12.5	12.4	12.3
10	18.8	...	17.8	...	16.5	...	15.3	...	...	...	...	...	...	...	...	...	...
11	18.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	18.8	...	17.8	...	16.5	...	15.3	...	14.3	...	13.5	13.3	12.9	12.7	12.5	12.5	12.5
13	18.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	18.8	...	17.8	...	16.5	...	16.3	...	16.3	...	16.3	16.3	16.3	16.3	16.3	16.3	16.3
15	18.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0
17	20.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	25.0	...	25.0	...	25.0	...	25.0	...	25.0	...	25.0	25.0	25.0	25.0	25.0	25.0	25.0
19	25.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	18.8	...	16.7	...	15.0	...	13.8	...	12.9	...	12.1	12.0	11.8	11.5	11.2	11.0	10.8
21	18.8	...	18.8	...	18.8	...	18.8	...	18.8	...	18.8	18.8	18.8	18.8	18.7	18.3	18.0
22	18.8	...	18.8	...	18.8	...	18.8	...	18.8	...	18.8	18.8	18.8	18.8	18.8	18.8	18.8
23	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0
24	25.0	...	25.0	...	25.0	...	25.0	...	25.0	...	25.0	25.0	25.0	25.0	25.0	25.0	25.0
25	12.5	...	11.4	...	10.6	...	10.0	...	9.5	...	9.0	8.8	8.6	8.4	8.3	...	...
26	12.5	...	11.5	...	10.7	...	10.0	...	9.5	...	9.0	8.8	8.7	8.5	8.3	8.2	8.0
27	15.0	...	13.7	...	12.7	...	12.0	...	11.5	...	10.9	10.6	10.4	10.1	9.9	...	...
28	15.0	...	13.8	...	12.8	...	12.1	...	11.5	...	10.9	10.6	10.4	10.2	10.0	9.8	9.6
29	15.0	...	13.7	...	12.7	...	12.0	...	11.5	...	10.9	10.6	10.4	10.1	9.9	...	...
30	15.0	...	13.8	...	12.8	...	12.1	...	11.5	...	10.9	10.7	10.4	10.2	10.0	9.8	9.6
31	17.5	...	16.0	...	14.8	...	14.0	...	13.4	...	12.7	12.4	12.1	11.8	11.6	...	...
32	17.5	...	16.1	...	14.9	...	14.1	...	13.4	...	12.7	12.4	12.2	11.9	11.6	11.4	11.2
33	25.0	...	24.9	...	23.6	...	22.7	...	22.3	...	21.9	21.8	21.6	21.4	21.2	20.9	20.6
34	25.0	...	24.9	...	23.6	...	22.7	...	22.3	...	21.9	21.8	21.6	21.4	21.2	20.9	20.6
35	25.0	...	24.9	...	23.6	...	22.7	...	22.3	...	21.9	21.8	21.6	21.4	21.2	20.9	20.6
36	26.2	...	26.2	...	26.2	...	26.2	...	26.2	...	26.2	26.2	26.2	26.2	26.2	26.2	26.2

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
															Ferrous Materials (Cont'd)
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	12.1	12.0	9.6	6.9	5.0	3.6	2.5	1.7	1.1	0.80	0.50	0.30	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	12.5	12.5	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	16.3	16.3	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	20.0	20.0	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	25.0	25.0	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	10.6	10.4	10.1	9.8	7.7	6.0	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...
21	17.7	17.3	...	...	...	...	...	...	...	...	...	...	...	...	...
22	18.8	18.8	...	...	...	...	...	...	...	...	...	...	...	...	...
23	20.0	20.0	...	...	...	...	...	...	...	...	...	...	...	...	...
24	24.8	24.1	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	7.9	7.7	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	9.4	9.2	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	9.4	9.2	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	11.0	10.7	...	...	...	...	...	...	...	...	...	...	...	...	...
33	20.3	19.9	19.0	13.0	8.3	...	...	...	...	...	...	...	...	...	...
34	20.3	19.9	19.0	13.0	8.3	...	...	...	...	...	...	...	...	...	...
35	20.3	19.9	19.0	13.0	8.3	...	...	...	...	...	...	...	...	...	...
36	26.2	26.2	19.0	13.0	8.3	...	...	...	...	...	...	...	...	...	...

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.
	Nonferrous Materials						
1	...	Bolting	SB-211	2014	A92014	T6	0.125–8.000
2	...	Bolting	SB-211	2014	A92014	T651	0.125–8.000
3	...	Bolting	SB-211	2024	A92024	T4	0.125–0.499
4	...	Bolting	SB-211	2024	A92024	T4	0.500–4.500
5	...	Bolting	SB-211	2024	A92024	T4	4.501–6.500
6	...	Bolting	SB-211	2024	A92024	T4	6.501–8.000
7	...	Bolting	SB-211	6061	A96061	T6	0.125–0.249
8	...	Bolting	SB-211	6061	A96061	T651	0.250–8.000
9	...	Bolting	SB-211	6061	A96061	T6 wld.	0.125–0.249
10	...	Bolting	SB-211	6061	A96061	T651 wld.	0.250–8.000
11	...	Rod	SB-187	...	C10200	O60	...
12	...	Rod	SB-187	...	C11000	O60	...
13	...	Bar, rod	SB-150	...	C61400	HR50	$2 < t \le 3$
14	...	Bar, rod	SB-150	...	C61400	HR50	$1 < t \le 2$
15	...	Bar, rod	SB-150	...	C61400	HR50	$\frac{1}{2} < t \le 1$
16	...	Bar, rod	SB-150	...	C61400	HR50	$\le \frac{1}{2}$
17	...	Bar, rod	SB-150	...	C62300	HR50	> 3
18	...	Bar, rod	SB-150	...	C62300	M20	> 3
19	...	Bar, rod	SB-150	...	C62300	M30	> 3
20	...	Bar, rod	SB-150	...	C62300	O20	> 3
21	...	Bar, rod	SB-150	...	C62300	O25	> 3
22	...	Bar, rod	SB-150	...	C62300	O30	> 3
23	...	Bar, rod	SB-150	...	C62300	HR50	$2 < t \le 3$
24	...	Bar, rod	SB-150	...	C62300	HR50	$1 < t \le 2$
25	...	Bar, rod	SB-150	...	C62300	HR50	$\frac{1}{2} < t \le 1$
26	...	Bar, rod	SB-150	...	C62300	HR50	$\le \frac{1}{2}$
27	...	Rod	SB-150	...	C63000	HR50	$2 < t \le 3$
28	...	Bar	SB-150	...	C63000	M20	$2 < t \le 4$
29	...	Bar, rod	SB-150	...	C63000	HR50	$1 < t \le 2$
30	...	Bar, rod	SB-150	...	C63000	HR50	$\frac{1}{2} < t \le 1$
31	...	Bar, rod	SB-150	...	C64200	M20	> 4
32	...	Bar, rod	SB-150	...	C64200	M30	> 4
33	...	Bar, rod	SB-150	...	C64200	M10	$3 < t \le 4$
34	...	Bar, rod	SB-150	...	C64200	HR50	$2 < t \le 3$
35	...	Bar, rod	SB-150	...	C64200	HR50	$1 < t \le 2$
36	...	Bar, rod	SB-150	...	C64200	HR50	$\frac{1}{2} < t \le 1$
37	...	Bar, rod	SB-150	...	C64200	HR50	$\le \frac{1}{2}$

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applicability and Max. Temp. Limits (NP = Not Permitted)			Notes
			III	VIII-1	VIII-2	
						Nonferrous Materials
1	65	55	400 (Cl. 3 only)	400	400	W4
2	65	55	NP	400	400	G12, W4
3	62	45	400 (Cl. 3 only)	400	400	W4
4	62	42	400 (Cl. 3 only)	400	400	W4
5	62	40	400 (Cl. 3 only)	400	400	W4
6	58	38	400 (Cl. 3 only)	400	400	W4
7	42	35	400 (Cl. 3 only)	400	400	W4
8	42	35	NP	400	400	G12, W4
9	42	35	400 (Cl. 3 only)	400	400	W4, W5
10	42	35	NP	400	400	G12, W5
11	30	10	NP	400	400	...
12	30	10	NP	400	400	...
13	70	30	500 (Cl. 3 only)	500	500	...
14	70	32	500 (Cl. 3 only)	500	500	...
15	75	35	500 (Cl. 3 only)	500	500	...
16	80	40	500 (Cl. 3 only)	500	500	...
17	75	30	400 (Cl. 3 only)	600	400	W1
18	75	30	400 (Cl. 3 only)	600	400	W1
19	75	30	400 (Cl. 3 only)	600	400	W1
20	75	30	400 (Cl. 3 only)	600	400	W1
21	75	30	400 (Cl. 3 only)	600	400	W1
22	75	30	400 (Cl. 3 only)	600	400	W1
23	76	37	400 (Cl. 3 only)	600	400	W1
24	84	40	400 (Cl. 3 only)	600	400	W1
25	88	44	400 (Cl. 3 only)	600	400	W1
26	90	50	400 (Cl. 3 only)	600	400	W1
27	85	42.5	700 (Cl. 3 only)	700	500	W4
28	85	42.5	700 (Cl. 3 only)	700	500	W4
29	90	45	700 (Cl. 3 only)	700	500	W4
30	100	50	700 (Cl. 3 only)	700	500	W4
31	70	25	350 (Cl. 3 only)	600	350	W1
32	70	25	350 (Cl. 3 only)	600	350	W1
33	70	30	350 (Cl. 3 only)	600	350	W4
34	75	35	350 (Cl. 3 only)	600	350	W1
35	80	42	350 (Cl. 3 only)	600	350	W1
36	85	45	350 (Cl. 3 only)	600	350	W1
37	90	45	350 (Cl. 3 only)	600	350	W1

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
	Nonferrous Materials																
1	13.0	13.0	13.0	13.0	11.4	6.8	3.9	...	...	...	...	...	...	...	...	...	...
2	13.0	13.0	13.0	13.0	11.4	6.8	3.9	...	...	...	...	...	...	...	...	...	...
3	11.3	11.3	11.3	11.3	10.4	6.5	4.5	...	...	...	...	...	...	...	...	...	...
4	10.5	10.5	10.5	10.5	10.4	6.5	4.5	...	...	...	...	...	...	...	...	...	...
5	10.0	10.0	10.0	10.0	10.0	6.5	4.5	...	...	...	...	...	...	...	...	...	...
6	9.5	9.5	9.5	9.5	9.5	6.1	4.2	...	...	...	...	...	...	...	...	...	...
7	8.4	8.4	8.4	8.4	8.4	6.3	4.4	...	...	...	...	...	...	...	...	...	...
8	8.4	8.4	8.4	8.4	8.4	6.3	4.4	...	...	...	...	...	...	...	...	...	...
9	4.8	4.8	4.8	4.8	4.8	4.6	3.5	...	...	...	...	...	...	...	...	...	...
10	4.8	4.8	4.8	4.8	4.8	4.6	3.5	...	...	...	...	...	...	...	...	...	...
11	6.7	5.8	5.5	5.2	5.1	4.0	3.0	...	...	...	...	...	...	...	...	...	...
12	6.7	5.8	5.5	5.2	5.1	4.0	3.0	...	...	...	...	...	...	...	...	...	...
13	17.5	17.5	17.5	17.5	17.5	17.5	17.2	16.6	16.1	...	...	...	...	...	...	...	...
14	17.5	17.5	17.5	17.5	17.5	17.5	17.2	16.6	16.1	...	...	...	...	...	...	...	...
15	17.5	17.5	17.5	17.5	17.5	17.5	17.2	16.6	16.1	...	...	...	...	...	...	...	...
16	17.5	17.5	17.5	17.5	17.5	17.5	17.2	16.6	16.1	...	...	...	...	...	...	...	...
17	18.8	18.8	18.8	18.8	18.7	18.1	17.7	16.0	12.5	10.6	9.9	...	...	...	...	...	...
18	18.8	18.8	18.8	18.8	18.7	18.1	17.7	16.0	12.5	10.6	9.9	...	...	...	...	...	...
19	18.8	18.8	18.8	18.8	18.7	18.1	17.7	16.0	12.5	10.6	9.9	...	...	...	...	...	...
20	18.8	18.8	18.8	18.8	18.7	18.1	17.7	16.0	12.5	10.6	9.9	...	...	...	...	...	...
21	18.8	18.8	18.8	18.8	18.7	18.1	17.7	16.0	12.5	10.6	9.9	...	...	...	...	...	...
22	18.8	18.8	18.8	18.8	18.7	18.1	17.7	16.0	12.5	10.6	9.9	...	...	...	...	...	...
23	18.8	18.8	18.8	18.8	18.7	18.1	17.7	16.0	12.5	10.6	9.9	...	...	...	...	...	...
24	18.8	18.8	18.8	18.8	18.7	18.1	17.7	16.0	12.5	10.6	9.9	...	...	...	...	...	...
25	18.8	18.8	18.8	18.8	18.7	18.1	17.7	16.0	12.5	10.6	9.9	...	...	...	...	...	...
26	18.8	18.8	18.8	18.8	18.7	18.1	17.7	16.0	12.5	10.6	9.9	...	...	...	...	...	...
27	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.4	16.4	12.0	8.5	6.0	...	...	...	...
28	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.4	16.4	12.0	8.5	6.0	...	...	...	...
29	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.4	16.4	12.0	8.5	6.0	...	...	...	...
30	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.4	16.4	12.0	8.5	6.0	...	...	...	...
31	16.7	14.5	14.0	13.5	13.5	13.0	11.0	7.5	5.2	2.5	1.7	...	...	...	...	...	...
32	16.7	14.5	14.0	13.5	13.5	13.0	11.0	7.5	5.2	2.5	1.7	...	...	...	...	...	...
33	16.7	14.5	14.0	13.5	13.5	13.0	11.0	7.5	5.2	2.5	1.7	...	...	...	...	...	...
34	16.7	14.5	14.0	13.5	13.5	13.0	11.0	7.5	5.2	2.5	1.7	...	...	...	...	...	...
35	16.7	14.5	14.0	13.5	13.5	13.0	11.0	7.5	5.2	2.5	1.7	...	...	...	...	...	...
36	16.7	14.5	14.0	13.5	13.5	13.0	11.0	7.5	5.2	2.5	1.7	...	...	...	...	...	...
37	16.7	14.5	14.0	13.5	13.5	13.0	11.0	7.5	5.2	2.5	1.7	...	...	...	...	...	...

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
															Nonferrous Materials
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.
	Nonferrous Materials (Cont'd)						
1	...	Rod	SB-98	...	C65100	O60	...
2	...	Rod	SB-98	...	C65100	H06	$1 < t \le 1\frac{1}{2}$
3	...	Rod	SB-98	...	C65100	H06	$\frac{1}{2} < t \le 1$
4	...	Rod	SB-98	...	C65100	H06	$\le \frac{1}{2}$
5	...	Rod	SB-98	...	C65500	O60	...
6	...	Rod	SB-98	...	C65500	H01	...
7	...	Rod	SB-98	...	C65500	H02	...
8	...	Rod	SB-98	...	C66100	O60	...
9	...	Rod	SB-98	...	C66100	H01	...
10	...	Rod	SB-98	...	C66100	H02	...
11	99Ni	Bolting	SB-160	...	N02200	Annealed	...
12	99Ni	Bolting	SB-160	...	N02200	Hot fin./ann.	...
13	99Ni	Bolting	SB-160	...	N02200	Cold drawn	...
14	99Ni–Low C	Bolting	SB-160	...	N02201	Hot fin./ann.	...
15	67Ni–30Cu	Bolting	SB-164	...	N04400	Annealed	...
16	67Ni–30Cu	Bolting	SB-164	...	N04400	Annealed	...
17	67Ni–30Cu	Bolting	SB-164	...	N04400	Hot worked	...
18	67Ni–30Cu	Bolting	SB-164	...	N04400	Hot worked	...
19	67Ni–30Cu	Bolting	SB-164	...	N04400	Hot worked	...
20	67Ni–30Cu	Bolting	SB-164	...	N04400	Hot worked	...
21	67Ni–30Cu	Bolting	SB-164	...	N04400	CD-str. rel.	...
22	67Ni–30Cu	Bolting	SB-164	...	N04400	Cold worked	...
23	67Ni–30Cu	Bolting	SB-164	...	N04400	Cold worked	...
24	67Ni–30Cu	Bolting	SB-164	...	N04400	CD-str. rel.	...
25	67Ni–30Cu–S	Bolting	SB-164	...	N04405	Annealed	...
26	67Ni–30Cu–S	Bolting	SB-164	...	N04405	Annealed	...
27	67Ni–30Cu–S	Bolting	SB-164	...	N04405	Hot worked	...
28	67Ni–30Cu–S	Bolting	SB-164	...	N04405	Hot worked	...
29	67Ni–30Cu–S	Bolting	SB-164	...	N04405	Cold worked	...
30	47Ni–22Cr–9Mo–18Fe	Bolting	SB-572	...	N06002	Annealed	...
31	47Ni–22Cr–19Fe–6Mo	Bolting	SB-581	...	N06007	Solution ann.	$> \frac{3}{4}$
32	47Ni–22Cr–19Fe–6Mo	Bolting	SB-581	...	N06007	Solution ann.	$< \frac{3}{4}$
33	55Ni–21Cr–13.5Mo	Bolting	SB-574	...	N06022	Solution ann.	...
34	40Ni–29Cr–15Fe–5Mo	Bolting	SB-581	...	N06030	Solution ann.	...
35	61Ni–16Mo–16Cr	Bolting	SB-574	...	N06455	Solution ann.	...

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applicability and Max. Temp. Limits (NP = Not Permitted) III	VIII-1	VIII-2	Notes
						Nonferrous Materials (Cont'd)
1	40	12	350 (Cl. 3 only)	350	350	G2
2	75	40	350 (Cl. 3 only)	350	350	G2, W2
3	75	45	350 (Cl. 3 only)	350	350	G2, W2
4	85	55	350 (Cl. 3 only)	350	350	G2, W2
5	52	15	350 (Cl. 3 only)	350	350	G2
6	55	24	350 (Cl. 3 only)	NP	350	G2, W2
7	70	38	350 (Cl. 3 only)	NP	350	G2, W2
8	52	15	350 (Cl. 3 only)	350	350	G2
9	55	24	350 (Cl. 3 only)	NP	350	G2, W2
10	70	38	350 (Cl. 3 only)	NP	350	G2, W2
11	55	15	600 (Cl. 3 only)	600	600	...
12	60	15	600 (Cl. 3 only)	600	600	...
13	65	40	600 (Cl. 3 only)	600	600	...
14	50	10	600 (Cl. 3 only)	1200	800	...
15	70	25	800	NP	NP	...
16	70	25	NP	900	800	...
17	75	30	800	NP	NP	...
18	75	30	NP	900	800	...
19	80	40	800	NP	NP	...
20	80	40	NP	900	800	...
21	84	50	500	500	500	G3
22	85	55	500	NP	NP	G3
23	85	55	NP	500	500	G3
24	87	60	NP	500	500	G3
25	70	25	800	NP	NP	...
26	70	25	NP	900	800	...
27	75	35	800	NP	NP	...
28	75	35	NP	900	800	...
29	85	50	500	500	500	G3
30	95	35	NP	1650	800	...
31	85	30	NP	1000	800	...
32	90	35	NP	1000	800	...
33	100	45	NP	800	800	...
34	85	35	NP	800	800	...
35	100	40	NP	800	800	...

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MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
	Nonferrous Materials (Cont'd)																
1	8.0	8.0	8.0	8.0	7.9	7.7	...	...	...	...	...	...	...	...	...	...	...
2	10.0	10.0	10.0	10.0	10.0	10.0	...	...	...	...	...	...	...	...	...	...	...
3	11.3	11.3	11.3	11.3	11.3	11.3	...	...	...	...	...	...	...	...	...	...	...
4	13.7	13.7	13.7	13.7	13.7	13.7	...	...	...	...	...	...	...	...	...	...	...
5	10.0	10.0	10.0	10.0	10.0	9.7	...	...	...	...	...	...	...	...	...	...	...
6	10.0	10.0	10.0	10.0	10.0	9.7	...	...	...	...	...	...	...	...	...	...	...
7	10.0	10.0	10.0	10.0	10.0	9.7	...	...	...	...	...	...	...	...	...	...	...
8	10.0	10.0	10.0	10.0	10.0	9.7	...	...	...	...	...	...	...	...	...	...	...
9	10.0	10.0	10.0	10.0	10.0	9.7	...	...	...	...	...	...	...	...	...	...	...
10	10.0	10.0	10.0	10.0	10.0	9.7	...	...	...	...	...	...	...	...	...	...	...
11	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	...	...	...	...	...	...
12	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.8	9.5	8.9	8.3	...	...	...	...	...	...
13	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	...	...	...	...	...	...
14	6.7	6.6	6.4	6.3	6.3	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.0	5.9	5.8	4.8
15	16.6	...	14.6	...	13.6	...	13.2	...	13.1	...	13.1	13.1	13.1	12.9	12.7	...	...
16	16.6	...	14.6	...	13.6	...	13.2	...	13.1	...	13.1	13.1	13.1	13.0	12.7	11.0	8.0
17	18.7	...	18.7	...	18.7	...	18.0	...	17.8	...	17.4	17.2	17.0	15.8	14.5	...	...
18	18.7	...	18.7	...	18.7	...	18.0	...	17.8	...	17.4	17.2	17.0	16.8	14.5	8.5	4.0
19	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	19.6	19.2	16.9	14.5	...	...
20	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	19.2	18.5	14.5	8.5	4.0
21	12.5	...	12.5	...	12.5	...	12.5	...	12.5	...	...	...	...	...	...	...	...
22	13.7	...	13.7	...	13.7	...	13.7	...	13.7	...	...	...	...	...	...	...	...
23	13.7	...	13.7	...	13.7	...	13.7	...	13.7	...	...	...	...	...	...	...	...
24	17.5	...	17.5	...	17.5	...	17.5	...	17.5	...	...	...	...	...	...	...	...
25	16.6	...	14.6	...	13.6	...	13.2	...	13.1	...	13.1	13.1	13.1	12.9	12.7	...	...
26	16.6	...	14.6	...	13.6	...	13.2	...	13.1	...	13.1	13.1	13.1	13.0	12.7	11.0	8.0
27	18.7	...	18.7	...	18.7	...	18.7	...	18.7	...	18.7	18.4	18.0	16.3	14.5	...	...
28	18.7	...	18.7	...	18.7	...	18.7	...	18.7	...	18.7	18.7	18.0	17.2	14.5	8.5	4.0
29	12.5	...	12.5	...	12.5	...	12.5	...	12.5	...	...	...	...	...	...	...	...
30	23.3	...	20.9	...	19.2	...	17.8	...	16.5	...	15.6	15.3	15.0	14.9	14.7	14.6	14.5
31	20.0	...	19.9	...	16.6	...	15.6	...	15.0	...	14.4	14.2	14.0	13.9	13.8	13.7	13.6
32	22.5	...	20.9	...	19.5	...	18.2	...	17.4	...	16.8	16.6	16.4	16.3	16.1	16.0	16.0
33	25.0	...	25.0	...	24.5	...	22.7	...	21.2	...	20.1	19.6	19.2	18.9	18.6	...	...
34	21.3	...	20.0	...	18.3	...	17.2	...	16.4	...	15.8	15.5	15.2	14.9	14.6	...	...
35	25.0	...	24.6	...	23.0	...	21.7	...	20.9	...	20.1	19.8	19.6	19.4	19.1	...	...

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
															Nonferrous Materials (Cont'd)
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	3.7	3.0	2.4	2.0	1.5	1.2	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	14.4	14.3	14.2	14.2	14.1	11.3	9.3	7.7	6.1	4.8	3.8	3.0	2.3	1.7	1.2
31	13.6	13.5	...	...	...	...	...	...	...	...	...	...	...	...	...
32	15.9	15.8	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.
	Nonferrous Materials (Cont'd)						
1	72Ni–15Cr–8Fe	Bolting	SB-166	...	N06600	Annealed	...
2	72Ni–15Cr–8Fe	Bolting	SB-166	...	N06600	Hot fin.	...
3	72Ni–15Cr–8Fe	Bolting	SB-166	...	N06600	Cold drawn	...
4	72Ni–15Cr–8Fe	Bolting	SB-166	...	N06600	Hot fin.	...
5	72Ni–15Cr–8Fe	Bolting	SB-166	...	N06600	Hot fin.	...
6	60Ni–22Cr–9Mo–3.5Cb	Bolting	SB-446	1	N06625	Annealed	...
7	49Ni–25Cr–18Fe–6Mo	Bolting	SB-581	...	N06975	Solution ann.	...
8	53Ni–19Cr–19Fe–Cb–Mo	Bolting	SB-637	...	N07718	Solution ann.	≤ 6
9	70Ni–16Cr–7Fe–Ti–Al	Bolting	SB-637	2	N07750	Solution ann.	...
10	26Ni–43Fe–22Cr–5Mo	Bolting	SB-621	...	N08320	Solution ann.	...
11	33Ni–42Fe–21Cr	Bolting	SB-408	...	N08800	Annealed	...
12	33Ni–42Fe–21Cr	Bolting	SB-408	...	N08810	Annealed	...
13	42Ni–21.5Cr–3Mo–2.3Cu	Bolting	SB-425	...	N08825	Annealed	...
14	62Ni–28Mo–5Fe	Bolting	SB-335	...	N10001	Annealed	$1\frac{1}{2} < t \leq 3\frac{1}{2}$
15	62Ni–28Mo–5Fe	Bolting	SB-335	...	N10001	Annealed	$\leq 1\frac{1}{2}$
16	70Ni–16Mo–7Cr–5Fe	Bolting	SB-573	...	N10003	Annealed	...
17	54Ni–16Mo–15Cr	Bolting	SB-574	...	N10276	Solution ann.	...
18	65Ni–28Mo–2Fe	Bolting	SB-335	...	N10665	Solution ann.	...
19	21Ni–30Fe–22Cr–18Co–3Mo–3W	Bolting	SB-572	...	R30556	Annealed	...

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applicability and Max. Temp. Limits (NP = Not Permitted)			Notes
			III	VIII-1	VIII-2	
						Nonferrous Materials (Cont'd)
1	80	35	800	1200	800	...
2	85	35	800	1200	800	...
3	90	40	NP	500	500	G3, H1
4	90	40	800	NP	NP	...
5	90	40	NP	1200	800	...
6	120	60	NP	1200	800	G13
7	85	32	NP	800	800	...
8	185	150	800	1150	800	W4, W6
9	170	115	800	800	800	...
10	75	28	NP	800	800	...
11	75	30	NP	1500	800	...
12	65	25	NP	1650	800	...
13	85	35	NP	1000	800	...
14	100	46	800	800	800	...
15	115	46	800	800	800	...
16	100	40	NP	1300	800	...
17	100	41	NP	1000	800	...
18	110	51	NP	800	800	...
19	100	45	NP	1650	800	...

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
	Nonferrous Materials (Cont'd)																
1	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	19.8	19.6	19.4	19.1	18.7	16.0
2	21.2	...	21.2	...	21.2	...	21.2	...	21.2	...	21.2	21.2	21.1	21.0	20.4	20.2	19.5
3	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	...	...	...	...	...	...	...
4	10.0	...	9.5	...	9.2	...	9.1	...	9.1	...	9.1	9.0	8.9	8.9	8.8	...	...
5	21.2	...	21.2	...	21.2	...	21.2	...	21.2	...	21.2	21.2	21.1	21.0	20.4	20.2	19.5
6	30.0	...	30.0	...	30.0	...	28.2	...	27.0	...	26.4	26.2	26.0	26.0	24.6	24.3	24.0
7	21.3	...	19.6	...	18.4	...	17.6	...	16.5	...	15.6	15.3	15.1	14.9	14.7	...	...
8	37.0	...	36.0	...	35.2	...	34.6	...	34.2	...	33.8	33.7	33.6	33.5	33.3	33.1	32.9
9	28.7	...	28.7	...	28.7	...	28.7	...	28.7	...	28.7	28.7	28.7	28.7	28.7	...	...
10	18.7	...	17.3	...	16.4	...	15.3	...	14.6	...	13.7	13.5	13.2	12.9	12.8	...	...
11	18.7	...	18.7	...	17.9	...	17.2	...	16.7	...	16.3	16.1	15.9	15.7	15.5	15.3	15.1
12	16.2	...	15.4	...	14.5	...	13.5	...	12.9	...	12.2	11.9	11.7	11.4	11.1	10.9	10.7
13	21.2	...	21.2	...	20.4	...	19.2	...	18.3	...	17.8	17.6	17.3	17.2	17.1	16.9	16.8
14	25.0	...	25.0	...	25.0	...	24.7	...	24.3	...	23.7	23.4	23.0	22.8	22.5	...	...
15	11.5	...	10.0	...	9.8	...	9.1	...	8.8	...	8.3	8.3	8.3	8.3	8.3	...	...
16	25.0	...	24.0	...	23.0	...	21.0	...	20.0	...	20.0	19.5	19.0	18.5	18.0	17.7	17.5
17	25.0	...	25.0	...	23.0	...	21.2	...	20.0	...	18.8	18.3	17.8	17.4	17.1	16.8	16.6
18	27.5	...	27.5	...	27.5	...	27.5	...	27.5	...	27.2	26.8	26.6	26.1	25.6	...	...
19	25.0	...	25.0	...	23.1	...	21.3	...	20.1	...	19.3	19.0	18.7	18.5	18.2	18.0	17.8

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TABLE 3 (CONT'D)
SECTION III, CLASS 2 AND 3;* AND SECTION VIII, DIVISIONS 1 and 2†
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Appendix 3 of Section VIII, Division 2)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
															Nonferrous Materials (Cont'd)
1	10.6	7.0	4.5	3.0	2.2	2.2	...	...	...	...	...	...	...	...	...
2	19.3	14.5	10.3	7.2	5.8	5.5	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	19.3	14.5	10.3	7.2	5.8	5.5	...	...	...	...	...	...	...	...	...
6	23.9	23.7	23.6	23.4	21.0	13.2	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	32.6	32.3	32.0	30.7	29.5	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	14.9	14.7	14.5	13.0	9.8	6.6	4.2	2.2	1.6	1.1	1.0	0.80	...	...	...
12	10.5	10.3	10.1	10.0	9.3	7.4	5.9	4.7	3.8	3.0	2.4	1.9	1.5	1.2	0.98
13	16.7	16.6	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	17.3	17.0	15.5	12.4	9.3	6.6	4.8	3.5	...	...	...	...	...	...	...
17	16.5	16.5	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	17.6	17.4	17.2	17.1	16.9	13.6	10.9	8.8	7.0	5.6	4.5	3.6	2.8	2.2	1.8

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NOTES TO TABLE 3

GENERAL NOTES:

(a) The stress values in this Table may be interpolated to determine values for intermediate temperatures.

(b) When used for Section III Class MC design, the stress values listed herein shall be multiplied by a factor of 1.1 (NE-3112.4); these values shall be considered as design stress intensities or allowable stress values as required by NE-3200 or NE-3300, respectively.

(c) For Section VIII applications, stress values in restricted shear, such as in dowel bolts, rivets, or similar construction in which the shearing member is so restricted that the section under consideration would fail without reduction of area, shall be 0.80 times the values in this Table.

(d) For Section VIII applications, stress values in bearing shall be 1.60 times the values in this Table.

(e) These stress values are established from a consideration of strength only and will be satisfactory for average service. For bolted joints where freedom from leakage over a long period of time without retightening is required, lower stress values may be necessary as determined from the relative flexibility of the flange and bolts, and corresponding relaxation properties.

(f) Stress values for –20 to 100°F are applicable for colder temperatures when toughness requirements of Section III or Section VIII are met.

(g) For bolting with a reported hardness exceeding 350 HB, user is cautioned that under certain conditions of temperature and environment or fatigue conditions, stress corrosion cracking of this high hardness bolting shall be considered.

(h) The following abbreviations are used: ann., annealed; CD, Cold drawn; Cond., Condition; Desig., Designation; fin., finished; rel., relieved; str., stress; Temp., Temperature; and wld., welded.

NOTES — GENERAL REQUIREMENTS:

G1 Between temperatures of –20 to 400°F, stress values are set equal to the lower of the following: 20% of the specified minimum tensile strength, or 25% of the specified minimum yield strength.

G2 Copper–silicon alloys are not always suitable when exposed to certain media and high temperatures, particularly steam above 212°F. The owner, the owner's designated agent, or the user should ensure himself that the alloy selected is satisfactory for the service for which it is to be used.

G3 The maximum operating temperature is arbitrarily set at 500°F because harder temper adversely affects design stress in the creep rupture temperature range.

G4 This material has reduced toughness at room temperature after exposure for about 5000 hr at 600°F and after shorter exposure above 650°F.

G5 At temperatures above 1000°F, these stress values apply only when the carbon is 0.04% or higher on heat analysis.

G6 For temperatures above 1000°F, these stress values may be used only if the material is heat treated by heating it to a minimum temperature of 1900°F.

G7 The user is cautioned that under certain conditions of temperature and environment or fatigue conditions, stress corrosion of this material shall be considered.

G8 For all design temperatures, the maximum hardness shall be Rockwell C35 immediately under thread roots. The hardness shall be taken on a flat area at least $\frac{1}{8}$ in. across, prepared by removing threads; no more material than necessary shall be removed to prepare the flat area. Hardness determinations shall be made at the same frequency as tensile tests.

G9 For Section VIII, Division 1 applications, use of external pressure charts for material in the form of barstock is permitted for stiffening rings only.

G10 For Section III applications, impact testing in accordance with Subarticle NX-2300 is not required.

G11 The shipping lot testing method of SA-574, 10.3, is prohibited.

G12 For stress relieved tempers (T351, T3510, T3511, T451, T4510, T4511, T651, T6510, T6511), stress values for material in the basic temper shall be used.

G13 Alloy N06625 in the annealed condition is subject to severe loss of impact strength at room temperatures after exposure in the range of 1000°F to 1400°F.

NOTES — HEAT TREATMENT REQUIREMENTS:

H1 Design stresses for the cold drawn temper based on hot rolled properties until required data on cold drawn is submitted.

NOTES — WELDING REQUIREMENTS:

W1 Welding, brazing, and thermal cutting are not permitted.

W2 If welded, the allowable stress values for the annealed condition shall be used.

W3 This material may be welded by the resistance technique.

W4 The stress values given for this material are not applicable when either welding or thermal cutting is employed.

W5 Strength of reduced section tension specimen required to qualify welding procedures. See QW-150, Section IX.

W6 Except for nonstructural tack welds used as a locking device, welding is prohibited for Section VIII, Division 1 use.

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TABLE 4
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2*
DESIGN STRESS INTENSITY VALUES S_m FOR BOLTING MATERIALS
(*Use With Appendices 4, 5, and 6 of Section VIII, Division 2)

Line No.	Nominal Composition	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.
	Ferrous Materials					
1	1Cr–1Mn–¼Mo	SA-540	B22	K41420	5	$2 < t \le 4$
2	1Cr–1Mn–¼Mo	SA-540	B22	K41420	5	≤ 2
3	1Cr–1Mn–¼Mo	SA-540	B22	K41420	4	≤ 4
4	1Cr–1Mn–¼Mo	SA-540	B22	K41420	3	≤ 4
5	1Cr–1Mn–¼Mo	SA-540	B22	K41420	2	≤ 3
6	1Cr–1Mn–¼Mo	SA-540	B22	K41420	1	$\le 1\frac{1}{2}$
7	1Cr–⅕Mo	SA-193	B7	G41400	...	$4 < t \le 7$
8	1Cr–⅕Mo	SA-193	B7M	G41400	...	$\le 2\frac{1}{2}$
9	1Cr–⅕Mo	SA-193	B7	G41400	...	$2\frac{1}{2} < t \le 4$
10	1Cr–⅕Mo	SA-193	B7	G41400	...	$2\frac{1}{2} < t \le 4$
11	1Cr–⅕Mo	SA-193	B7	G41400	...	$\le 2\frac{1}{2}$
12	1Cr–½Mo–V	SA-193	B16	K14072	...	$4 < t \le 7$
13	1Cr–½Mo–V	SA-193	B16	K14072	...	$4 < t \le 7$
14	1Cr–½Mo–V	SA-193	B16	K14072	...	$2\frac{1}{2} < t \le 4$
15	1Cr–½Mo–V	SA-193	B16	K14072	...	$2\frac{1}{2} < t \le 4$
16	1Cr–½Mo–V	SA-540	B21	K14073	5	$2 < t \le 8$
17	1Cr–½Mo–V	SA-540	B21	K14073	5	≤ 2
18	1Cr–½Mo–V	SA-193	B16	K14072	...	$\le 2\frac{1}{2}$
19	1Cr–½Mo–V	SA-193	B16	K14072	...	$\le 2\frac{1}{2}$
20	1Cr–½Mo–V	SA-540	B21	K14073	4	≤ 6
21	1Cr–½Mo–V	SA-540	B21	K14073	3	≤ 6
22	1Cr–½Mo–V	SA-540	B21	K14073	2	≤ 4
23	1Cr–½Mo–V	SA-540	B21	K14073	1	≤ 4
24	12Cr–1Mo–V–W	SA-437	B4C	K91352	...	...
25	12Cr–1Mo–V–W	SA-437	B4B	K91352	...	...
26	13Cr	SA-193	B6	S41000	...	≤ 4
27	17Cr–4Ni–4Cu	SA-564	630	S17400	H1100	≤ 8
28	17Cr–4Ni–4Cu	SA-705	630	S17400	H1100	≤ 8
29	1¾Ni–¾Cr–¼Mo	SA-320	L43	G43400	...	≤ 4
30	2Ni–¾Cr–¼Mo	SA-540	B23	H43400	5	$6 < t \le 9\frac{1}{2}$
31	2Ni–¾Cr–¼Mo	SA-540	B23	H43400	5	$6 < t \le 9\frac{1}{2}$
32	2Ni–¾Cr–¼Mo	SA-540	B23	H43400	5	≤ 6
33	2Ni–¾Cr–¼Mo	SA-540	B23	H43400	4	$\le 9\frac{1}{2}$
34	2Ni–¾Cr–¼Mo	SA-540	B23	H43400	3	$\le 9\frac{1}{2}$
35	2Ni–¾Cr–¼Mo	SA-540	B23	H43400	2	$\le 9\frac{1}{2}$
36	2Ni–¾Cr–¼Mo	SA-540	B23	H43400	1	≤ 8
37	2Ni–¾Cr–⅓Mo	SA-540	B24	K24064	5	$6 < t \le 9\frac{1}{2}$
38	2Ni–¾Cr–⅓Mo	SA-540	B24	K24064	5	$6 < t \le 9\frac{1}{2}$
39	2Ni–¾Cr–⅓Mo	SA-540	B24	K24064	5	≤ 6

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TABLE 4
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2*
DESIGN STRESS INTENSITY VALUES S_m FOR BOLTING MATERIALS
(*Use With Appendices 4, 5, and 6 of Section VIII, Division 2)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applicability and Max. Temp. Limits (NP = Not Permitted)		Notes
			III	VIII-2	
					Ferrous Materials
1	115	100	700	700	G5
2	120	105	700	700	G5
3	135	120	700	700	G5
4	145	130	700	700	G4
5	155	140	700	700	G4
6	165	150	600	600	G2
7	100	75	800	800	G5
8	100	80	NP	800	G5
9	115	95	800	NP	G6
10	115	95	NP	800	G5
11	125	105	800	800	G5
12	100	85	800	NP	...
13	100	85	NP	800	...
14	110	95	800	NP	...
15	110	95	NP	800	...
16	115	100	700	700	G5
17	120	105	700	700	G5
18	125	105	800	NP	...
19	125	105	NP	800	...
20	135	120	700	700	G5
21	145	130	700	700	G4
22	155	140	700	700	G4
23	165	150	700	700	G2
24	115	85	700	700	...
25	145	105	700	700	...
26	110	85	700	700	...
27	140	115	650	650	G3
28	140	115	650	650	G3
29	125	105	800	800	G5
30	115	100	700	NP	G5
31	115	100	NP	700	G5
32	120	105	700	700	G5
33	135	120	700	700	G5
34	145	130	700	700	G4, G5
35	155	140	700	700	G4
36	165	150	600	600	G2
37	115	100	700	NP	G5
38	115	100	NP	700	G5
39	120	105	700	700	G5

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TABLE 4
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2*
DESIGN STRESS INTENSITY VALUES S_m FOR BOLTING MATERIALS
(Use with Appendices 4, 5, and 6 of Section VIII, Division 2)

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	–20 to 100	200	300	400	500	600	650	700	750	800
	Ferrous Materials									
1	33.3	31.8	30.9	29.8	28.9	27.6	...	25.9	...	...
2	35.0	33.4	32.4	31.3	30.3	29.0	...	27.2	...	...
3	40.0	38.2	36.9	35.9	34.7	33.1	...	31.1	...	...
4	43.3	41.4	40.2	38.8	37.6	35.9	...	33.7	...	...
5	46.7	44.6	43.1	41.8	40.5	38.7	...	36.3	...	...
6	50.0	47.8	46.2	44.8	43.4	41.4	...	...	...	...
7	25.0	23.3	22.4	21.8	21.0	20.3	19.7	19.2	18.5	17.5
8	26.7	24.8	23.8	23.2	22.4	21.7	...	20.5	...	18.8
9	31.6	29.5	28.4	27.4	26.7	25.7	25.0	24.3	23.4	22.3
10	31.7	29.5	28.4	27.4	26.7	25.7	...	24.3	...	22.3
11	35.0	32.6	31.4	30.5	29.5	28.4	27.6	26.8	25.8	24.6
12	28.3	27.4	26.6	25.9	25.2	24.5	...	23.7	...	22.6
13	28.3	27.5	26.9	26.3	25.7	25.0	...	23.8	...	22.4
14	31.7	30.6	29.7	29.0	28.2	27.4	...	26.5	...	25.3
15	31.7	30.7	30.0	29.4	28.8	27.9	...	26.6	...	25.1
16	33.3	32.2	31.3	30.5	29.7	28.8	...	27.9	...	...
17	35.0	33.8	32.8	32.0	31.2	30.3	...	29.3	...	...
18	35.0	33.8	32.8	32.0	31.2	30.3	...	29.3	...	27.9
19	35.0	34.0	33.2	32.5	31.8	30.9	...	29.4	...	27.7
20	40.0	38.7	37.5	36.6	35.6	34.6	...	33.4	...	...
21	43.3	41.9	40.6	39.7	38.6	37.5	...	36.2	...	...
22	46.7	45.1	43.8	42.7	41.5	40.4	...	39.0	...	...
23	50.0	48.4	46.9	45.8	44.5	43.3	...	41.8	...	...
24	28.3	27.2	26.3	25.6	25.0	24.6	24.3	24.0	...	...
25	35.0	33.5	32.4	31.6	30.9	30.2	29.9	29.7	...	...
26	28.3	27.0	26.1	25.3	24.6	23.9	...	23.3	...	...
27	38.3	35.4	33.9	32.7	31.7	30.9	30.5	...	...	...
28	38.3	35.4	33.9	32.7	31.7	30.9	30.5	...	...	...
29	35.0	33.0	31.9	30.6	29.5	28.1	...	26.4	...	24.2
30	33.3	31.8	30.9	29.8	28.9	27.6	...	25.9	...	...
31	33.3	31.8	30.7	29.8	28.9	27.6	...	25.9	...	...
32	35.0	33.4	32.4	31.3	30.3	29.0	...	27.2	...	...
33	40.0	38.2	36.9	35.9	34.7	33.1	...	31.1	...	...
34	43.3	41.4	40.2	38.8	37.6	35.9	...	33.7	...	...
35	46.7	44.6	43.1	41.8	40.5	38.7	...	36.3	...	...
36	50.0	47.8	46.2	44.8	43.4	41.4	...	...	...	...
37	33.3	31.8	30.9	29.8	28.9	27.6	...	25.9	...	...
38	33.3	31.8	30.7	29.8	28.9	27.6	...	25.9	...	...
39	35.0	33.4	32.4	31.3	30.3	29.0	...	27.2	...	...

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TABLE 4 (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2*
DESIGN STRESS INTENSITY VALUES S_m FOR BOLTING MATERIALS
(*Use With Appendices 4, 5, and 6 of Section VIII, Division 2)

Line No.	Nominal Composition	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.
	Ferrous Materials (Cont'd)					
1	2Ni–¾Cr–⅓Mo	SA-540	B24	K24064	4	≤ 9½
2	2Ni–¾Cr–⅓Mo	SA-540	B24	K24064	3	≤ 9½
3	2Ni–¾Cr–⅓Mo	SA-540	B24	K24064	2	≤ 9½
4	2Ni–¾Cr–⅓Mo	SA-540	B24	K24064	1	≤ 8
5	2Ni–¾Cr–⅓Mo–V	SA-540	B24V	K24070	3	≤ 11
6	26Ni–15Cr–2Ti	SA-453	660	S66286	A	...
7	26Ni–15Cr–2Ti	SA-453	660	S66286	B	...
8	16Cr–12Ni–2Mo	SA-193	B8M	S31600	1/Sol. treat.	...
9	16Cr–12Ni–2Mo–N	SA-193	B8MNA	S31651	1A/Sol. treat.	...
10	18Cr–8Ni	SA-193	B8	S30400	1/Sol. treat.	...
11	18Cr–8Ni–N	SA-193	B8NA	S30451	1A/Sol. treat.	...
12	18Cr–8Ni–4Si–N	SA-193	B8S	S21800	Sol. treat.	...
13	18Cr–8Ni–4Si–N	SA-193	B8SA	S21800	Sol. treat.	...
14	18Cr–10Ni–Cb	SA-193	B8C	S34700	1/Sol. treat.	...
15	18Cr–10Ni–Ti	SA-193	B8T	S32100	1/Sol. treat.	...
16	19Cr–9Ni–Mo–W	SA-453	651	S63198	B	> 3
17	19Cr–9Ni–Mo–W	SA-453	651	S63198	B	≤ 3
18	19Cr–9Ni–Mo–W	SA-453	651	S63198	A	> 3
19	19Cr–9Ni–Mo–W	SA-453	651	S63198	A	≤ 3
20	22Cr–13Ni–5Mn	SA-193	B8R	S20910	1C/Sol. treat.	...
21	22Cr–13Ni–5Mn	SA-193	B8RA	S20910	Sol. treat.	...
	Nonferrous Materials					
22	67Ni–30Cu	SB-164	...	N04400	Annealed	...
23	67Ni–30Cu	SB-164	...	N04400	Hot worked	...
24	67Ni–30Cu	SB-164	...	N04400	Hot worked	...
25	67Ni–30Cu	SB-164	...	N04400	CD-str. rel.	...
26	67Ni–30Cu	SB-164	...	N04400	CD-str. rel.	...
27	67Ni–30Cu	SB-164	...	N04400	As drawn	...
28	67Ni–30Cu	SB-164	...	N04400	CD-str. rel.	...
29	67Ni–30Cu	SB-164	...	N04400	As drawn	...
30	67Ni–30Cu–S	SB-164	...	N04405	Annealed	...
31	67Ni–30Cu–S	SB-164	...	N04405	Hot worked	...
32	67Ni–30Cu–S	SB-164	...	N04405	As drawn	...
33	53Ni–19Cr–19Fe–Cb–Mo	SB-637	...	N07718	...	≤ 6
34	70Ni–16Cr–7Fe–Ti–Al	SB-637	2	N07750	...	< 4

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TABLE 4 (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2*
DESIGN STRESS INTENSITY VALUES S_m FOR BOLTING MATERIALS
(*Use With Appendices 4, 5, and 6 of Section VIII, Division 2)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applicability and Max. Temp. Limits (NP = Not Permitted)		Notes
			III	VIII-2	
					Ferrous Materials (Cont'd)
1	135	120	700	700	G5
2	145	130	700	700	G4, G5
3	155	140	700	700	G4
4	165	150	600	600	G2
5	145	130	700	700	G4
6	130	85	800	800	G1
7	130	85	800	800	G1
8	75	30	800	800	...
9	75	30	800	800	...
10	75	30	800	800	...
11	75	30	800	800	...
12	95	50	800	800	...
13	95	50	800	800	...
14	75	30	800	800	...
15	75	30	800	800	...
16	95	50	800	800	...
17	95	60	800	800	...
18	100	60	800	800	...
19	100	70	800	800	...
20	100	55	800	800	...
21	100	55	800	800	...
					Nonferrous Materials
22	70	25	800	800	...
23	75	30	800	800	...
24	80	40	800	800	...
25	80	50	500	500	...
26	84	55	500	500	...
27	85	55	500	500	...
28	87	60	500	500	...
29	110	85	500	500	...
30	70	25	800	800	...
31	75	35	800	800	...
32	85	50	500	500	...
33	185	150	800	800	...
34	170	115	800	800	...

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TABLE 4 (CONT'D)
SECTION III, CLASS 1 AND SECTION VIII, DIVISION 2*
DESIGN STRESS INTENSITY VALUES S_m FOR BOLTING MATERIALS
(Use with Appendices 4, 5, and 6 of Section VIII, Division 2)

Line No.	Design Stress Intensity, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	–20 to 100	200	300	400	500	600	650	700	750	800
	Ferrous Materials (Cont'd)									
1	40.0	38.2	36.9	35.9	34.7	33.1	...	31.1	...	...
2	43.3	41.4	40.2	38.8	37.6	35.9	...	33.7	...	...
3	46.7	44.6	43.1	41.8	40.5	38.7	...	36.3	...	...
4	50.0	47.8	46.2	44.8	43.4	41.4	...	...	...	...
5	43.3	41.4	40.2	38.8	37.6	35.9	...	33.7	...	...
6	28.3	27.8	27.3	26.9	26.4	26.0	25.7	25.5	25.2	25.0
7	28.3	27.8	27.3	26.9	26.4	26.0	25.7	25.5	25.2	25.0
8	10.0	8.6	7.8	7.2	6.7	6.3	...	6.0	...	5.8
9	10.0	8.9	8.1	7.6	7.1	6.7	6.5	6.4	6.2	6.1
10	10.0	8.3	7.5	6.9	6.5	6.1	...	5.9	...	5.6
11	10.0	8.2	7.2	6.4	6.0	5.7	5.6	5.4	5.4	5.3
12	16.7	13.0	11.0	9.9	9.2	8.8	8.7	8.5	8.5	8.4
13	16.7	13.0	11.0	9.9	9.2	8.8	8.7	8.5	8.5	8.4
14	10.0	9.2	8.6	8.0	7.5	7.2	...	6.9	...	6.8
15	10.0	9.0	8.3	7.7	7.2	6.8	...	6.5	...	6.3
16	16.7	15.3	14.2	13.3	12.7	12.0	...	11.5	...	11.1
17	20.0	18.3	17.0	16.0	15.1	14.5	...	13.8	...	13.2
18	20.0	18.3	17.0	16.0	15.1	14.5	...	13.8	...	13.2
19	23.3	21.4	19.8	18.7	17.7	16.9	...	16.1	...	15.4
20	18.3	15.7	14.5	13.6	12.9	12.4	12.3	12.1	11.9	11.8
21	18.3	15.7	14.5	13.6	12.9	12.4	12.3	12.1	11.9	11.8
	Nonferrous Materials									
22	8.3	7.3	6.9	6.6	6.6	6.6	6.6	6.6	...	6.3
23	10.0	8.8	8.2	7.9	7.9	7.9	7.9	7.9	...	7.6
24	13.3	11.7	11.0	10.6	10.6	10.6	10.6	10.6	...	10.1
25	16.6	14.6	13.8	13.2	13.2	...	...	...	...	...
26	18.3	16.1	15.1	14.6	14.6	...	...	...	...	...
27	18.3	16.1	15.1	14.6	14.6	...	...	...	...	...
28	20.0	17.6	16.4	15.8	15.8	...	...	...	...	...
29	28.3	24.9	23.4	22.5	22.5	...	...	...	...	...
30	8.3	7.3	6.9	6.6	6.6	6.6	6.6	6.6	...	6.3
31	11.7	10.3	9.6	9.3	9.3	9.3	9.3	9.3	...	8.9
32	16.6	14.6	13.8	13.2	13.2	...	...	...	...	...
33	50.0	48.0	46.9	46.1	45.6	45.1	...	44.8	...	44.4
34	38.3	37.3	36.8	36.3	36.0	35.8	35.7	35.6	35.5	35.4

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NOTES TO TABLE 4

GENERAL NOTES:

(a) The allowable stress values for bolting materials given in this Table do not exceed the lesser of one-third of the specified minimum yield strength or one-third of the yield strength at temperature, with credit granted for the enhancement of properties produced by heat treatment. They are intended for Section VIII, Division 2 use when flanges are designed in accordance with the rules of Appendices 4, 5, and 6 when the bolting requirements are determined in accordance with 4-140 and 4-141. They are intended for Section III use in the design equations. For allowable values of actual preload and service stresses, see Section III NB-3230 and Appendix E.

(b) Stress values for –20 to 100°F are applicable for colder temperatures when toughness requirements of Section III or Section VIII are met.

(c) The following abbreviations are used: CD, Cold drawn; Cond., Condition; Desig., Designation; rel., relieved; Sol., Solution; str., stress; Temp., Temperature; and treat., treated.

NOTES — GENERAL REQUIREMENTS:

G1 For Section III applications, impact testing in accordance with Subarticle NX-2300 is not required.

G2 Stress values may result in relaxation of the bolting materials after prolonged service at temperatures of 500°F and higher, and the designer is to investigate the effect of this relaxation on the application.

G3 This material has reduced toughness at room temperature after exposure for about 5000 hr at 600°F and after shorter exposure above 650°F.

G4 Stress values may result in relaxation of the bolting materials after prolonged service at temperatures of 600°F and higher, and the designer is to investigate the effect of this relaxation on the application.

G5 Stress values may result in relaxation of the bolting materials after prolonged service at temperatures of 700°F and higher, and the designer is to investigate the effect of this relaxation on the application.

G6 Stress values may result in relaxation of the bolting materials after prolonged service at temperatures of 750°F and higher, and the designer is to investigate the effect of this relaxation on the application.

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TABLE U
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials							
1	Carbon steel	Sheet	SA-620	...	K00040	...	...	40
2	Carbon steel	Bar	SA-675	45	...	...	...	45
3	Carbon steel	Wld. pipe	SA-134	A283A	...	...	...	45
4	Carbon steel	Plate	SA-283	A	...	...	...	45
5	Carbon steel	Plate	SA-285	A	K01700	...	...	45
6	Carbon steel	Wld. pipe	SA-672	A45	K01700	...	...	45
7	Carbon steel	Sheet	SA-414	A	K01501	...	...	45
8	Carbon steel	Wld. tube	SA-178	A	K01200	...	...	47
9	Carbon steel	Smls. tube	SA-179	...	K01200	...	...	47
10	Carbon steel	Smls. tube	SA-192	...	K01201	...	...	47
11	Carbon steel	Wld. tube	SA-214	...	K01807	...	...	47
12	Carbon steel	Wld. tube	SA-226	...	K01201	...	...	47
13	Carbon steel	Smls. tube	SA-556	A2	K01807	...	...	47
14	Carbon steel	Wld. tube	SA-557	A2	K01807	...	...	47
15	Carbon steel	Wld. pipe	SA-53	E/A	K02504	...	...	48
16	Carbon steel	Wld. pipe	SA-53	F	...	...	...	48
17	Carbon steel	Smls. pipe	SA-53	S/A	K02504	...	...	48
18	Carbon steel	Smls. pipe	SA-106	A	K02501	...	...	48
19	Carbon steel	Wld. pipe	SA-135	A	...	...	...	48
20	Carbon steel	Forged pipe	SA-369	FPA	K02501	...	...	48
21	Carbon steel	Wld. pipe	SA-587	...	K11500	...	...	48
22	Carbon steel	Bar	SA-675	50	...	...	...	50
23	Carbon steel	Wld. pipe	SA-134	A283B	...	...	...	50
24	Carbon steel	Plate	SA-283	B	...	...	...	50
25	Carbon steel	Plate	SA-285	B	K02200	...	...	50
26	Carbon steel	Wld. pipe	SA-672	A50	K02200	...	...	50
27	Carbon steel	Sheet	SA-414	B	K02201	...	...	50
28	Carbon steel	Bar	SA-675	55	...	...	...	55
29	Carbon steel	Wld. pipe	SA-134	A283C	K02401	...	...	55
30	Carbon steel	Plate	SA-283	C	K02401	...	...	55
31	Carbon steel	Plate	SA-285	C	K02801	...	...	55
32	Carbon steel	Smls. & wld. pipe	SA-333	1	K03008	...	...	55
33	Carbon steel	Smls. & wld. tube	SA-334	1	K03008	...	...	55
34	Carbon steel	Plate	SA-516	55	K01800	...	...	55
35	Carbon steel	Smls. pipe	SA-524	II	K02104	...	...	55
36	Carbon steel	Wld. pipe	SA-671	CA55	K02801	...	...	55
37	Carbon steel	Wld. pipe	SA-671	CE55	K02202	...	...	55

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TABLE U
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials
1	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	39.5	36.8	33.5	29.9	26.2	23.1
2	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	44.4	41.3	37.7	33.6	29.5	25.9
3	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	44.4	41.3	37.7	33.6	29.5	25.9
4	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	44.4	41.3	37.7	33.6	29.5	25.9
5	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	44.4	41.3	37.7	33.6	29.5	25.9
6	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	44.4	41.3	37.7	33.6	29.5	25.9
7	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	44.4	41.3	37.7	33.6	29.5	25.9
8	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	46.4	43.2	39.3	35.1	30.8	27.1
9	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	46.4	43.2	39.3	35.1	30.8	27.1
10	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	46.4	43.2	39.3	35.1	30.8	27.1
11	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	46.4	43.2	39.3	35.1	30.8	27.1
12	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	46.4	43.2	39.3	35.1	30.8	27.1
13	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	46.4	43.2	39.3	35.1	30.8	27.1
14	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	46.4	43.2	39.3	35.1	30.8	27.1
15	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	47.4	44.1	40.2	35.8	31.5	27.7
16	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	47.4	44.1	40.2	35.8	31.5	27.7
17	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	47.4	44.1	40.2	35.8	31.5	27.7
18	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	47.4	44.1	40.2	35.8	31.5	27.7
19	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	47.4	44.1	40.2	35.8	31.5	27.7
20	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	47.4	44.1	40.2	35.8	31.5	27.7
21	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	47.4	44.1	40.2	35.8	31.5	27.7
22	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	49.4	45.9	41.8	37.3	32.8	28.8
23	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	49.4	45.9	41.8	37.3	32.8	28.8
24	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	49.4	45.9	41.8	37.3	32.8	28.8
25	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	49.4	45.9	41.8	37.3	32.8	28.8
26	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	49.4	45.9	41.8	37.3	32.8	28.8
27	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	49.4	45.9	41.8	37.3	32.8	28.8
28	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	54.3	50.5	46.0	41.1	36.1	31.7
29	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	54.3	50.5	46.0	41.1	36.1	31.7
30	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	54.3	50.5	46.0	41.1	36.1	31.7
31	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	54.3	50.5	46.0	41.1	36.1	31.7
32	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	54.3	50.5	46.0	41.1	36.1	31.7
33	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	54.3	50.5	46.0	41.1	36.1	31.7
34	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	54.3	50.5	46.0	41.1	36.1	31.7
35	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	54.3	50.5	46.0	41.1	36.1	31.7
36	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	54.3	50.5	46.0	41.1	36.1	31.7
37	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	54.3	50.5	46.0	41.1	36.1	31.7

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	Carbon steel	Wld. pipe	SA-672	A55	K02801	...	...	55
2	Carbon steel	Wld. pipe	SA-672	B55	K02001	...	...	55
3	Carbon steel	Wld. pipe	SA-672	C55	K01800	...	...	55
4	Carbon steel	Wld. pipe	SA-672	E55	K02202	...	...	55
5	Carbon steel	Sheet	SA-414	C	K02503	...	...	55
6	Carbon steel	Plate, sheet, bar	SA-36	...	K02600	...	...	58
7	Carbon steel	Plate, sheet	SA-662	A	K01701	...	...	58
8	Carbon steel	Forgings	SA-181	...	K03502	60	...	60
9	Carbon steel	Castings	SA-216	WCA	J02502	...	...	60
10	Carbon steel	Forgings	SA-266	1	K03506	...	...	60
11	Carbon steel	Forgings	SA-350	LF1	K03009	1	...	60
12	Carbon steel	Castings	SA-352	LCA	J02504	...	...	60
13	Carbon steel	Cast pipe	SA-660	WCA	J02504	...	...	60
14	Carbon steel	Bar	SA-675	60	...	...	...	60
15	Carbon steel	Forgings	SA-765	I	K03046	...	...	60
16	Carbon steel	Plate	SA-515	60	K02401	...	...	60
17	Carbon steel	Plate	SA-516	60	K02100	...	...	60
18	Carbon steel	Wld. pipe	SA-671	CB60	K02401	...	...	60
19	Carbon steel	Wld. pipe	SA-671	CC60	K02100	...	...	60
20	Carbon steel	Wld. pipe	SA-671	CE60	K02402	...	...	60
21	Carbon steel	Wld. pipe	SA-672	B60	K02401	...	...	60
22	Carbon steel	Wld. pipe	SA-672	C60	K02100	...	...	60
23	Carbon steel	Wld. pipe	SA-672	E60	K02402	...	...	60
24	Carbon steel	Wld. pipe	SA-134	A283D	K02702	...	...	60
25	Carbon steel	Plate	SA-283	D	K02702	...	...	60
26	Carbon steel	Wld. pipe	SA-53	E/B	K03005	...	...	60
27	Carbon steel	Smls. pipe	SA-53	S/B	K03005	...	...	60
28	Carbon steel	Smls. pipe	SA-106	B	K03006	...	...	60
29	Carbon steel	Wld. pipe	SA-135	B	...	...	...	60
30	Carbon steel	Smls. & wld. fittings	SA-234	WPB	K03006	...	...	60
31	Carbon steel	Smls. & wld. pipe	SA-333	6	K03006	...	...	60
32	Carbon steel	Smls. & wld. tube	SA-334	6	K03006	...	...	60
33	Carbon steel	Forged pipe	SA-369	FPB	K03006	...	...	60
34	Carbon steel	Forgings	SA-372	A	K03002	...	...	60
35	Carbon steel	Sheet	SA-414	D	K02505	...	...	60
36	Carbon steel	Smls. & wld. fittings	SA-420	WPL6	...	...	...	60
37	Carbon steel	Smls. pipe	SA-524	I	K02104	...	...	60
38	Carbon steel	Bar	SA-695	B/35	K03504	...	...	60
39	Carbon steel	Bar	SA-696	B	K03200	...	...	60
40	Carbon steel	Forgings	SA-727	...	K02506	...	...	60

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
													Ferrous Materials (Cont'd)	
1	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	54.3	50.5	46.0	41.1	36.1	31.7
2	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	54.3	50.5	46.0	41.1	36.1	31.7
3	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	54.3	50.5	46.0	41.1	36.1	31.7
4	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	54.3	50.5	46.0	41.1	36.1	31.7
5	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	54.3	50.5	46.0	41.1	36.1	31.7
6	58.0	58.0	58.0	58.0	58.0	58.0	58.0	58.0	57.3	53.3	48.5	43.3	38.0	33.4
7	58.0	58.0	58.0	58.0	58.0	58.0	58.0	58.0	57.3	53.3	48.5	43.3	38.0	33.4
8	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
9	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
10	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
11	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
12	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
13	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
14	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
15	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
16	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
17	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
18	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
19	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
20	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
21	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
22	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
23	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
24	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
25	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
26	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
27	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
28	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
29	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
30	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
31	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
32	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
33	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
34	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
35	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
36	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
37	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
38	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
39	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6
40	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	Carbon steel	Wld. tube	SA-178	C	K03503	...	...	60
2	Carbon steel	Smls. tube	SA-210	A-1	K02707	...	...	60
3	Carbon steel	Smls. tube	SA-556	B2	K02707	...	...	60
4	Carbon steel	Wld. tube	SA-557	B2	K03007	...	...	60
5	Carbon steel	Plate, bar	SA/CSA-G40.21	38W	...	...	...	60
01 6	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...	> 4	64
7	Carbon steel	Bar	SA-675	65	...	...	...	65
8	Carbon steel	Castings	SA-352	LCB	J03003	...	...	65
9	Carbon steel	Plate	SA-515	65	K02800	...	...	65
10	Carbon steel	Plate	SA-516	65	K02403	...	...	65
11	Carbon steel	Wld. pipe	SA-671	CB65	K02800	...	...	65
12	Carbon steel	Wld. pipe	SA-671	CC65	K02403	...	...	65
13	Carbon steel	Wld. pipe	SA-672	B65	K02800	...	...	65
14	Carbon steel	Wld. pipe	SA-672	C65	K02403	...	...	65
15	Carbon steel	Sheet	SA-414	E	K02704	...	...	65
16	Carbon steel	Plate	SA-662	B	K02203	...	...	65
17	Carbon steel	Plate	SA-537	...	K12437	1	$2\frac{1}{2} < t \le 4$	65
18	Carbon steel	Wld. pipe	SA-691	CMSH-70	K12437	...	$2\frac{1}{2} < t \le 4$	65
01 19	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...	≤ 4	66.5
01 20	...	...	...	...	...	...	...	...
21	Carbon steel	Plate	SA-455	...	K03300	...	$0.58 < t \le \frac{3}{4}$	70
22	Carbon steel	Bar	SA-675	70	...	...	...	70
23	Carbon steel	Forgings	SA-105	...	K03504	...	...	70
24	Carbon steel	Forgings	SA-181	...	K03502	70	...	70
25	Carbon steel	Castings	SA-216	WCB	J03002	...	...	70
26	Carbon steel	Forgings	SA-266	2	K03506	...	...	70
27	Carbon steel	Forgings	SA-266	4	K03017	...	...	70
28	Carbon steel	Forgings	SA-350	LF2	K03011	...	...	70
29	Carbon steel	Forgings	SA-508	1	K13502	...	...	70
30	Carbon steel	Forgings	SA-508	1A	K13502	...	...	70
31	Carbon steel	Forgings	SA-541	1	K03506	...	...	70
32	Carbon steel	Forgings	SA-541	1A	K03506	...	...	70
33	Carbon steel	Cast pipe	SA-660	WCB	J03003	...	...	70
34	Carbon steel	Forgings	SA-765	II	K03047	...	...	70

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	
														Ferrous Materials (Cont'd)	
1	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6	
2	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6	
3	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6	
4	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	59.3	55.1	50.2	44.8	39.4	34.6	
5	60.0	58.0	58.0	58.0	58.0	58.0	58.0	58.0	57.3	53.3	48.5	43.3	38.0	33.4	
6	64.0	64.0	64.0	64.0	64.0	64.0	64.0	64.0	63.2	58.8	53.5	47.5	42.0	36.9	**01**
7	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	64.2	59.7	54.4	48.5	42.6	37.5	
8	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	64.2	59.7	54.4	48.5	42.6	37.5	
9	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	64.2	59.7	54.4	48.5	42.6	37.5	
10	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	64.2	59.7	54.4	48.5	42.6	37.5	
11	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	64.2	59.7	54.4	48.5	42.6	37.5	
12	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	64.2	59.7	54.4	48.5	42.6	37.5	
13	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	64.2	59.7	54.4	48.5	42.6	37.5	
14	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	64.2	59.7	54.4	48.5	42.6	37.5	
15	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	64.2	59.7	54.4	48.5	42.6	37.5	
16	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	64.2	59.7	54.4	48.5	42.6	37.5	
17	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	64.2	59.7	54.4	48.5	42.6	37.5	
18	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	64.2	59.7	54.4	48.5	42.6	37.5	
19	66.5	66.5	66.5	66.5	66.5	66.5	66.5	66.5	65.7	61.1	55.6	49.6	43.6	38.3	**01**
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
21	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4	
22	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4	
23	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4	
24	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4	
25	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4	
26	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4	
27	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4	
28	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4	
29	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4	
30	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4	
31	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4	
32	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4	
33	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4	
34	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4	

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	Carbon steel	Plate	SA-515	70	K03101	...	...	70
2	Carbon steel	Plate	SA-516	70	K02700	...	...	70
3	Carbon steel	Wld. pipe	SA-671	CB70	K03101	...	...	70
4	Carbon steel	Wld. pipe	SA-671	CC70	K02700	...	...	70
5	Carbon steel	Wld. pipe	SA-672	B70	K03101	...	...	70
6	Carbon steel	Wld. pipe	SA-672	C70	K02700	...	...	70
7	Carbon steel	Smls. pipe	SA-106	C	K03501	...	...	70
8	Carbon steel	Wld. tube	SA-178	D	...	...	...	70
9	Carbon steel	Smls. tube	SA-210	C	K03501	...	...	70
10	Carbon steel	Castings	SA-216	WCC	J02503	...	...	70
11	Carbon steel	Smls. & wld. fittings	SA-234	WPC	K03501	...	...	70
12	Carbon steel	Castings	SA-352	LCC	J02505	...	...	70
13	Carbon steel	Castings	SA-487	16	...	A	...	70
14	Carbon steel	Plate	SA-537	...	K12437	3	$4 < t \le 6$	70
15	Carbon steel	Smls. tube	SA-556	C2	K03006	...	...	70
16	Carbon steel	Tube	SA-557	C2	K03505	...	...	70
17	Carbon steel	Cast pipe	SA-660	WCC	J02505	...	...	70
18	Carbon steel	Bar	SA-695	B/40	K03504	...	...	70
19	Carbon steel	Bar	SA-696	C	K03200	...	...	70
20	Carbon steel	Sheet	SA-414	F	K03102	...	...	70
21	Carbon steel	Plate	SA-662	C	K02007	...	...	70
22	Carbon steel	Plate	SA-537	...	K12437	2	$4 < t \le 6$	70
23	Carbon steel	Plate	SA-738	C	...	...	$4 < t \le 6$	70
24	Carbon steel	Plate	SA-537	...	K12437	1	$\le 2\frac{1}{2}$	70
25	Carbon steel	Wld. pipe	SA-671	CD70	K12437	...	$\le 2\frac{1}{2}$	70
26	Carbon steel	Wld. pipe	SA-672	D70	K12437	...	$\le 2\frac{1}{2}$	70
27	Carbon steel	Wld. pipe	SA-691	CMSH-70	K12437	...	$\le 2\frac{1}{2}$	70
28	Carbon steel	Plate	SA-455	...	K03300	...	$\frac{3}{8} < t \le \frac{5}{8}$	73
29	Carbon steel	Forgings	SA-266	3	K05001	...	...	75
30	Carbon steel	Plate	SA-455	...	K03300	...	$\le \frac{3}{8}$	75
31	Carbon steel	Plate	SA-299	...	K02803	...	> 1	75
32	Carbon steel	Wld. pipe	SA-671	CK75	K02803	...	> 1	75
33	Carbon steel	Wld. pipe	SA-672	N75	K02803	...	> 1	75
34	Carbon steel	Wld. pipe	SA-691	CMS-75	K02803	...	> 1	75
35	Carbon steel	Plate	SA-299	...	K02803	...	≤ 1	75
36	Carbon steel	Wld. pipe	SA-691	CMS-75	K02803	...	≤ 1	75
37	Carbon steel	Forgings	SA-372	B	K04001	...	...	75
38	Carbon steel	Sheet	SA-414	G	K03103	...	...	75
39	Carbon steel	Plate	SA-738	A	K12447	...	...	75

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials (Cont'd)
1	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4
2	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4
3	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4
4	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4
5	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4
6	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4
7	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4
8	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4
9	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4
10	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4
11	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4
12	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4
13	70.0	69.5	65.7	63.3	62.6	62.6	62.6	62.6	62.3	59.2	...	...	...	...
14	70.0	70.0	69.1	68.4	68.4	68.4	68.4	68.4	67.7	65.4	...	...	...	...
15	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4
16	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4
17	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4
18	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4
19	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4
20	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4
21	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.1	64.3	58.6	52.3	45.9	40.4
22	70.0	70.0	69.1	68.4	68.4	68.4	68.4	68.4	67.7	65.4	...	...	...	...
23	70.0	70.0	69.1	68.4	68.4	68.4	68.4	68.4	67.7	65.4	...	...	...	...
24	70.0	70.0	69.1	68.4	68.4	68.4	68.4	68.4	67.7	65.4	...	...	...	...
25	70.0	70.0	69.1	68.4	68.4	68.4	68.4	68.4	67.7	65.4	...	...	...	...
26	70.0	70.0	69.1	68.4	68.4	68.4	68.4	68.4	67.7	65.4	...	...	...	...
27	70.0	70.0	69.1	68.4	68.4	68.4	68.4	68.4	67.7	65.4	...	...	...	...
28	73.0	73.0	73.0	73.0	73.0	73.0	73.0	73.0	72.1	67.1	61.1	54.5	47.9	42.1
29	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	74.1	68.9	62.8	56.0	49.2	43.2
30	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	74.1	68.9	62.8	56.0	49.2	43.2
31	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	74.1	68.9	62.8	56.0	49.2	43.2
32	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	74.1	68.9	62.8	56.0	49.2	43.2
33	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	74.1	68.9	62.8	56.0	49.2	43.2
34	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	74.1	68.9	62.8	56.0	49.2	43.2
35	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	74.1	68.9	62.8	56.0	49.2	43.2
36	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	74.1	68.9	62.8	56.0	49.2	43.2
37	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	74.1	68.9	62.8	56.0	49.2	43.2
38	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	74.1	68.9	62.8	56.0	49.2	43.2
39	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	74.1	68.9	62.8	56.0	49.2	43.2

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	Carbon steel	Plate	SA-537	...	K12437	3	$2\frac{1}{2} < t \le 4$	75
2	Carbon steel	Plate	SA-537	...	K12437	2	$2\frac{1}{2} < t \le 4$	75
3	Carbon steel	Wld. pipe	SA-691	CMSH-80	K12437	...	$2\frac{1}{2} < t \le 4$	75
4	Carbon steel	Plate	SA-738	C	...	...	$2\frac{1}{2} < t \le 4$	75
5	Carbon steel	Plate	SA-537	...	K12437	3	$\le 2\frac{1}{2}$	80
6	Carbon steel	Plate	SA-537	...	K12437	2	$\le 2\frac{1}{2}$	80
7	Carbon steel	Wld. pipe	SA-671	CD80	K12437	...	$\le 2\frac{1}{2}$	80
8	Carbon steel	Wld. pipe	SA-672	D80	K12437	...	$\le 2\frac{1}{2}$	80
9	Carbon steel	Wld. pipe	SA-691	CMSH-80	K12437	...	$\le 2\frac{1}{2}$	80
10	Carbon steel	Plate	SA-738	C	...	...	$\le 2\frac{1}{2}$	80
11	Carbon steel	Plate	SA-612	...	K02900	...	$\frac{1}{2} < t \le 1$	81
12	Carbon steel	Plate	SA-738	B	K12447	...	...	85
13	Carbon steel	Forgings	SA-372	C	K04801	...	...	90
14	Carbon steel	Plate	SA-724	A	K11831	...	...	90
15	Carbon steel	Plate	SA-724	C	K12037	...	...	90
16	Carbon steel	Plate	SA-724	B	K12031	...	...	95
17	C–Mn–Cb	Sheet	SA-812	65	...	...	...	85
18	C–Mn–Si–Cb	Plate	SA-737	B	K12001	...	...	70
19	C–Mn–Si–Cb	Sheet	SA-812	80	...	...	...	100
20	C–Mn–Si–V	Plate	SA-737	C	K12202	...	...	80
21	C–Mn–Ti	Plate, sheet	SA-562	...	K11224	...	...	55
22	C–Si–Ti	Forgings	SA-836	...	...	1	...	55
23	C–$\frac{1}{2}$Mo	Smls. tube	SA-209	T1b	K11422	...	...	53
24	C–$\frac{1}{2}$Mo	Wld. tube	SA-250	T1b	K11422	...	...	53
25	C–$\frac{1}{2}$Mo	Smls. tube	SA-209	T1	K11522	...	...	55
26	C–$\frac{1}{2}$Mo	Smls. & wld. fittings	SA-234	WP1	K12821	...	...	55
27	C–$\frac{1}{2}$Mo	Wld. tube	SA-250	T1	K11522	...	...	55
28	C–$\frac{1}{2}$Mo	Smls. pipe	SA-335	P1	K11522	...	...	55
29	C–$\frac{1}{2}$Mo	Forged pipe	SA-369	FP1	K11522	...	...	55
30	C–$\frac{1}{2}$Mo	Smls. tube	SA-209	T1a	K12023	...	...	60
31	C–$\frac{1}{2}$Mo	Wld. tube	SA-250	T1a	K12023	...	...	60
32	C–$\frac{1}{2}$Mo	Castings	SA-217	WC1	J12524	...	...	65
33	C–$\frac{1}{2}$Mo	Castings	SA-352	LC1	J12522	...	...	65
34	C–$\frac{1}{2}$Mo	Cast pipe	SA-426	CP1	J12521	...	...	65
35	C–$\frac{1}{2}$Mo	Plate	SA-204	A	K11820	...	...	65
36	C–$\frac{1}{2}$Mo	Wld. pipe	SA-672	L65	K11820	...	...	65
37	C–$\frac{1}{2}$Mo	Wld. pipe	SA-691	CM-65	K11820	...	...	65

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials (Cont'd)
1	75.0	75.0	74.0	73.3	73.2	73.2	73.2	73.2	72.5	70.1	...	...	...	...
2	75.0	75.0	74.0	73.3	73.2	73.2	73.2	73.2	72.5	70.1	...	...	...	...
3	75.0	75.0	74.0	73.3	73.2	73.2	73.2	73.2	72.5	70.1	...	...	...	...
4	75.0	75.0	74.0	73.3	73.2	73.2	73.2	73.2	72.5	70.1	...	...	...	...
5	80.0	80.0	78.9	78.2	78.1	78.1	78.1	78.1	77.4	74.8	...	...	...	...
6	80.0	80.0	78.9	78.2	78.1	78.1	78.1	78.1	77.4	74.8	...	...	...	...
7	80.0	80.0	78.9	78.2	78.1	78.1	78.1	78.1	77.4	74.8	...	...	...	...
8	80.0	80.0	78.9	78.2	78.1	78.1	78.1	78.1	77.4	74.8	...	...	...	...
9	80.0	80.0	78.9	78.2	78.1	78.1	78.1	78.1	77.4	74.8	...	...	...	...
10	80.0	80.0	78.9	78.2	78.1	78.1	78.1	78.1	77.4	74.8	...	...	...	...
11	81.0	81.0	79.9	79.1	79.1	79.1	79.1	79.1	78.3	75.7	...	...	...	...
12	85.0	85.0	83.9	83.1	83.0	83.0	83.0	83.0	82.2	79.4	...	...	...	...
13	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	88.9	82.7	75.3	67.2	59.0	51.9
14	90.0	90.0	88.8	87.9	87.9	87.9	87.9	87.9	87.0	84.1	...	...	...	...
15	90.0	90.0	88.8	87.9	87.9	87.9	87.9	87.9	87.0	84.1	...	...	...	...
16	95.0	95.0	93.7	92.8	92.8	92.8	92.8	92.8	91.9	88.8	...	...	...	...
17	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	83.0	...	...	...	...	...
18	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.4	66.7	63.0	58.2	52.7	47.0	...
19	100.0	99.9	98.2	98.2	98.2	98.2	98.2	...	...	...	...	...	...	...
20	80.0	80.0	80.0	80.0	80.0	80.0	80.0	79.4	76.3	72.0	66.5	60.3	53.7	...
21	55.0	44.4	41.5	39.5	38.1	36.9	36.3	35.6	34.8	...	...	...	...	...
22	55.0	54.3	50.7	48.3	46.6	45.1	44.3	43.5	42.5	...	...	...	...	...
23	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	51.8	49.3	46.3	42.8
24	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	51.8	49.3	46.3	42.8
25	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	53.7	51.1	48.0	44.4
26	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	53.7	51.1	48.0	44.4
27	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	53.7	51.1	48.0	44.4
28	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	53.7	51.1	48.0	44.4
29	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	53.7	51.1	48.0	44.4
30	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	58.6	55.8	52.4	48.4
31	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	58.6	55.8	52.4	48.4
32	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	63.5	60.4	56.8	52.5
33	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	63.5	60.4	56.8	52.5
34	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	63.5	60.4	56.8	52.5
35	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	63.5	60.4	56.8	52.5
36	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	63.5	60.4	56.8	52.5
37	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	63.5	60.4	56.8	52.5

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	C–½Mo	Forgings	SA-182	F1	K12822	...	...	70
2	C–½Mo	Plate	SA-204	B	K12020	...	...	70
3	C–½Mo	Forgings	SA-336	F1	K12520	...	...	70
4	C–½Mo	Wld. pipe	SA-672	L70	K12020	...	...	70
5	C–½Mo	Wld. pipe	SA-691	CM-70	K12020	...	...	70
6	C–½Mo	Plate	SA-204	C	K12320	...	...	75
7	C–½Mo	Wld. pipe	SA-672	L75	K12320	...	...	75
8	C–½Mo	Wld. pipe	SA-691	CM-75	K12320	...	...	75
9	C–½Mo	Plate	SA-517	J	K11625	...	≤ 1¼	115
10	½Cr–⅕Mo–V	Plate	SA-517	B	K11630	...	≤ 1¼	115
11	½Cr–¼Mo–Si	Plate	SA-517	A	K11856	...	≤ 1¼	115
12	½Cr–¼Mo–Si	Forgings	SA-592	A	K11856	...	≤ 2½	115
13	½Cr–½Mo	Smls. pipe	SA-335	P2	K11547	...	...	55
14	½Cr–½Mo	Forged pipe	SA-369	FP2	K11547	...	...	55
15	½Cr–½Mo	Plate	SA-387	2	K12143	1	...	55
16	½Cr–½Mo	Wld. pipe	SA-691	½CR	K12143	...	...	55
17	½Cr–½Mo	Smls. tube	SA-213	T2	K11547	...	...	60
18	½Cr–½Mo	Cast pipe	SA-426	CP2	J11547	...	...	60
19	½Cr–½Mo	Forgings	SA-182	F2	K12122	...	...	70
20	½Cr–½Mo	Plate	SA-387	2	K12143	2	...	70
21	½Cr–½Mo	Wld. pipe	SA-691	½CR	K12143	...	...	70
22	½Cr–1¼Mn–Si	Plate	SA-202	A	K11742	...	...	75
23	½Cr–1¼Mn–Si	Plate	SA-202	B	K12542	...	...	85
24	¾Cr–½Ni–Cu	Wld. tube	SA-423	1	K11535	...	...	60
25	¾Cr–¾Ni–Cu–Al	Pipe	SA-333	4	K11267	...	...	60
26	1Cr–⅕Mo	Forgings	SA-372	E	K13047	70	...	120
27	1Cr–⅕Mo	Forgings	SA-372	F	G41350	70	...	120
28	1Cr–⅕Mo	Forgings	SA-372	G	K13049	70	...	120
29	1Cr–⅕Mo	Forgings	SA-372	H	K13547	70	...	120
30	1Cr–⅕Mo	Forgings	SA-372	J	K13548	70	...	120
31	1Cr–⅕Mo	Forgings	SA-372	J	G41370	110	...	135
32	1Cr–½Mo	Plate	SA-387	12	K11757	1	...	55
33	1Cr–½Mo	Wld. pipe	SA-691	1CR	K11757	...	...	55
34	1Cr–½Mo	Cast pipe	SA-426	CP12	J11562	...	...	60
35	1Cr–½Mo	Forgings	SA-182	F12	K11562	1	...	60
36	1Cr–½Mo	Smls. tube	SA-213	T12	K11562	...	...	60
37	1Cr–½Mo	Smls. & wld. fittings	SA-234	WP12	K12062	1	...	60
38	1Cr–½Mo	Smls. pipe	SA-335	P12	K11562	...	...	60
39	1Cr–½Mo	Forged pipe	SA-369	FP12	K11562	...	...	60

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials (Cont'd)
1	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	68.4	65.1	61.1	56.5
2	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	68.4	65.1	61.1	56.5
3	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	68.4	65.1	61.1	56.5
4	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	68.4	65.1	61.1	56.5
5	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	68.4	65.1	61.1	56.5
6	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	73.2	69.7	65.5	60.5
7	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	73.2	69.7	65.5	60.5
8	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	73.2	69.7	65.5	60.5
9	115.0	115.0	115.0	115.0	115.0	115.0	115.0	115.0	115.0	115.0	112.3	106.9	100.4	92.8
10	115.0	115.0	115.0	115.0	115.0	115.0	114.8	112.6	109.6	106.0	101.6	96.6	90.8	84.4
11	115.0	115.0	115.0	115.0	115.0	115.0	114.8	112.6	109.6	106.0	101.6	96.6	90.8	84.4
12	115.0	115.0	115.0	115.0	115.0	115.0	114.8	112.6	109.6	106.0	101.6	96.6	90.8	84.4
13	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	53.7	51.1	48.0	44.4
14	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	53.7	51.1	48.0	44.4
15	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	53.7	51.1	48.0	44.4
16	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	53.7	51.1	48.0	44.4
17	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	58.6	55.8	52.4	48.4
18	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	58.6	55.8	52.4	48.4
19	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	68.4	65.1	61.1	56.5
20	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	68.4	65.1	61.1	56.5
21	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	68.4	65.1	61.1	56.5
22	75.0	75.0	75.0	75.0	75.0	75.0	75.0	71.2	66.5	62.0	57.9	53.7	48.7	41.9
23	85.0	85.0	85.0	85.0	85.0	85.0	85.0	80.7	75.3	70.3	65.6	60.8	55.2	47.5
24	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	...	...	...
25	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	...	...	...
26	120.0	120.0	120.0	120.0	120.0	120.0	119.2	115.2	110.3	104.4	97.7	90.4	82.9	75.5
27	120.0	120.0	120.0	120.0	120.0	120.0	119.2	115.2	110.3	104.4	97.7	90.4	82.9	75.5
28	120.0	120.0	120.0	120.0	120.0	120.0	119.2	115.2	110.3	104.4	97.7	90.4	82.9	75.5
29	120.0	120.0	120.0	120.0	120.0	120.0	119.2	115.2	110.3	104.4	97.7	90.4	82.9	75.5
30	120.0	120.0	120.0	120.0	120.0	120.0	119.2	115.2	110.3	104.4	97.7	90.4	82.9	75.5
31	135.0	135.0	135.0	135.0	135.0	135.0	134.1	129.7	124.0	117.4	109.9	101.7	93.3	85.0
32	55.0	54.0	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	51.4	48.9	45.8
33	55.0	54.0	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	51.4	48.9	45.8
34	60.0	58.9	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	56.1	53.3	50.0
35	60.0	58.9	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	56.1	53.3	50.0
36	60.0	58.9	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	56.1	53.3	50.0
37	60.0	58.9	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	56.1	53.3	50.0
38	60.0	58.9	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	56.1	53.3	50.0
39	60.0	58.9	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	56.1	53.3	50.0

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	1Cr–½Mo	Plate	SA-387	12	K11757	2	...	65
2	1Cr–½Mo	Wld. pipe	SA-691	1CR	K11757	...	...	65
3	1Cr–½Mo	Forgings	SA-182	F12	K11564	2	...	70
4	1Cr–½Mo	Forgings	SA-336	F12	K11564	...	...	70
5	1Cr–V	Smls. tube	SA-213	T17	K12047	...	...	60
6	1¼Cr–½Mo	Castings	SA-217	WC6	J12072	...	...	70
7	1¼Cr–½Mo	Cast pipe	SA-426	CP11	J12072	...	...	70
8	1¼Cr–½Mo	Bar	SA-739	B11	K11797	...	...	70
9	1¼Cr–½Mo–Si	Smls. tube	SA-199	T11	K11597	...	...	60
10	1¼Cr–½Mo–Si	Forgings	SA-182	F11	K11597	1	...	60
11	1¼Cr–½Mo–Si	Smls. tube	SA-213	T11	K11597	...	...	60
12	1¼Cr–½Mo–Si	Smls. & wld. fittings	SA-234	WP11	...	1	...	60
13	1¼Cr–½Mo–Si	Smls. pipe	SA-335	P11	K11597	...	...	60
14	1¼Cr–½Mo–Si	Forgings	SA-336	F11	K11597	1	...	60
15	1¼Cr–½Mo–Si	Forged pipe	SA-369	FP11	K11597	...	...	60
16	1¼Cr–½Mo–Si	Plate	SA-387	11	K11789	1	...	60
17	1¼Cr–½Mo–Si	Wld. pipe	SA-691	1¼CR	K11789	...	...	60
18	1¼Cr–½Mo–Si	Forgings	SA-182	F11	K11572	2	...	70
19	1¼Cr–½Mo–Si	Forgings	SA-336	F11	K11572	2	...	70
20	1¼Cr–½Mo–Si	Forgings	SA-336	F11	K11572	3	...	75
21	1¼Cr–½Mo–Si	Plate	SA-387	11	K11789	2	...	75
22	1¼Cr–½Mo–Si	Wld. pipe	SA-691	1¼CR	K11789	...	...	75
23	1¾Cr–½Mo–Cu	Forgings	SA-592	E	K11695	...	$2\frac{1}{2} < t \le 4$	105
24	1¾Cr–½Mo–Cu	Forgings	SA-592	E	K11695	...	$\le 2\frac{1}{2}$	115
25	1¾Cr–½Mo–Ti	Plate	SA-517	E	K21604	...	$2\frac{1}{2} < t \le 6$	105
26	1¾Cr–½Mo–Ti	Plate	SA-517	E	K21604	...	$\le 2\frac{1}{2}$	115
27	2¼Cr–1Mo	Tube	SA-199	T22	K21590	...	...	60
28	2¼Cr–1Mo	Forgings	SA-182	F22	K21590	1	...	60
29	2¼Cr–1Mo	Smls. tube	SA-213	T22	K21590	...	...	60
30	2¼Cr–1Mo	Smls. & wld. fittings	SA-234	WP22	K21590	1	...	60
31	2¼Cr–1Mo	Smls. pipe	SA-335	P22	K21590	...	...	60
32	2¼Cr–1Mo	Forgings	SA-336	F22	K21590	1	...	60
33	2¼Cr–1Mo	Forged pipe	SA-369	FP22	K21590	...	...	60
34	2¼Cr–1Mo	Plate	SA-387	22	K21590	1	...	60
35	2¼Cr–1Mo	Wld. pipe	SA-691	2¼CR	K21590	...	...	60
36	2¼Cr–1Mo	Castings	SA-217	WC9	J21890	...	...	70
37	2¼Cr–1Mo	Cast pipe	SA-426	CP22	J21890	...	...	70

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials (Cont'd)
1	65.0	63.8	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	60.8	57.8	54.2
2	65.0	63.8	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	60.8	57.8	54.2
3	70.0	68.7	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	65.5	62.2	58.3
4	70.0	68.7	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	65.5	62.2	58.3
5	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	58.3	55.8	52.6	48.8
6	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	68.0	65.1	61.4	56.9
7	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	68.0	65.1	61.4	56.9
8	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	68.0	65.1	61.4	56.9
9	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	58.3	55.8	52.6	48.8
10	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	58.3	55.8	52.6	48.8
11	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	58.3	55.8	52.6	48.8
12	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	58.3	55.8	52.6	48.8
13	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	58.3	55.8	52.6	48.8
14	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	58.3	55.8	52.6	48.8
15	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	58.3	55.8	52.6	48.8
16	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	58.3	55.8	52.6	48.8
17	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	58.3	55.8	52.6	48.8
18	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	68.0	65.1	61.4	56.9
19	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	68.0	65.1	61.4	56.9
20	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	72.8	69.7	65.7	61.0
21	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	72.8	69.7	65.7	61.0
22	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	72.8	69.7	65.7	61.0
23	105.0	105.0	105.0	105.0	105.0	105.0	105.0	104.6	102.7	100.4	97.7	94.8	91.5	88.1
24	115.0	115.0	115.0	115.0	115.0	115.0	115.0	114.6	112.5	110.0	107.0	103.8	100.2	96.5
25	105.0	105.0	105.0	105.0	105.0	105.0	105.0	104.6	102.7	100.4	97.7	94.8	91.5	88.1
26	115.0	115.0	115.0	115.0	115.0	115.0	115.0	114.6	112.5	110.0	107.0	103.8	100.2	96.5
27	60.0	59.9	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	57.5	53.9
28	60.0	59.9	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	57.5	53.9
29	60.0	59.9	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	57.5	53.9
30	60.0	59.9	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	57.5	53.9
31	60.0	59.9	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	57.5	53.9
32	60.0	59.9	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	57.5	53.9
33	60.0	59.9	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	57.5	53.9
34	60.0	59.9	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	57.5	53.9
35	60.0	59.9	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	57.5	53.9
36	70.0	70.0	69.0	67.9	67.6	67.3	66.8	66.0	64.6	62.7	60.1	56.9	52.8	48.1
37	70.0	70.0	69.0	67.9	67.6	67.3	66.8	66.0	64.6	62.7	60.1	56.9	52.8	48.1

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	2¼Cr–1Mo	Forgings	SA-182	F22	K21590	3	...	75
2	2¼Cr–1Mo	Forgings	SA-336	F22	K21590	3	...	75
3	2¼Cr–1Mo	Plate	SA-387	22	K21590	2	...	75
4	2¼Cr–1Mo	Wld. pipe	SA-691	2¼CR	K21590	...	...	75
5	2¼Cr–1Mo	Bar	SA-739	B22	K21390	...	...	75
6	2¼Cr–1Mo	Castings	SA-487	8	J22091	A	...	85
7	2¼Cr–1Mo	Forgings	SA-508	22	K21590	3	...	85
8	2¼Cr–1Mo	Forgings	SA-541	22	K21390	3	...	85
9	2¼Cr–1Mo	Plate	SA-542	B	K21590	4	...	85
10	2¼Cr–1Mo	Forgings	SA-541	22	K21390	4	...	105
11	2¼Cr–1Mo–V	Forgings	SA-182	F22V	K31835	...	...	85
12	2¼Cr–1Mo–V	Forgings	SA-336	F22V	K31835	...	...	85
13	2¼Cr–1Mo–V	Forgings	SA-541	22V	K31835	...	...	85
14	2¼Cr–1Mo–V	Plate	SA-542	D	K31835	4a	...	85
15	2¼Cr–1Mo–V	Plate	SA-832	22V	K31835	...	...	85
16	3Cr–1Mo	Smls. tube	SA-199	T21	K31545	...	...	60
17	3Cr–1Mo	Smls. tube	SA-213	T21	K31545	...	...	60
18	3Cr–1Mo	Smls. pipe	SA-335	P21	K31545	...	...	60
19	3Cr–1Mo	Forgings	SA-336	F21	K31545	1	...	60
20	3Cr–1Mo	Forged pipe	SA-369	FP21	K31545	...	...	60
21	3Cr–1Mo	Plate	SA-387	21	K31545	1	...	60
22	3Cr–1Mo	Cast pipe	SA-426	CP21	J31545	...	...	60
23	3Cr–1Mo	Forgings	SA-182	F21	K31545	...	...	75
24	3Cr–1Mo	Forgings	SA-336	F21	K31545	3	...	75
25	3Cr–1Mo	Plate	SA-387	21	K31545	2	...	75
26	3Cr–1Mo–¼V–Ti–B	Forgings	SA-182	F3V	K31830	...	...	85
27	3Cr–1Mo–¼V–Ti–B	Forgings	SA-336	F3V	K31830	...	...	85
28	3Cr–1Mo–¼V–Ti–B	Forgings	SA-508	3V	K31830	...	...	85
29	3Cr–1Mo–¼V–Ti–B	Forgings	SA-541	3V	K31830	...	...	85
30	3Cr–1Mo–¼V–Ti–B	Plate	SA-542	C	K31830	4a	...	85
31	3Cr–1Mo–¼V–Ti–B	Plate	SA-832	21V	K31830	...	...	85
32	5Cr–½Mo	Smls. tube	SA-199	T5	K41545	...	...	60
33	5Cr–½Mo	Smls. tube	SA-213	T5	K41545	...	...	60
34	5Cr–½Mo	Smls. & wld. fittings	SA-234	WP5	K41545	...	...	60
35	5Cr–½Mo	Smls. pipe	SA-335	P5	K41545	...	...	60
36	5Cr–½Mo	Forged pipe	SA-369	FP5	K41545	...	...	60
37	5Cr–½Mo	Plate	SA-387	5	K41545	1	...	60
38	5Cr–½Mo	Wld. pipe	SA-691	5CR	K41545	...	...	60
39	5Cr–½Mo	Forgings	SA-336	F5	K41545	...	...	60

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials (Cont'd)
1	75.0	75.0	73.0	72.2	71.9	71.4	70.8	70.1	69.0	67.5	65.6	63.0	59.7	55.4
2	75.0	75.0	73.0	72.2	71.9	71.4	70.8	70.1	69.0	67.5	65.6	63.0	59.7	55.4
3	75.0	75.0	73.0	72.2	71.9	71.4	70.8	70.1	69.0	67.5	65.6	63.0	59.7	55.4
4	75.0	75.0	73.0	72.2	71.9	71.4	70.8	70.1	69.0	67.5	65.6	63.0	59.7	55.4
5	75.0	75.0	73.0	72.2	71.9	71.4	70.8	70.1	69.0	67.5	65.6	63.0	59.7	55.4
6	85.0	85.0	83.0	82.2	82.1	81.7	81.1	80.0	78.4	76.1	73.0	69.0	64.1	58.2
7	85.0	85.0	84.9	84.9	83.5	81.7	81.0	80.3	79.1	76.5	71.4	...	...	...
8	85.0	85.0	84.9	84.9	83.5	81.7	81.0	80.3	79.1	76.5	71.4	...	...	...
9	85.0	85.0	84.9	84.9	83.5	81.7	81.0	80.3	79.1	76.5	71.4	...	...	...
10	105.0	105.0	105.0	105.0	104.3	103.0	102.1	100.9	99.4	97.5	95.0	92.1	88.5	84.4
11	85.0	85.0	85.0	85.0	85.0	82.8	81.3	79.6	77.7	75.6	73.4	71.0	...	...
12	85.0	85.0	85.0	85.0	85.0	82.8	81.3	79.6	77.7	75.6	73.4	71.0	...	...
13	85.0	85.0	85.0	85.0	85.0	82.8	81.3	79.6	77.7	75.6	73.4	71.0	...	...
14	85.0	85.0	85.0	85.0	85.0	82.8	81.3	79.6	77.7	75.6	73.4	71.0	...	...
15	85.0	85.0	85.0	85.0	85.0	82.8	81.3	79.6	77.7	75.6	73.4	71.0	...	...
16	60.0	59.9	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	57.5	53.9
17	60.0	59.9	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	57.5	53.9
18	60.0	59.9	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	57.5	53.9
19	60.0	59.9	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	57.5	53.9
20	60.0	59.9	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	57.5	53.9
21	60.0	59.9	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	57.5	53.9
22	60.0	59.9	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	58.2	57.5	53.9
23	75.0	75.0	73.0	72.2	71.9	71.4	70.8	70.1	69.0	67.5	65.6	63.0	59.7	55.4
24	75.0	75.0	73.0	72.2	71.9	71.4	70.8	70.1	69.0	67.5	65.6	63.0	59.7	55.4
25	75.0	75.0	73.0	72.2	71.9	71.4	70.8	70.1	69.0	67.5	65.6	63.0	59.7	55.4
26	85.0	85.0	81.5	79.0	77.5	76.4	75.7	75.0	74.1	72.9	71.4	69.8	...	...
27	85.0	85.0	81.5	79.0	77.5	76.4	75.7	75.0	74.1	72.9	71.4	69.8	...	...
28	85.0	85.0	81.5	79.0	77.5	76.4	75.7	75.0	74.1	72.9	71.4	69.8	...	...
29	85.0	85.0	81.5	79.0	77.5	76.4	75.7	75.0	74.1	72.9	71.4	69.8	...	...
30	85.0	85.0	81.5	79.0	77.5	76.4	75.7	75.0	74.1	72.9	71.4	69.8	...	...
31	85.0	85.0	81.5	79.0	77.5	76.4	75.7	75.0	74.1	72.9	71.4	69.8	...	...
32	60.0	59.9	58.1	57.7	57.5	56.7	55.8	54.6	52.9	50.9	48.5	45.6	42.5	39.0
33	60.0	59.9	58.1	57.7	57.5	56.7	55.8	54.6	52.9	50.9	48.5	45.6	42.5	39.0
34	60.0	59.9	58.1	57.7	57.5	56.7	55.8	54.6	52.9	50.9	48.5	45.6	42.5	39.0
35	60.0	59.9	58.1	57.7	57.5	56.7	55.8	54.6	52.9	50.9	48.5	45.6	42.5	39.0
36	60.0	59.9	58.1	57.7	57.5	56.7	55.8	54.6	52.9	50.9	48.5	45.6	42.5	39.0
37	60.0	59.9	58.1	57.7	57.5	56.7	55.8	54.6	52.9	50.9	48.5	45.6	42.5	39.0
38	60.0	59.9	58.1	57.7	57.5	56.7	55.8	54.6	52.9	50.9	48.5	45.6	42.5	39.0
39	60.0	59.9	58.1	57.7	57.5	56.7	55.8	54.6	52.9	50.9	48.5	45.6	42.5	39.0

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	5Cr–½Mo	Forgings	SA-182	F5	K41545	...	...	70
2	5Cr–½Mo	Plate	SA-387	5	K41545	2	...	75
3	5Cr–½Mo	Forgings	SA-336	F5A	K42544	...	...	80
4	5Cr–½Mo	Castings	SA-217	C5	J42045	...	...	90
5	5Cr–½Mo	Cast pipe	SA-426	CP5	J42045	...	...	90
6	5Cr–½Mo	Forgings	SA-182	F5a	K42544	...	...	90
7	5Cr–½Mo–Si	Smls. tube	SA-213	T5b	K51545	...	...	60
8	5Cr–½Mo–Si	Smls. pipe	SA-335	P5b	K51545	...	...	60
9	5Cr–½Mo–Ti	Smls. tube	SA-213	T5c	K41245	...	...	60
10	5Cr–½Mo–Ti	Smls. pipe	SA-335	P5c	K41245	...	...	60
11	9Cr–1Mo	Smls. tube	SA-199	T9	K81590	...	...	60
12	9Cr–1Mo	Smls. tube	SA-213	T9	K81590	...	...	60
13	9Cr–1Mo	Fittings	SA-234	WP9	K90941	...	...	60
14	9Cr–1Mo	Smls. pipe	SA-335	P9	K81590	...	...	60
15	9Cr–1Mo	Forged pipe	SA-369	FP9	K90941	...	...	60
16	9Cr–1Mo	Forgings	SA-182	F9	K90941	...	...	85
17	9Cr–1Mo	Forgings	SA-336	F9	K81590	...	...	85
18	9Cr–1Mo	Castings	SA-217	C12	J82090	...	...	90
19	9Cr–1Mo	Cast pipe	SA-426	CP9	J82090	...	...	90
20	9Cr–1Mo–V	Forgings	SA-182	F91	K90901	...	≤ 3	85
21	9Cr–1Mo–V	Smls. tube	SA-213	T91	K90901	...	≤ 3	85
22	9Cr–1Mo–V	Fittings	SA-234	WP91	K90901	...	≤ 3	85
23	9Cr–1Mo–V	Smls. pipe	SA-335	P91	K90901	...	≤ 3	85
24	9Cr–1Mo–V	Forgings	SA-336	F91	K90901	...	≤ 3	85
25	9Cr–1Mo–V	Forged pipe	SA-369	FP91	K90901	...	≤ 3	85
26	9Cr–1Mo–V	Plate	SA-387	91	K90901	2	≤ 3	85
27	11Cr–Ti	Plate	SA-240	TP409	S40900	...	...	55
28	11Cr–Ti	Smls. & wld. tube	SA-268	TP409	S40900	...	...	55
29	12Cr	Bar	SA-479	403	S40300	A	...	70
30	12Cr	Bar	SA-479	403	S40300	1	...	70
31	12Cr–Al	Plate	SA-240	405	S40500	...	...	60
32	12Cr–Al	Bar	SA-479	405	S40500	...	...	60
33	12Cr–Al	Smls. & wld. tube	SA-268	TP405	S40500	...	...	60
34	12Cr–Ti	Smls. & wld. tube	SA-268	...	S40800	...	...	55
35	13Cr	Plate	SA-240	410S	S41008	...	...	60
36	13Cr	Smls. & wld. tube	SA-268	TP410	S41000	...	...	60
37	13Cr	Plate	SA-240	410	S41000	...	...	65

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials (Cont'd)
1	70.0	69.9	67.8	67.3	67.1	66.1	65.1	63.7	61.8	59.4	56.5	53.2	49.5	45.5
2	75.0	74.8	72.7	72.1	71.9	70.8	69.7	68.2	66.2	63.6	60.6	57.0	53.1	48.7
3	80.0	79.8	77.5	76.9	76.7	75.5	74.4	72.8	70.6	67.9	64.6	60.9	56.6	52.0
4	90.0	89.8	87.2	86.5	86.2	85.0	83.7	81.9	79.4	76.4	72.7	68.5	63.7	58.5
5	90.0	89.8	87.2	86.5	86.2	85.0	83.7	81.9	79.4	76.4	72.7	68.5	63.7	58.5
6	90.0	89.8	87.2	86.5	86.2	85.0	83.7	81.9	79.4	76.4	72.7	68.5	63.7	58.5
7	60.0	59.9	58.1	57.7	57.5	56.7	55.8	54.6	52.9	50.9	48.5	45.6	42.5	39.0
8	60.0	59.9	58.1	57.7	57.5	56.7	55.8	54.6	52.9	50.9	48.5	45.6	42.5	39.0
9	60.0	59.9	58.1	57.7	57.5	56.7	55.8	54.6	52.9	50.9	48.5	45.6	42.5	39.0
10	60.0	59.9	58.1	57.7	57.5	56.7	55.8	54.6	52.9	50.9	48.5	45.6	42.5	39.0
11	60.0	59.9	58.1	57.7	57.5	56.7	55.8	54.6	52.9	50.9	48.5	45.6	42.5	39.0
12	60.0	59.9	58.1	57.7	57.5	56.7	55.8	54.6	52.9	50.9	48.5	45.6	42.5	39.0
13	60.0	59.9	58.1	57.7	57.5	56.7	55.8	54.6	52.9	50.9	48.5	45.6	42.5	39.0
14	60.0	59.9	58.1	57.7	57.5	56.7	55.8	54.6	52.9	50.9	48.5	45.6	42.5	39.0
15	60.0	59.9	58.1	57.7	57.5	56.7	55.8	54.6	52.9	50.9	48.5	45.6	42.5	39.0
16	85.0	84.8	82.3	81.7	81.4	80.3	79.0	77.3	75.0	72.1	68.7	64.7	60.1	55.2
17	85.0	84.8	82.3	81.7	81.4	80.3	79.0	77.3	75.0	72.1	68.7	64.7	60.1	55.2
18	90.0	89.8	87.2	86.5	86.2	85.0	83.7	81.9	79.4	76.4	72.7	68.5	63.7	58.5
19	90.0	89.8	87.2	86.5	86.2	85.0	83.7	81.9	79.4	76.4	72.7	68.5	63.7	58.5
20	85.0	85.0	85.0	84.7	84.4	83.1	81.8	80.0	77.6	74.7	71.1	66.9	62.2	57.0
21	85.0	85.0	85.0	84.7	84.4	83.1	81.8	80.0	77.6	74.7	71.1	66.9	62.2	57.0
22	85.0	85.0	85.0	84.7	84.4	83.1	81.8	80.0	77.6	74.7	71.1	66.9	62.2	57.0
23	85.0	85.0	85.0	84.7	84.4	83.1	81.8	80.0	77.6	74.7	71.1	66.9	62.2	57.0
24	85.0	85.0	85.0	84.7	84.4	83.1	81.8	80.0	77.6	74.7	71.1	66.9	62.2	57.0
25	85.0	85.0	85.0	84.7	84.4	83.1	81.8	80.0	77.6	74.7	71.1	66.9	62.2	57.0
26	85.0	85.0	85.0	84.7	84.4	83.1	81.8	80.0	77.6	74.7	71.1	66.9	62.2	57.0
27	55.0	55.0	53.9	53.0	52.1	50.9	49.9	48.6	47.1	45.2	42.9	40.3	37.4	34.1
28	55.0	55.0	53.9	53.0	52.1	50.9	49.9	48.6	47.1	45.2	42.9	40.3	37.4	34.1
29	70.0	70.0	68.6	67.4	66.4	64.7	63.5	61.9	59.9	57.5	54.6	51.3	47.6	43.5
30	70.0	70.0	68.6	67.4	66.4	64.7	63.5	61.9	59.9	57.5	54.6	51.3	47.6	43.5
31	60.0	60.0	58.8	57.8	56.9	55.5	54.4	53.1	51.4	49.3	46.8	44.0	40.8	37.2
32	60.0	60.0	58.8	57.8	56.9	55.5	54.4	53.1	51.4	49.3	46.8	44.0	40.8	37.2
33	60.0	60.0	58.8	57.8	56.9	55.5	54.4	53.1	51.4	49.3	46.8	44.0	40.8	37.2
34	55.0	55.0	53.9	53.0	52.1	50.9	49.9	48.6	47.1	45.2	42.9	40.3	37.4	34.1
35	60.0	60.0	58.8	57.8	56.9	55.5	54.4	53.1	51.4	49.3	46.8	44.0	40.8	37.2
36	60.0	60.0	58.8	57.8	56.9	55.5	54.4	53.1	51.4	49.3	46.8	44.0	40.8	37.2
37	65.0	65.0	63.7	62.6	61.6	60.1	59.0	57.5	55.6	53.4	50.7	47.7	44.2	40.3

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	13Cr	Forgings	SA-182	F6a	S41000	1	...	70
2	13Cr	Bar	SA-479	410	S41000	...	...	70
3	13Cr	Bar	SA-479	410	S41000	A	...	70
4	13Cr	Bar	SA-479	410	S41000	1	...	70
5	13Cr	Forgings	SA-182	F6a	S41000	2	...	85
6	13Cr	Castings	SA-217	CA15	J91150	...	...	90
7	13Cr	Cast pipe	SA-426	CPCA15	J91150	...	...	90
8	13Cr–4Ni	Castings	SA-487	CA6NM	J91540	A	...	110
9	13Cr–4Ni	Forgings	SA-182	F6NM	S41500	...	...	115
10	15Cr	Smls. & wld. tube	SA-268	TP429	S42900	...	...	60
11	15Cr	Plate	SA-240	429	S42900	...	...	65
12	17Cr	Smls. & wld. tube	SA-268	TP430	S43000	...	...	60
13	17Cr	Plate	SA-240	430	S43000	...	...	65
14	17Cr	Bar	SA-479	430	S43000	...	...	70
15	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1150	...	135
16	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1150	...	135
17	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1150	...	135
18	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1100	...	140
19	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1100	...	140
20	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1100	...	140
21	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1075	...	145
22	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1075	...	145
23	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1075	...	145
24	17Cr–4Ni–6Mn	Plate	SA-240	201-1	S20100	...	...	95
25	17Cr–4Ni–6Mn	Plate	SA-666	201-1	S20100	...	...	95
26	17Cr–4Ni–6Mn	Plate	SA-240	201-2	S20100	...	...	95
27	17Cr–4Ni–6Mn	Plate	SA-666	201-2	S20100	...	...	95
28	18Cr–2Mo	Plate	SA-240	...	S44400	...	...	60
29	18Cr–2Mo	Smls. & wld. tube	SA-268	...	S44400	...	...	60
30	18Cr–Ti	Smls. & wld. tube	SA-268	TP439	S43035	...	...	60
31	18Cr–Ti	Wld. tube	SA-803	TP439	S43035	...	...	60
32	18Cr–Ti	Smls. & wld. pipe	SA-731	TP439	S43035	...	...	60
33	18Cr–Ti	Bar	SA-479	439	S43035	...	...	70
34	26Cr–3Ni–3Mo	Plate	SA-240	26-3-3	S44660	...	$\leq 2/10$	85
35	26Cr–3Ni–3Mo	Smls. & wld. tube	SA-268	26-3-3	S44660	...	$\leq 2/10$	85
36	26Cr–3Ni–3Mo	Wld. tube	SA-803	26-3-3	S44660	...	$\leq 2/10$	85
37	26Cr–4Ni–Mo	Plate	SA-240	329	S32900	...	...	90
38	26Cr–4Ni–Mo	Smls. & wld. tube	SA-789	...	S32900	...	...	90
39	26Cr–4Ni–Mo	Smls. & wld. pipe	SA-790	...	S32900	...	...	90

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials (Cont'd)
1	70.0	70.0	68.6	67.4	66.4	64.7	63.5	61.9	59.9	57.5	54.6	51.3	47.6	43.5
2	70.0	70.0	68.6	67.4	66.4	64.7	63.5	61.9	59.9	57.5	54.6	51.3	47.6	43.5
3	70.0	70.0	68.6	67.4	66.4	64.7	63.5	61.9	59.9	57.5	54.6	51.3	47.6	43.5
4	70.0	70.0	68.6	67.4	66.4	64.7	63.5	61.9	59.9	57.5	54.6	51.3	47.6	43.5
5	85.0	85.0	83.3	81.8	80.6	78.6	77.1	75.2	72.8	69.8	66.3	62.3	57.8	52.8
6	90.0	90.0	88.2	86.7	85.3	83.2	81.6	79.6	77.0	73.9	70.2	66.0	61.2	55.9
7	90.0	90.0	88.2	86.7	85.3	83.2	81.6	79.6	77.0	73.9	70.2	66.0	61.2	55.9
8	110.0	110.0	108.0	105.3	103.1	100.7	99.4	97.8	95.9	93.5	90.5	86.7	81.7	75.4
9	115.0	115.0	115.0	113.7	109.5	105.1	102.8	100.3	97.6	94.7	91.4	...	...	...
10	60.0	60.0	58.8	57.8	56.9	55.5	54.4	53.1	51.4	49.3	46.8	44.0	40.8	37.2
11	65.0	65.0	63.7	62.6	61.6	60.1	59.0	57.5	55.6	53.4	50.7	47.7	44.2	40.3
12	60.0	60.0	58.8	57.8	56.9	55.5	54.4	53.1	51.4	49.3	46.8	44.0	40.8	37.2
13	65.0	65.0	63.7	62.6	61.6	60.1	59.0	57.5	55.6	53.4	50.7	47.7	44.2	40.3
14	70.0	70.0	68.6	67.4	66.4	64.7	63.5	61.9	59.9	57.5	54.6	51.3	47.6	43.5
15	135.0	135.0	135.0	131.2	128.6	126.7	125.5	123.8	121.5	118.1	113.6	107.5	99.6	89.7
16	135.0	135.0	135.0	131.2	128.6	126.7	125.5	123.8	121.5	118.1	113.6	107.5	99.6	89.7
17	135.0	135.0	135.0	131.2	128.6	126.7	125.5	123.8	121.5	118.1	113.6	107.5	99.6	89.7
18	140.0	140.0	140.0	136.1	133.4	131.4	130.1	128.4	126.0	122.5	117.8	111.5	103.3	93.0
19	140.0	140.0	140.0	136.1	133.4	131.4	130.1	128.4	126.0	122.5	117.8	111.5	103.3	93.0
20	140.0	140.0	140.0	136.1	133.4	131.4	130.1	128.4	126.0	122.5	117.8	111.5	103.3	93.0
21	145.0	145.0	145.0	140.9	138.2	136.1	134.8	133.0	130.5	126.9	122.0	115.4	107.0	96.3
22	145.0	145.0	145.0	140.9	138.2	136.1	134.8	133.0	130.5	126.9	122.0	115.4	107.0	96.3
23	145.0	145.0	145.0	140.9	138.2	136.1	134.8	133.0	130.5	126.9	122.0	115.4	107.0	96.3
24	95.0	83.1	76.4	74.0	...	...	...	...	...	...	...	...	...	...
25	95.0	83.1	76.4	74.0	...	...	...	...	...	...	...	...	...	...
26	95.0	83.1	76.4	74.0	...	...	...	...	...	...	...	...	...	...
27	95.0	83.1	76.4	74.0	...	...	...	...	...	...	...	...	...	...
28	60.0	60.0	58.2	56.8	55.5	53.9	52.9	51.8	50.4	48.9	47.1	44.9	42.2	38.9
29	60.0	60.0	58.2	56.8	55.5	53.9	52.9	51.8	50.4	48.9	47.1	44.9	42.2	38.9
30	60.0	60.0	57.9	56.4	55.2	53.8	53.0	51.9	50.7	49.2	47.3	45.0	42.3	39.0
31	60.0	60.0	57.9	56.4	55.2	53.8	53.0	51.9	50.7	49.2	47.3	45.0	42.3	39.0
32	60.0	60.0	57.9	56.4	55.2	53.8	53.0	51.9	50.7	49.2	47.3	45.0	42.3	39.0
33	70.0	70.0	67.6	65.8	64.4	62.8	61.8	60.6	59.1	57.3	55.2	52.5	49.3	45.4
34	85.0	85.0	84.8	83.7	83.2	82.8	82.4	81.8	...	...	...	...	...	...
35	85.0	85.0	84.8	83.7	83.2	82.8	82.4	81.8	...	...	...	...	...	...
36	85.0	85.0	84.8	83.7	83.2	82.8	82.4	81.8	...	...	...	...	...	...
37	90.0	90.0	86.7	84.9	84.9	84.9	84.9	84.9	...	...	...	...	...	...
38	90.0	90.0	86.7	84.9	84.9	84.9	84.9	84.9	...	...	...	...	...	...
39	90.0	90.0	86.7	84.9	84.9	84.9	84.9	84.9	...	...	...	...	...	...

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	26Cr–4Ni–Mo–N	Plate	SA-240	...	S32950	...	...	100
2	26Cr–4Ni–Mo–N	Smls. & wld. tube	SA-789	...	S32950	...	...	100
3	26Cr–4Ni–Mo–N	Smls. & wld. pipe	SA-790	...	S32950	...	...	100
4	27Cr	Smls. tube	SA-268	TP446-1	S44600	...	...	70
5	27Cr–1Mo	Forgings	SA-182	FXM-27Cb	S44627	...	...	60
6	27Cr–1Mo	Plate	SA-240	XM-27	S44627	...	...	65
7	27Cr–1Mo	Smls. & wld. tube	SA-268	TPXM-27	S44627	...	...	65
8	27Cr–1Mo	Bar	SA-479	XM-27	S44627	...	...	65
9	27Cr–1Mo	Smls. & wld. pipe	SA-731	TPXM-27	S44627	...	...	65
10	27Cr–1Mo–Ti	Smls. & wld. pipe	SA-731	TPXM-33	S44626	...	...	65
11	27Cr–1Mo–Ti	Plate	SA-240	XM-33	S44626	...	...	68
12	27Cr–1Mo–Ti	Smls. & wld. tube	SA-268	TPXM-33	S44626	...	...	68
13	29Cr–4Mo	Bar	SA-479	...	S44700	...	...	70
14	29Cr–4Mo	Plate	SA-240	...	S44700	...	...	80
15	29Cr–4Mo	Smls. & wld. tube	SA-268	29-4	S44700	...	...	80
16	29Cr–4Mo–2Ni	Bar	SA-479	...	S44800	...	...	70
17	29Cr–4Mo–2Ni	Plate	SA-240	...	S44800	...	...	80
18	29Cr–4Mo–2Ni	Smls. & wld. tube	SA-268	29-4-2	S44800	...	...	80
19	29Cr–4Mo–Ti	Smls. & wld. tube	SA-268	...	S44735	...	...	75
01 20	Mn–¼Mo	Forgings	SA-372	D	K14508	...	...	105
21	Mn–¼Mo–V	Castings	SA-487	2	J13005	A	...	85
22	Mn–¼Mo–V	Castings	SA-487	2	J13005	B	...	90
23	Mn–½Mo	Plate	SA-302	A	K12021	...	...	75
24	Mn–½Mo	Wld. pipe	SA-672	H75	K12021	...	...	75
25	Mn–½Mo	Plate	SA-302	B	K12022	...	...	80
26	Mn–½Mo	Plate	SA-533	A	K12521	1	...	80
27	Mn–½Mo	Plate	SA-533	A	K12521	2	...	90
28	Mn–½Mo	Plate	SA-533	A	K12521	3	...	100
29	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	1	...	80
30	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	2	...	90
31	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	3	...	100
32	Mn–½Mo–½Ni	Plate	SA-302	C	K12039	...	...	80
33	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	1	...	80
34	Mn–½Mo–½Ni	Wld. pipe	SA-672	H80	K12039	...	...	80
35	Mn–½Mo–½Ni	Wld. pipe	SA-672	J80	K12539	...	...	80
36	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	2	...	90
37	Mn–½Mo–½Ni	Wld. pipe	SA-672	J90	K12539	...	...	90
38	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	3	...	100
39	Mn–½Mo–½Ni	Wld. pipe	SA-672	J100	K12539	...	...	100

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	
														Ferrous Materials (Cont'd)	
1	100.0	99.7	94.6	92.5	92.5	92.5	92.5	92.5	...	...	...	...	...	...	
2	100.0	99.7	94.6	92.5	92.5	92.5	92.5	92.5	...	...	...	...	...	...	
3	100.0	99.7	94.6	92.5	92.5	92.5	92.5	92.5	...	...	...	...	...	...	
4	70.0	70.0	67.6	65.8	64.4	62.8	61.8	60.6	59.1	57.3	55.2	52.5	49.3	45.4	
5	60.0	60.0	58.1	56.5	56.5	56.5	56.5	...	...	...	...	...	...	...	
6	65.0	65.0	64.0	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	
7	65.0	65.0	64.0	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	
8	65.0	65.0	64.0	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	
9	65.0	65.0	64.0	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	
10	65.0	65.0	64.6	63.6	62.9	61.7	60.7	59.3	57.3	54.5	...	...	...	...	
11	68.0	68.0	67.6	66.5	65.8	64.5	63.5	62.0	59.9	57.0	...	...	...	...	
12	68.0	68.0	67.6	66.5	65.8	64.5	63.5	62.0	59.9	57.0	...	...	...	...	
13	70.0	69.8	67.6	67.2	67.2	67.2	67.2	67.2	67.2	...	...	...	...	...	
14	80.0	79.8	77.2	76.8	76.8	76.8	76.8	76.8	76.8	...	...	...	...	...	
15	80.0	79.8	77.2	76.8	76.8	76.8	76.8	76.8	76.8	...	...	...	...	...	
16	70.0	68.7	67.6	67.1	66.2	65.3	64.8	64.3	63.5	...	...	...	...	...	
17	80.0	78.6	77.3	76.7	75.7	74.6	74.1	73.5	72.6	...	...	...	...	...	
18	80.0	78.6	77.3	76.7	75.7	74.6	74.1	73.5	72.6	...	...	...	...	...	
19	75.0	73.7	72.5	71.9	70.9	69.9	69.5	68.9	68.0	...	...	...	...	...	
20	105.0	105.0	105.0	105.0	105.0	105.0	105.0	105.0	102.7	95.5	87.3	79.1	72.3	68.7	**01**
21	85.0	85.0	85.0	84.6	84.6	84.6	84.5	84.5	...	...	...	...	...	...	
22	90.0	90.0	90.0	89.5	89.5	89.5	89.5	89.5	...	...	...	...	...	...	
23	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	72.4	68.6	63.7	57.9	
24	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	72.4	68.6	63.7	57.9	
25	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7	
26	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7	
27	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	86.9	82.3	76.4	69.4	
28	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	96.6	91.4	84.9	77.1	
29	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7	
30	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	86.9	82.3	76.4	69.4	
31	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	96.6	91.4	84.9	77.1	
32	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7	
33	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7	
34	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7	
35	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7	
36	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	86.9	82.3	76.4	69.4	
37	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	86.9	82.3	76.4	69.4	
38	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	96.6	91.4	84.9	77.1	
39	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	96.6	91.4	84.9	77.1	

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	Mn–½Mo–¾Ni	Plate	SA-302	D	K12054	...	...	80
2	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	1	...	80
3	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	2	...	90
4	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	3	...	100
5	Mn–½Ni–V	Plate	SA-225	C	K12524	...	...	105
6	Mn–V	Castings	SA-487	1	J13002	A	...	85
7	Mn–V	Castings	SA-487	1	J13002	B	...	90
8	1½Si–½Mo	Smls. pipe	SA-335	P15	K11578	...	...	60
9	½Ni–½Cr–¼Mo–V	Castings	SA-487	4	J13047	A	...	90
10	½Ni–½Cr–¼Mo–V	Castings	SA-487	4	J13047	B	...	105
11	½Ni–½Cr–¼Mo–V	Castings	SA-487	4	J13047	E	...	115
12	½Ni–½Mo–V	Forgings	SA-541	3	K12045	1	...	80
13	½Ni–½Mo–V	Forgings	SA-541	3	K12045	2	...	90
14	¾Ni–½Cr–½Mo–V	Forgings	SA-592	F	K11576	...	$2\frac{1}{2} < t \le 4$	105
15	¾Ni–½Cr–½Mo–V	Plate	SA-517	F	K11576	...	$\le 2\frac{1}{2}$	115
16	¾Ni–½Cr–½Mo–V	Forgings	SA-592	F	K11576	...	$\le 2\frac{1}{2}$	115
17	¾Ni–½Cu–Mo	Smls. & wld. tube	SA-423	2	K11540	...	...	60
18	¾Ni–½Mo–⅓Cr–V	Forgings	SA-508	2	K12766	1	...	80
19	¾Ni–½Mo–⅓Cr–V	Forgings	SA-541	2	K12765	1	...	80
20	¾Ni–½Mo–⅓Cr–V	Forgings	SA-508	2	K12766	2	...	90
21	¾Ni–½Mo–⅓Cr–V	Forgings	SA-541	2	K12765	2	...	90
22	¾Ni–½Mo–Cr–V	Forgings	SA-508	3	K12042	1	...	80
23	¾Ni–½Mo–Cr–V	Forgings	SA-508	3	K12042	2	...	90
24	¾Ni–1Mo–¾Cr	Castings	SA-217	WC5	J22000	...	...	70
25	1Ni–½Cr–½Mo	Castings	SA-217	WC4	J12082	...	...	70
26	1¼Ni–1Cr–½Mo	Plate	SA-517	P	K21650	...	$2\frac{1}{2} < t \le 4$	105
27	1¼Ni–1Cr–½Mo	Plate	SA-517	P	K21650	...	$\le 2\frac{1}{2}$	115
28	1½Ni	Forgings	SA-350	LF5	K13050	1	...	60
29	1½Ni	Forgings	SA-350	LF5	K13050	2	...	70
30	2Ni–1Cu	Forgings	SA-182	FR	K22035	...	...	63
31	2Ni–1Cu	Fittings	SA-234	WPR	K22035	...	...	63
32	2Ni–1Cu	Smls. & wld. pipe	SA-333	9	K22035	...	...	63
33	2Ni–1Cu	Tube	SA-334	9	K22035	...	...	63
34	2Ni–1Cu	Forgings	SA-350	LF9	K22036	...	...	63
35	2Ni–1Cu	Smls. & wld. fittings	SA-420	WPL9	K22035	...	...	63
36	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	1	...	115
37	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	2	...	135
38	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	3	...	155
39	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	4	...	175
40	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	5	...	190

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials (Cont'd)
1	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7
2	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7
3	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	86.9	82.3	76.4	69.4
4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	96.6	91.4	84.9	77.1
5	105.0	105.0	105.0	105.0	105.0	105.0	105.0	105.0	104.3	96.2	...	...	...	...
6	85.0	...	...	...	...	...	...	...	...	...	...	...	...	...
7	90.0	...	...	...	...	...	...	...	...	...	...	...	...	...
8	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	57.9	54.9	51.0	46.3
9	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	...	...	...	...	...	...
10	105.0	105.0	105.0	105.0	105.0	105.0	105.0	105.0	...	...	...	...	...	...
11	115.0	115.0	115.0	115.0	115.0	115.0	115.0	115.0	...	...	...	...	...	...
12	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7
13	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	88.7	86.3	82.9	78.5	73.0	66.4
14	105.0	105.0	105.0	105.0	105.0	105.0	104.8	102.8	100.1	96.8	92.8	88.2	82.9	77.0
15	115.0	115.0	115.0	115.0	115.0	115.0	114.8	112.6	109.6	106.0	101.6	96.6	90.8	84.4
16	115.0	115.0	115.0	115.0	115.0	115.0	114.8	112.6	109.6	106.0	101.6	96.6	90.8	84.4
17	60.0	...	...	...	...	...	...	...	...	...	...	...	...	...
18	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7
19	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7
20	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	86.9	82.3	76.4	69.4
21	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	86.9	82.3	76.4	69.4
22	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7
23	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	86.9	82.3	76.4	69.4
24	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	67.6	64.0	59.5	54.0
25	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	67.6	64.0	59.5	54.0
26	105.0	105.0	105.0	105.0	105.0	105.0	104.8	102.8	100.1	96.8	92.8	88.2	82.9	77.0
27	115.0	115.0	115.0	115.0	115.0	115.0	114.8	112.6	109.6	106.0	101.6	96.6	90.8	84.4
28	60.0	...	...	...	...	...	...	...	...	...	...	...	...	...
29	70.0	...	...	...	...	...	...	...	...	...	...	...	...	...
30	63.0	...	...	...	...	...	...	...	...	...	...	...	...	...
31	63.0	...	...	...	...	...	...	...	...	...	...	...	...	...
32	63.0	...	...	...	...	...	...	...	...	...	...	...	...	...
33	63.0	...	...	...	...	...	...	...	...	...	...	...	...	...
34	63.0	...	...	...	...	...	...	...	...	...	...	...	...	...
35	63.0	...	...	...	...	...	...	...	...	...	...	...	...	...
36	115.0	115.0	115.0	115.0	115.0	115.0	113.2	110.5	107.1	103.3	...	...	...	...
37	135.0	135.0	135.0	135.0	135.0	135.0	132.9	129.7	125.8	121.3	...	...	...	...
38	155.0	155.0	155.0	155.0	155.0	155.0	152.6	149.0	144.4	139.2	...	...	...	...
39	175.0	175.0	175.0	175.0	175.0	175.0	172.3	168.2	163.1	157.2	...	...	...	...
40	190.0	190.0	190.0	190.0	190.0	190.0	187.1	182.6	177.0	170.7	...	...	...	...

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	2½Ni	Pipe	SA-333	7	K21903	...	...	65
2	2½Ni	Tube	SA-334	7	K21903	...	...	65
3	2½Ni	Plate	SA-203	A	K21703	...	...	65
4	2½Ni	Plate	SA-203	B	K22103	...	...	70
5	2½Ni	Castings	SA-352	LC2	J22500	...	...	70
6	2¾Ni–1½Cr–½Mo	Plate	SA-543	C	...	3	...	90
7	2¾Ni–1½Cr–½Mo	Plate	SA-543	C	...	1	...	105
8	2¾Ni–1½Cr–½Mo	Plate	SA-543	C	...	2	...	115
9	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	1	...	115
10	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	2	...	135
11	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	3	...	155
12	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	4	...	175
13	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	5	...	190
14	3Ni–1¾Cr–½Mo	Plate	SA-543	B	K42339	3	...	90
15	3Ni–1¾Cr–½Mo	Plate	SA-543	B	K42339	1	...	105
16	3Ni–1¾Cr–½Mo	Plate	SA-543	B	K42339	2	...	115
17	3½Ni	Pipe	SA-333	3	K31918	...	...	65
18	3½Ni	Tube	SA-334	3	K31918	...	...	65
19	3½Ni	Fittings	SA-420	WPL3	...	...	...	65
20	3½Ni	Plate	SA-203	D	K31718	...	...	65
21	3½Ni	Forgings	SA-350	LF3	K32025	...	...	70
22	3½Ni	Forgings	SA-765	III	K32026	...	...	70
23	3½Ni	Plate	SA-203	E	K32018	...	...	70
24	3½Ni	Castings	SA-352	LC3	J31550	...	...	70
25	3½Ni	Plate	SA-203	F	...	...	> 2	75
26	3½Ni	Plate	SA-203	F	...	...	≤ 2	80
27	3½Ni–1¾Cr–½Mo–V	Forgings	SA-508	4N	K22375	3	...	90
28	3½Ni–1¾Cr–½Mo–V	Forgings	SA-508	4N	K22375	1	...	105
29	3½Ni–1¾Cr–½Mo–V	Forgings	SA-508	4N	K22375	2	...	115
30	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	1	...	115
31	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	2	...	135
32	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	3	...	155
33	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	4	...	175
34	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	5	...	190
35	5Ni–¼Mo	Plate	SA-645	...	K41583	...	...	95
36	8Ni	Forgings	SA-522	II	K71340	...	...	100
37	8Ni	Plate	SA-553	II	K71340	...	...	100

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials (Cont'd)
1	65.0	65.0	65.0	65.0	65.0	65.0	65.0	61.7	57.6	53.7	50.1	46.5	42.2	36.3
2	65.0	65.0	65.0	65.0	65.0	65.0	65.0	61.7	57.6	53.7	50.1	46.5	42.2	36.3
3	65.0	65.0	65.0	65.0	65.0	65.0	65.0	61.7	57.6	53.7	50.1	46.5	42.2	36.3
4	70.0	70.0	70.0	70.0	70.0	70.0	70.0	66.5	62.0	57.9	54.0	50.1	45.5	39.1
5	70.0	70.0	70.0	70.0	70.0	70.0	70.0	66.5	62.0	57.9	54.0	50.1	45.5	39.1
6	90.0	90.0	90.0	89.1	88.5	87.3	86.2	84.7	82.6	79.9	76.5	72.5	67.7	62.1
7	105.0	105.0	105.0	103.9	103.3	101.9	100.6	98.8	96.4	93.2	89.3	84.5	78.9	72.5
8	115.0	115.0	115.0	113.8	113.1	111.6	110.2	108.2	105.5	102.1	97.8	92.6	86.5	79.4
9	115.0	115.0	115.0	115.0	115.0	115.0	113.2	110.5	107.1	103.3	...	...	...	...
10	135.0	135.0	135.0	135.0	135.0	135.0	132.9	129.7	125.8	121.3	...	...	...	...
11	155.0	155.0	155.0	155.0	155.0	155.0	152.6	149.0	144.4	139.2	...	...	...	...
12	175.0	175.0	175.0	175.0	175.0	175.0	172.3	168.2	163.1	157.2	...	...	...	...
13	190.0	190.0	190.0	190.0	190.0	190.0	187.1	182.6	177.0	170.7	...	...	...	...
14	90.0	90.0	90.0	89.1	88.5	87.3	86.2	84.7	82.6	79.9	76.5	72.5	67.7	62.1
15	105.0	105.0	105.0	103.9	103.3	101.9	100.6	98.8	96.4	93.2	89.3	84.5	78.9	72.5
16	115.0	115.0	115.0	113.8	113.1	111.6	110.2	108.2	105.5	102.1	97.8	92.6	86.5	79.4
17	65.0	65.0	65.0	65.0	65.0	65.0	65.0	61.7	57.6	53.7	50.1	46.5	42.2	36.3
18	65.0	65.0	65.0	65.0	65.0	65.0	65.0	61.7	57.6	53.7	50.1	46.5	42.2	36.3
19	65.0	65.0	65.0	65.0	65.0	65.0	65.0	61.7	57.6	53.7	50.1	46.5	42.2	36.3
20	65.0	65.0	65.0	65.0	65.0	65.0	65.0	61.7	57.6	53.7	50.1	46.5	42.2	36.3
21	70.0	70.0	70.0	70.0	70.0	70.0	70.0	66.5	62.0	57.9	54.0	50.1	45.5	39.1
22	70.0	70.0	70.0	70.0	70.0	70.0	70.0	66.5	62.0	57.9	54.0	50.1	45.5	39.1
23	70.0	70.0	70.0	70.0	70.0	70.0	70.0	66.5	62.0	57.9	54.0	50.1	45.5	39.1
24	70.0	70.0	70.0	70.0	70.0	70.0	70.0	66.5	62.0	57.9	54.0	50.1	45.5	39.1
25	75.0	75.0	75.0	75.0	75.0	75.0	75.0	71.2	66.5	62.0	57.9	53.7	48.7	41.9
26	80.0	80.0	80.0	80.0	80.0	80.0	80.0	76.0	70.9	66.1	61.7	57.2	52.0	44.7
27	90.0	90.0	90.0	89.1	88.5	87.3	86.2	84.7	82.6	79.9	76.5	72.5	67.7	62.1
28	105.0	105.0	105.0	103.9	103.3	101.9	100.6	98.8	96.4	93.2	89.3	84.5	78.9	72.5
29	115.0	115.0	115.0	113.8	113.1	111.6	110.2	108.2	105.5	102.1	97.8	92.6	86.5	79.4
30	115.0	115.0	115.0	115.0	115.0	115.0	113.2	110.5	107.1	103.3	...	...	...	...
31	135.0	135.0	135.0	135.0	135.0	135.0	132.9	129.7	125.8	121.3	...	...	...	...
32	155.0	155.0	155.0	155.0	155.0	155.0	152.6	149.0	144.4	139.2	...	...	...	...
33	175.0	175.0	175.0	175.0	175.0	175.0	172.3	168.2	163.1	157.2	...	...	...	...
34	190.0	190.0	190.0	190.0	190.0	190.0	187.1	182.6	177.0	170.7	...	...	...	...
35	95.0	...	...	...	...	...	...	...	...	...	...	...	...	...
36	100.0	...	...	...	...	...	...	...	...	...	...	...	...	...
37	100.0	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	9Ni	Smls. & wld. pipe	SA-333	8	K81340	...	...	100
2	9Ni	Smls. & wld. tube	SA-334	8	K81340	...	...	100
3	9Ni	Plate	SA-353	...	K81340	...	...	100
4	9Ni	Smls. & wld. fittings	SA-420	WPL8	K81340	...	...	100
5	9Ni	Forgings	SA-522	I	K81340	...	...	100
6	9Ni	Plate	SA-553	I	K81340	...	...	100
7	25Ni–15Cr–2Ti	Bar	SA-638	660	S66286	...	...	130
01 8	29Ni–20Cr–3Cu–2Mo	Castings	SA-351	CN7M	J95150	...	...	62
9	16Cr–9Mn–2Ni–N	Plate	SA-240	204	S20400	...	...	95
10	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...	> 5	65
11	16Cr–12Ni–2Mo	Forgings	SA-336	F316L	S31603	...	...	65
12	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...	≤ 5	70
13	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316L	S31603	...	...	70
14	16Cr–12Ni–2Mo	Plate	SA-240	316L	S31603	...	...	70
15	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316L	S31603	...	...	70
16	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316L	S31603	...	...	70
17	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316L	S31603	1	...	70
18	16Cr–12Ni–2Mo	Smls. & wld. fittings	SA-403	316L	S31603	...	...	70
19	16Cr–12Ni–2Mo	Wld. pipe	SA-409	TP316L	S31603	...	...	70
20	16Cr–12Ni–2Mo	Bar	SA-479	316L	S31603	...	...	70
21	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316L	S31603	...	...	70
22	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316L	S31603	...	...	70
23	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316L	S31603	...	...	70
24	16Cr–12Ni–2Mo	Castings	SA-351	CF3M	J92800	...	...	70
25	16Cr–12Ni–2Mo	Cast pipe	SA-451	CPF3M	J92800	...	...	70
26	16Cr–12Ni–2Mo	Castings	SA-351	CF8M	J92900	...	...	70
27	16Cr–12Ni–2Mo	Cast pipe	SA-451	CPF8M	J92900	...	...	70
28	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...	> 5	70
29	16Cr–12Ni–2Mo	Forgings	SA-336	F316	S31600	...	...	70
30	16Cr–12Ni–2Mo	Forged pipe	SA-430	FP316	S31600	...	...	70
31	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...	> 5	70
32	16Cr–12Ni–2Mo	Forgings	SA-336	F316H	S31609	...	...	70
33	16Cr–12Ni–2Mo	Forged pipe	SA-430	FP316H	S31609	...	...	70
34	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...	≤ 5	75
35	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316	S31600	...	...	75
36	16Cr–12Ni–2Mo	Plate	SA-240	316	S31600	...	...	75
37	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316	S31600	...	...	75
38	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316	S31600	...	...	75

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials (Cont'd)
1	100.0	...	...	...	...	...	...	...	...	...	...	...	...	...
2	100.0	...	...	...	...	...	...	...	...	...	...	...	...	...
3	100.0	...	...	...	...	...	...	...	...	...	...	...	...	...
4	100.0	...	...	...	...	...	...	...	...	...	...	...	...	...
5	100.0	...	...	...	...	...	...	...	...	...	...	...	...	...
6	100.0	...	...	...	...	...	...	...	...	...	...	...	...	...
7	130.0	130.0	130.0	130.0	127.6	125.2	124.0	122.7	121.3	119.8	118.1	116.3	114.4	112.1
8	62.0	52.4	47.7	44.6	42.4	40.6	39.9	39.2	...	...	...	...	...	...
9	95.0	82.6	72.2	66.2	63.5	62.7	62.6	62.6	62.3	61.8	60.8	59.2	56.8	53.4
10	65.0	63.2	59.5	57.8	57.3	57.3	57.2	57.1	56.7	56.2	55.4	54.4	53.0	51.4
11	65.0	63.2	59.5	57.8	57.3	57.3	57.2	57.1	56.7	56.2	55.4	54.4	53.0	51.4
12	70.0	68.1	64.0	62.2	61.8	61.7	61.6	61.5	61.1	60.5	59.7	58.6	57.1	55.4
13	70.0	68.1	64.0	62.2	61.8	61.7	61.6	61.5	61.1	60.5	59.7	58.6	57.1	55.4
14	70.0	68.1	64.0	62.2	61.8	61.7	61.6	61.5	61.1	60.5	59.7	58.6	57.1	55.4
15	70.0	68.1	64.0	62.2	61.8	61.7	61.6	61.5	61.1	60.5	59.7	58.6	57.1	55.4
16	70.0	68.1	64.0	62.2	61.8	61.7	61.6	61.5	61.1	60.5	59.7	58.6	57.1	55.4
17	70.0	68.1	64.0	62.2	61.8	61.7	61.6	61.5	61.1	60.5	59.7	58.6	57.1	55.4
18	70.0	68.1	64.0	62.2	61.8	61.7	61.6	61.5	61.1	60.5	59.7	58.6	57.1	55.4
19	70.0	68.1	64.0	62.2	61.8	61.7	61.6	61.5	61.1	60.5	59.7	58.6	57.1	55.4
20	70.0	68.1	64.0	62.2	61.8	61.7	61.6	61.5	61.1	60.5	59.7	58.6	57.1	55.4
21	70.0	68.1	64.0	62.2	61.8	61.7	61.6	61.5	61.1	60.5	59.7	58.6	57.1	55.4
22	70.0	68.1	64.0	62.2	61.8	61.7	61.6	61.5	61.1	60.5	59.7	58.6	57.1	55.4
23	70.0	68.1	64.0	62.2	61.8	61.7	61.6	61.5	61.1	60.5	59.7	58.6	57.1	55.4
24	70.0	70.0	68.0	67.2	67.2	67.2	67.2	67.2	66.8	66.2	65.2	63.9	62.3	60.2
25	70.0	70.0	68.0	67.2	67.2	67.2	67.2	67.2	66.8	66.2	65.2	63.9	62.3	60.2
26	70.0	70.0	68.0	67.2	67.2	67.2	67.2	67.2	66.8	66.2	65.2	63.9	62.3	60.2
27	70.0	70.0	68.0	67.2	67.2	67.2	67.2	67.2	66.8	66.2	65.2	63.9	62.3	60.2
28	70.0	70.0	68.0	67.1	67.0	67.0	67.0	67.0	66.7	66.1	65.1	63.8	62.1	60.0
29	70.0	70.0	68.0	67.1	67.0	67.0	67.0	67.0	66.7	66.1	65.1	63.8	62.1	60.0
30	70.0	70.0	68.0	67.1	67.0	67.0	67.0	67.0	66.7	66.1	65.1	63.8	62.1	60.0
31	70.0	70.0	68.0	67.1	67.0	67.0	67.0	67.0	66.7	66.1	65.1	63.8	62.1	60.0
32	70.0	70.0	68.0	67.1	67.0	67.0	67.0	67.0	66.7	66.1	65.1	63.8	62.1	60.0
33	70.0	70.0	68.0	67.1	67.0	67.0	67.0	67.0	66.7	66.1	65.1	63.8	62.1	60.0
34	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
35	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
36	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
37	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
38	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316	S31600	1	...	75
2	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316	S31600	...	...	75
3	16Cr–12Ni–2Mo	Smls. & wld. fittings	SA-403	316	S31600	...	...	75
4	16Cr–12Ni–2Mo	Wld. pipe	SA-409	TP316	S31600	...	...	75
5	16Cr–12Ni–2Mo	Bar	SA-479	316	S31600	...	...	75
6	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316	S31600	...	...	75
7	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316	S31600	...	...	75
8	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316	S31600	...	...	75
9	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...	≤ 5	75
10	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316H	S31609	...	...	75
11	16Cr–12Ni–2Mo	Plate	SA-240	316H	S31609	...	...	75
12	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316H	S31609	...	...	75
13	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316H	S31609	...	...	75
14	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316H	S31609	1	...	75
15	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316H	S31609	...	...	75
16	16Cr–12Ni–2Mo	Smls. & wld. fittings	SA-403	316H	S31609	...	...	75
17	16Cr–12Ni–2Mo	Cast pipe	SA-452	TP316H	S31609	...	...	75
18	16Cr–12Ni–2Mo	Bar	SA-479	316H	S31609	...	...	75
19	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316H	S31609	...	...	75
20	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316H	S31609	...	...	75
21	16Cr–12Ni–2Mo–Cb	Plate	SA-240	316Cb	S31640	...	...	75
22	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316LN	S31653	...	> 5	70
23	16Cr–12Ni–2Mo–N	Forgings	SA-336	F316LN	S31653	...	...	70
24	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316LN	S31653	...	≤ 5	75
25	16Cr–12Ni–2Mo–N	Smls. tube	SA-213	TP316LN	S31653	...	...	75
26	16Cr–12Ni–2Mo–N	Plate	SA-240	316LN	S31653	...	...	75
27	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316LN	S31653	...	...	75
28	16Cr–12Ni–2Mo–N	Smls. & wld. pipe	SA-312	TP316LN	S31653	...	...	75
29	16Cr–12Ni–2Mo–N	Wld. pipe	SA-358	316LN	S31653	1	...	75
30	16Cr–12Ni–2Mo–N	Smls. pipe	SA-376	TP316LN	S31653	...	...	75
31	16Cr–12Ni–2Mo–N	Fittings	SA-403	316LN	S31653	...	...	75
32	16Cr–12Ni–2Mo–N	Bar	SA-479	316LN	S31653	...	...	75
33	16Cr–12Ni–2Mo–N	Wld. tube	SA-688	TP316LN	S31653	...	...	75
34	16Cr–12Ni–2Mo–N	Forged pipe	SA-430	FP316N	S31651	...	...	75
35	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316N	S31651	...	...	80
36	16Cr–12Ni–2Mo–N	Smls. tube	SA-213	TP316N	S31651	...	...	80
37	16Cr–12Ni–2Mo–N	Plate	SA-240	316N	S31651	...	...	80
38	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316N	S31651	...	...	80

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials (Cont'd)
1	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
2	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
3	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
4	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
5	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
6	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
7	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
8	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
9	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
10	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
11	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
12	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
13	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
14	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
15	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
16	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
17	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
18	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
19	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
20	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
21	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	...	...	...
22	70.0	70.0	66.0	62.6	60.3	59.0	58.6	58.3	57.9	57.6	57.1	56.4	55.6	54.6
23	70.0	70.0	66.0	62.6	60.3	59.0	58.6	58.3	57.9	57.6	57.1	56.4	55.6	54.6
24	75.0	75.0	70.7	67.1	64.6	63.3	62.8	62.4	62.1	61.7	61.1	60.4	59.6	58.4
25	75.0	75.0	70.7	67.1	64.6	63.3	62.8	62.4	62.1	61.7	61.1	60.4	59.6	58.4
26	75.0	75.0	70.7	67.1	64.6	63.3	62.8	62.4	62.1	61.7	61.1	60.4	59.6	58.4
27	75.0	75.0	70.7	67.1	64.6	63.3	62.8	62.4	62.1	61.7	61.1	60.4	59.6	58.4
28	75.0	75.0	70.7	67.1	64.6	63.3	62.8	62.4	62.1	61.7	61.1	60.4	59.6	58.4
29	75.0	75.0	70.7	67.1	64.6	63.3	62.8	62.4	62.1	61.7	61.1	60.4	59.6	58.4
30	75.0	75.0	70.7	67.1	64.6	63.3	62.8	62.4	62.1	61.7	61.1	60.4	59.6	58.4
31	75.0	75.0	70.7	67.1	64.6	63.3	62.8	62.4	62.1	61.7	61.1	60.4	59.6	58.4
32	75.0	75.0	70.7	67.1	64.6	63.3	62.8	62.4	62.1	61.7	61.1	60.4	59.6	58.4
33	75.0	75.0	70.7	67.1	64.6	63.3	62.8	62.4	62.1	61.7	61.1	60.4	59.6	58.4
34	75.0	75.0	72.2	70.4	69.7	69.6	69.6	69.6	69.6	69.3	68.7	67.8	66.6	65.0
35	80.0	80.0	77.0	75.1	74.4	74.3	74.3	74.3	74.2	73.9	73.3	72.4	71.1	69.3
36	80.0	80.0	77.0	75.1	74.4	74.3	74.3	74.3	74.2	73.9	73.3	72.4	71.1	69.3
37	80.0	80.0	77.0	75.1	74.4	74.3	74.3	74.3	74.2	73.9	73.3	72.4	71.1	69.3
38	80.0	80.0	77.0	75.1	74.4	74.3	74.3	74.3	74.2	73.9	73.3	72.4	71.1	69.3

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	16Cr–12Ni–2Mo–N	Smls. & wld. pipe	SA-312	TP316N	S31651	...	...	80
2	16Cr–12Ni–2Mo–N	Forgings	SA-336	F316N	S31651	...	...	80
3	16Cr–12Ni–2Mo–N	Wld. pipe	SA-358	316N	S31651	1	...	80
4	16Cr–12Ni–2Mo–N	Smls. pipe	SA-376	TP316N	S31651	...	...	80
5	16Cr–12Ni–2Mo–N	Smls. & wld. fittings	SA-403	316N	S31651	...	...	80
6	16Cr–12Ni–2Mo–N	Bar	SA-479	316N	S31651	...	...	80
7	16Cr–12Ni–2Mo–N	Wld. tube	SA-688	TP316N	S31651	...	...	80
8	16Cr–12Ni–2Mo–N	Wld. pipe	SA-813	TP316N	S31651	...	...	80
9	16Cr–12Ni–2Mo–N	Wld. pipe	SA-814	TP316N	S31651	...	...	80
10	16Cr–12Ni–2Mo–Ti	Plate	SA-240	316Ti	S31635	...	...	75
11	18Cr–3Ni–12Mn	Plate	SA-240	XM-29	S24000	...	...	100
12	18Cr–3Ni–12Mn	Wld. tube	SA-249	XM-29	S24000	...	...	100
13	18Cr–3Ni–12Mn	Wld. pipe	SA-312	XM-29	S24000	...	...	100
14	18Cr–3Ni–12Mn	Bar	SA-479	XM-29	S24000	...	...	100
15	18Cr–3Ni–12Mn	Wld. tube	SA-688	TPXM-29	S24000	...	...	100
16	18Cr–5Ni–3Mo	Smls. & wld. tube	SA-789	...	S31500	...	...	92
17	18Cr–5Ni–3Mo	Smls. & wld. pipe	SA-790	...	S31500	...	...	92
18	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...	> 5	65
19	18Cr–8Ni	Forgings	SA-336	F304L	S30403	...	...	65
20	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...	≤ 5	70
21	18Cr–8Ni	Smls. tube	SA-213	TP304L	S30403	...	...	70
22	18Cr–8Ni	Plate	SA-240	304L	S30403	...	...	70
23	18Cr–8Ni	Wld. tube	SA-249	TP304L	S30403	...	...	70
24	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304L	S30403	...	...	70
25	18Cr–8Ni	Wld. pipe	SA-358	304L	S30403	1	...	70
26	18Cr–8Ni	Smls. & wld. fittings	SA-403	304L	S30403	...	...	70
27	18Cr–8Ni	Wld. pipe	SA-409	TP304L	S30403	...	...	70
28	18Cr–8Ni	Bar	SA-479	304L	S30403	...	...	70
29	18Cr–8Ni	Wld. tube	SA-688	TP304L	S30403	...	...	70
30	18Cr–8Ni	Wld. pipe	SA-813	TP304L	S30403	...	...	70
31	18Cr–8Ni	Wld. pipe	SA-814	TP304L	S30403	...	...	70
32	18Cr–8Ni	Forgings	SA-182	F304	S30400	...	> 5	70
33	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...	> 5	70
34	18Cr–8Ni	Forgings	SA-336	F304	S30400	...	...	70
35	18Cr–8Ni	Forgings	SA-336	F304H	S30409	...	...	70
36	18Cr–8Ni	Castings	SA-351	CF3	J92500	...	...	70
37	18Cr–8Ni	Castings	SA-351	CF8	J92600	...	...	70
38	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...	...	70
39	18Cr–8Ni	Forged pipe	SA-430	FP304	S30400	...	...	70

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials (Cont'd)
1	80.0	80.0	77.0	75.1	74.4	74.3	74.3	74.3	74.2	73.9	73.3	72.4	71.1	69.3
2	80.0	80.0	77.0	75.1	74.4	74.3	74.3	74.3	74.2	73.9	73.3	72.4	71.1	69.3
3	80.0	80.0	77.0	75.1	74.4	74.3	74.3	74.3	74.2	73.9	73.3	72.4	71.1	69.3
4	80.0	80.0	77.0	75.1	74.4	74.3	74.3	74.3	74.2	73.9	73.3	72.4	71.1	69.3
5	80.0	80.0	77.0	75.1	74.4	74.3	74.3	74.3	74.2	73.9	73.3	72.4	71.1	69.3
6	80.0	80.0	77.0	75.1	74.4	74.3	74.3	74.3	74.2	73.9	73.3	72.4	71.1	69.3
7	80.0	80.0	77.0	75.1	74.4	74.3	74.3	74.3	74.2	73.9	73.3	72.4	71.1	69.3
8	80.0	80.0	77.0	75.1	74.4	74.3	74.3	74.3	74.2	73.9	73.3	72.4	71.1	69.3
9	80.0	80.0	77.0	75.1	74.4	74.3	74.3	74.3	74.2	73.9	73.3	72.4	71.1	69.3
10	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	...	...	...
11	100.0	97.7	91.1	87.3	85.1	83.3	82.0	80.5	78.5	76.3	73.8	71.4	69.4	68.3
12	100.0	97.7	91.1	87.3	85.1	83.3	82.0	80.5	78.5	76.3	73.8	71.4	69.4	68.3
13	100.0	97.7	91.1	87.3	85.1	83.3	82.0	80.5	78.5	76.3	73.8	71.4	69.4	68.3
14	100.0	97.7	91.1	87.3	85.1	83.3	82.0	80.5	78.5	76.3	73.8	71.4	69.4	68.3
15	100.0	97.7	91.1	87.3	85.1	83.3	82.0	80.5	78.5	76.3	73.8	71.4	69.4	68.3
16	92.0	88.8	85.4	84.8	84.8	84.8	84.8	84.8	84.8	...	...	...	...	...
17	92.0	88.8	85.4	84.8	84.8	84.8	84.8	84.8	84.8	...	...	...	...	...
18	65.0	61.3	56.9	54.5	53.4	52.9	52.6	52.4	52.0	51.4	50.7	49.8	48.6	47.1
19	65.0	61.3	56.9	54.5	53.4	52.9	52.6	52.4	52.0	51.4	50.7	49.8	48.6	47.1
20	70.0	66.1	61.2	58.7	57.5	56.9	56.7	56.4	56.0	55.4	54.6	53.6	52.3	50.7
21	70.0	66.1	61.2	58.7	57.5	56.9	56.7	56.4	56.0	55.4	54.6	53.6	52.3	50.7
22	70.0	66.1	61.2	58.7	57.5	56.9	56.7	56.4	56.0	55.4	54.6	53.6	52.3	50.7
23	70.0	66.1	61.2	58.7	57.5	56.9	56.7	56.4	56.0	55.4	54.6	53.6	52.3	50.7
24	70.0	66.1	61.2	58.7	57.5	56.9	56.7	56.4	56.0	55.4	54.6	53.6	52.3	50.7
25	70.0	66.1	61.2	58.7	57.5	56.9	56.7	56.4	56.0	55.4	54.6	53.6	52.3	50.7
26	70.0	66.1	61.2	58.7	57.5	56.9	56.7	56.4	56.0	55.4	54.6	53.6	52.3	50.7
27	70.0	66.1	61.2	58.7	57.5	56.9	56.7	56.4	56.0	55.4	54.6	53.6	52.3	50.7
28	70.0	66.1	61.2	58.7	57.5	56.9	56.7	56.4	56.0	55.4	54.6	53.6	52.3	50.7
29	70.0	66.1	61.2	58.7	57.5	56.9	56.7	56.4	56.0	55.4	54.6	53.6	52.3	50.7
30	70.0	66.1	61.2	58.7	57.5	56.9	56.7	56.4	56.0	55.4	54.6	53.6	52.3	50.7
31	70.0	66.1	61.2	58.7	57.5	56.9	56.7	56.4	56.0	55.4	54.6	53.6	52.3	50.7
32	70.0	66.3	61.8	59.7	59.2	59.2	59.2	59.2	59.0	58.6	57.9	56.8	55.4	53.6
33	70.0	66.3	61.8	59.7	59.2	59.2	59.2	59.2	59.0	58.6	57.9	56.8	55.4	53.6
34	70.0	66.3	61.8	59.7	59.2	59.2	59.2	59.2	59.0	58.6	57.9	56.8	55.4	53.6
35	70.0	66.3	61.8	59.7	59.2	59.2	59.2	59.2	59.0	58.6	57.9	56.8	55.4	53.6
36	70.0	66.3	61.8	59.7	59.2	59.2	59.2	59.2	59.0	58.6	57.9	56.8	55.4	53.6
37	70.0	66.3	61.8	59.7	59.2	59.2	59.2	59.2	59.0	58.6	57.9	56.8	55.4	53.6
38	70.0	66.3	61.8	59.7	59.2	59.2	59.2	59.2	59.0	58.6	57.9	56.8	55.4	53.6
39	70.0	66.3	61.8	59.7	59.2	59.2	59.2	59.2	59.0	58.6	57.9	56.8	55.4	53.6

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	18Cr–8Ni	Forged pipe	SA-430	FP304H	S30409	...	...	70
2	18Cr–8Ni	Cast pipe	SA-451	CPF3	J92500	...	...	70
3	18Cr–8Ni	Cast pipe	SA-451	CPF8	J92600	...	...	70
4	18Cr–8Ni	Forgings	SA-182	F304	S30400	...	≤ 5	75
5	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...	≤ 5	75
6	18Cr–8Ni	Smls. tube	SA-213	TP304	S30400	...	...	75
7	18Cr–8Ni	Smls. tube	SA-213	TP304H	S30409	...	...	75
8	18Cr–8Ni	Plate	SA-240	302	S30200	...	...	75
9	18Cr–8Ni	Plate	SA-240	304	S30400	...	...	75
10	18Cr–8Ni	Plate	SA-240	304H	S30409	...	...	75
11	18Cr–8Ni	Wld. tube	SA-249	TP304	S30400	...	...	75
12	18Cr–8Ni	Wld. tube	SA-249	TP304H	S30409	...	...	75
13	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304	S30400	...	...	75
14	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304H	S30409	...	...	75
15	18Cr–8Ni	Wld. pipe	SA-358	304	S30400	1	...	75
16	18Cr–8Ni	Wld. pipe	SA-358	304H	S30409	1	...	75
17	18Cr–8Ni	Wld. pipe	SA-358	304LN	S30453	1	...	75
18	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...	...	75
19	18Cr–8Ni	Smls. pipe	SA-376	TP304H	S30409	...	...	75
20	18Cr–8Ni	Smls. & wld. fittings	SA-403	304	S30400	...	...	75
21	18Cr–8Ni	Smls. & wld. fittings	SA-403	304H	S30409	...	...	75
22	18Cr–8Ni	Wld. pipe	SA-409	TP304	S30400	...	...	75
23	18Cr–8Ni	Cast pipe	SA-452	TP304H	S30409	...	...	75
24	18Cr–8Ni	Bar	SA-479	302	S30200	...	...	75
25	18Cr–8Ni	Bar	SA-479	304	S30400	...	...	75
26	18Cr–8Ni	Bar	SA-479	304H	S30409	...	...	75
27	18Cr–8Ni	Wld. tube	SA-688	TP304	S30400	...	...	75
28	18Cr–8Ni	Wld. pipe	SA-813	TP304	S30400	...	...	75
29	18Cr–8Ni	Wld. pipe	SA-813	TP304H	S30409	...	...	75
30	18Cr–8Ni	Wld. pipe	SA-814	TP304	S30400	...	...	75
31	18Cr–8Ni	Wld. pipe	SA-814	TP304H	S30409	...	...	75
32	18Cr–8Ni	Castings	SA-351	CF3A	J92500	...	...	77
33	18Cr–8Ni	Castings	SA-351	CF8A	J92600	...	...	77
34	18Cr–8Ni	Cast pipe	SA-451	CPF3A	J92500	...	...	77
35	18Cr–8Ni	Cast pipe	SA-451	CPF8A	J92600	...	...	77
36	18Cr–8Ni–N	Forgings	SA-182	F304LN	S30453	...	> 5	70
37	18Cr–8Ni–N	Forgings	SA-336	F304LN	S30453	...	...	70
38	18Cr–8Ni–N	Forgings	SA-182	F304LN	S30453	...	≤ 5	75
39	18Cr–8Ni–N	Smls. tube	SA-213	TP304LN	S30453	...	...	75

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials (Cont'd)
1	70.0	66.3	61.8	59.7	59.2	59.2	59.2	59.2	59.0	58.6	57.9	56.8	55.4	53.6
2	70.0	66.3	61.8	59.7	59.2	59.2	59.2	59.2	59.0	58.6	57.9	56.8	55.4	53.6
3	70.0	66.3	61.8	59.7	59.2	59.2	59.2	59.2	59.0	58.6	57.9	56.8	55.4	53.6
4	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
5	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
6	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
7	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
8	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
9	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
10	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
11	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
12	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
13	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
14	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
15	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
16	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
17	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
18	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
19	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
20	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
21	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
22	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
23	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
24	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
25	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
26	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
27	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
28	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
29	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
30	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
31	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
32	77.0	72.9	68.0	65.7	65.1	65.1	65.1	65.1	65.0	64.5	63.6	62.5	60.9	58.9
33	77.0	72.9	68.0	65.7	65.1	65.1	65.1	65.1	65.0	64.5	63.6	62.5	60.9	58.9
34	77.0	72.9	68.0	65.7	65.1	65.1	65.1	65.1	65.0	64.5	63.6	62.5	60.9	58.9
35	77.0	72.9	68.0	65.7	65.1	65.1	65.1	65.1	65.0	64.5	63.6	62.5	60.9	58.9
36	70.0	66.3	61.8	59.7	59.2	59.2	59.2	59.2	59.0	58.6	57.9	56.8	55.4	53.6
37	70.0	66.3	61.8	59.7	59.2	59.2	59.2	59.2	59.0	58.6	57.9	56.8	55.4	53.6
38	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
39	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	18Cr–8Ni–N	Plate	SA-240	304LN	S30453	...	...	75
2	18Cr–8Ni–N	Wld. tube	SA-249	TP304LN	S30453	...	...	75
3	18Cr–8Ni–N	Smls. & wld. pipe	SA-312	TP304LN	S30453	...	...	75
4	18Cr–8Ni–N	Smls. pipe	SA-376	TP304LN	S30453	...	...	75
5	18Cr–8Ni–N	Smls. & wld. fittings	SA-403	304LN	S30453	WP	...	75
6	18Cr–8Ni–N	Bar	SA-479	304LN	S30453	...	...	75
7	18Cr–8Ni–N	Wld. tube	SA-688	TP304LN	S30453	...	...	75
8	18Cr–8Ni–N	Wld. pipe	SA-813	TP304LN	S30453	...	...	75
9	18Cr–8Ni–N	Wld. pipe	SA-814	TP304LN	S30453	...	...	75
10	18Cr–8Ni–N	Forged pipe	SA-430	FP304N	S30451	...	...	75
11	18Cr–8Ni–N	Forgings	SA-182	F304N	S30451	...	...	80
12	18Cr–8Ni–N	Smls. tube	SA-213	TP304N	S30451	...	...	80
13	18Cr–8Ni–N	Plate	SA-240	304N	S30451	...	...	80
14	18Cr–8Ni–N	Wld. tube	SA-249	TP304N	S30451	...	...	80
15	18Cr–8Ni–N	Smls. & wld. pipe	SA-312	TP304N	S30451	...	...	80
16	18Cr–8Ni–N	Forgings	SA-336	F304N	S30451	...	...	80
17	18Cr–8Ni–N	Wld. pipe	SA-358	304N	S30451	1	...	80
18	18Cr–8Ni–N	Smls. pipe	SA-376	TP304N	S30451	...	...	80
19	18Cr–8Ni–N	Smls. & wld. fittings	SA-403	304N	S30451	...	...	80
20	18Cr–8Ni–N	Bar	SA-479	304N	S30451	...	...	80
21	18Cr–8Ni–N	Wld. tube	SA-688	TP304N	S30451	...	...	80
22	18Cr–8Ni–N	Wld. pipe	SA-813	TP304N	S30451	...	...	80
23	18Cr–8Ni–N	Wld. pipe	SA-814	TP304N	S30451	...	...	80
24	18Cr–8Ni–4Si–N	Bar	SA-479	...	S21800	...	...	95
25	18Cr–10Ni–Cb	Forgings	SA-336	F348H	S34809	...	...	65
26	18Cr–10Ni–Cb	Castings	SA-351	CF8C	J92710	...	...	70
27	18Cr–10Ni–Cb	Cast pipe	SA-451	CPF8C	J92710	...	...	70
28	18Cr–10Ni–Cb	Forgings	SA-182	F347	S34700	...	> 5	70
29	18Cr–10Ni–Cb	Forgings	SA-336	F347	S34700	...	...	70
30	18Cr–10Ni–Cb	Forged pipe	SA-430	FP347	S34700	...	...	70
31	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...	> 5	70
32	18Cr–10Ni–Cb	Forgings	SA-336	F347H	S34709	...	...	70
33	18Cr–10Ni–Cb	Forged pipe	SA-430	FP347H	S34709	...	...	70
34	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...	> 5	70
35	18Cr–10Ni–Cb	Forgings	SA-336	F348	S34800	...	...	70
36	18Cr–10Ni–Cb	Forgings	SA-182	F348H	S34809	...	> 5	70

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials (Cont'd)
1	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
2	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
3	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
4	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
5	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
6	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
7	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
8	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
9	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
10	75.0	75.0	71.3	68.6	66.7	65.4	64.8	64.3	63.7	63.1	62.3	61.4	60.4	59.0
11	80.0	80.0	76.1	73.2	71.2	69.7	69.1	68.6	67.9	67.3	66.5	65.5	64.4	63.0
12	80.0	80.0	76.1	73.2	71.2	69.7	69.1	68.6	67.9	67.3	66.5	65.5	64.4	63.0
13	80.0	80.0	76.1	73.2	71.2	69.7	69.1	68.6	67.9	67.3	66.5	65.5	64.4	63.0
14	80.0	80.0	76.1	73.2	71.2	69.7	69.1	68.6	67.9	67.3	66.5	65.5	64.4	63.0
15	80.0	80.0	76.1	73.2	71.2	69.7	69.1	68.6	67.9	67.3	66.5	65.5	64.4	63.0
16	80.0	80.0	76.1	73.2	71.2	69.7	69.1	68.6	67.9	67.3	66.5	65.5	64.4	63.0
17	80.0	80.0	76.1	73.2	71.2	69.7	69.1	68.6	67.9	67.3	66.5	65.5	64.4	63.0
18	80.0	80.0	76.1	73.2	71.2	69.7	69.1	68.6	67.9	67.3	66.5	65.5	64.4	63.0
19	80.0	80.0	76.1	73.2	71.2	69.7	69.1	68.6	67.9	67.3	66.5	65.5	64.4	63.0
20	80.0	80.0	76.1	73.2	71.2	69.7	69.1	68.6	67.9	67.3	66.5	65.5	64.4	63.0
21	80.0	80.0	76.1	73.2	71.2	69.7	69.1	68.6	67.9	67.3	66.5	65.5	64.4	63.0
22	80.0	80.0	76.1	73.2	71.2	69.7	69.1	68.6	67.9	67.3	66.5	65.5	64.4	63.0
23	80.0	80.0	76.1	73.2	71.2	69.7	69.1	68.6	67.9	67.3	66.5	65.5	64.4	63.0
24	95.0	93.9	87.0	82.1	79.3	77.9	77.5	77.1	76.7	76.2	75.5	74.7	73.6	72.5
25	65.0	62.2	57.1	53.9	52.0	51.2	51.0	51.0	51.0	51.0	50.9	50.7	50.4	49.8
26	70.0	66.9	61.5	58.0	56.0	55.1	55.0	54.9	54.9	54.9	54.8	54.6	54.2	53.6
27	70.0	67.0	61.5	58.0	56.0	55.1	54.9	54.9	54.9	54.9	54.8	54.6	54.3	53.7
28	70.0	66.9	61.5	58.0	56.0	55.1	55.0	54.9	54.9	54.9	54.8	54.6	54.2	53.6
29	70.0	66.9	61.5	58.0	56.0	55.1	55.0	54.9	54.9	54.9	54.8	54.6	54.2	53.6
30	70.0	66.9	61.5	58.0	56.0	55.1	55.0	54.9	54.9	54.9	54.8	54.6	54.2	53.6
31	70.0	67.0	61.5	58.0	56.0	55.1	54.9	54.9	54.9	54.9	54.8	54.6	54.3	53.7
32	70.0	67.0	61.5	58.0	56.0	55.1	54.9	54.9	54.9	54.9	54.8	54.6	54.3	53.7
33	70.0	67.0	61.5	58.0	56.0	55.1	54.9	54.9	54.9	54.9	54.8	54.6	54.3	53.7
34	70.0	66.9	61.5	58.0	56.0	55.1	55.0	54.9	54.9	54.9	54.8	54.6	54.2	53.6
35	70.0	66.9	61.5	58.0	56.0	55.1	55.0	54.9	54.9	54.9	54.8	54.6	54.2	53.6
36	70.0	67.0	61.5	58.0	56.0	55.1	54.9	54.9	54.9	54.9	54.8	54.6	54.3	53.7

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	18Cr–10Ni–Cb	Forgings	SA-182	F347	S34700	...	≤ 5	75
2	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347	S34700	...	...	75
3	18Cr–10Ni–Cb	Plate	SA-240	347	S34700	...	...	75
4	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347	S34700	...	...	75
5	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP347	S34700	...	...	75
6	18Cr–10Ni–Cb	Wld. pipe	SA-358	347	S34700	1	...	75
7	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347	S34700	...	...	75
8	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	347	S34700	...	...	75
9	18Cr–10Ni–Cb	Wld. pipe	SA-409	TP347	S34700	...	...	75
10	18Cr–10Ni–Cb	Bar	SA-479	347	S34700	...	...	75
11	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP347	S34700	...	...	75
12	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...	≤ 5	75
13	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347H	S34709	...	...	75
14	18Cr–10Ni–Cb	Plate	SA-240	347H	S34709	...	...	75
15	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347H	S34709	...	...	75
16	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP347H	S34709	...	...	75
17	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347H	S34709	...	...	75
18	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	347H	S34709	...	...	75
19	18Cr–10Ni–Cb	Cast pipe	SA-452	TP347H	S34709	...	...	75
20	18Cr–10Ni–Cb	Bar	SA-479	347H	S34709	...	...	75
21	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP347H	S34709	...	...	75
22	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP347H	S34709	...	...	75
23	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...	≤ 5	75
24	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348	S34800	...	...	75
25	18Cr–10Ni–Cb	Plate	SA-240	348	S34800	...	...	75
26	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348	S34800	...	...	75
27	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP348	S34800	...	...	75
28	18Cr–10Ni–Cb	Wld. pipe	SA-358	348	S34800	1	...	75
29	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP348	S34800	...	...	75
30	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	348	S34800	...	...	75
31	18Cr–10Ni–Cb	Wld. pipe	SA-409	TP348	S34800	...	...	75
32	18Cr–10Ni–Cb	Bar	SA-479	348	S34800	...	...	75
33	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP348	S34800	...	...	75
34	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP348	S34800	...	...	75
35	18Cr–10Ni–Cb	Forgings	SA-182	F348H	S34809	...	≤ 5	75
36	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348H	S34809	...	...	75
37	18Cr–10Ni–Cb	Plate	SA-240	348H	S34809	...	...	75
38	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348H	S34809	...	...	75
39	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP348H	S34809	...	...	75

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials (Cont'd)
1	75.0	71.7	65.9	62.1	60.0	59.1	58.9	58.8	58.8	58.8	58.7	58.5	58.1	57.5
2	75.0	71.7	65.9	62.1	60.0	59.1	58.9	58.8	58.8	58.8	58.7	58.5	58.1	57.5
3	75.0	71.7	65.9	62.1	60.0	59.1	58.9	58.8	58.8	58.8	58.7	58.5	58.1	57.5
4	75.0	71.7	65.9	62.1	60.0	59.1	58.9	58.8	58.8	58.8	58.7	58.5	58.1	57.5
5	75.0	71.7	65.9	62.1	60.0	59.1	58.9	58.8	58.8	58.8	58.7	58.5	58.1	57.5
6	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
7	75.0	71.7	65.9	62.1	60.0	59.1	58.9	58.8	58.8	58.8	58.7	58.5	58.1	57.5
8	75.0	71.7	65.9	62.1	60.0	59.1	58.9	58.8	58.8	58.8	58.7	58.5	58.1	57.5
9	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
10	75.0	71.7	65.9	62.1	60.0	59.1	58.9	58.8	58.8	58.8	58.7	58.5	58.1	57.5
11	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
12	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
13	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
14	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
15	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
16	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
17	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
18	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
19	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
20	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
21	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
22	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
23	75.0	71.7	65.9	62.1	60.0	59.1	58.9	58.8	58.8	58.8	58.7	58.5	58.1	57.5
24	75.0	71.7	65.9	62.1	60.0	59.1	58.9	58.8	58.8	58.8	58.7	58.5	58.1	57.5
25	75.0	71.7	65.9	62.1	60.0	59.1	58.9	58.8	58.8	58.8	58.7	58.5	58.1	57.5
26	75.0	71.7	65.9	62.1	60.0	59.1	58.9	58.8	58.8	58.8	58.7	58.5	58.1	57.5
27	75.0	71.7	65.9	62.1	60.0	59.1	58.9	58.8	58.8	58.8	58.7	58.5	58.1	57.5
28	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
29	75.0	71.7	65.9	62.1	60.0	59.1	58.9	58.8	58.8	58.8	58.7	58.5	58.1	57.5
30	75.0	71.7	65.9	62.1	60.0	59.1	58.9	58.8	58.8	58.8	58.7	58.5	58.1	57.5
31	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
32	75.0	71.7	65.9	62.1	60.0	59.1	58.9	58.8	58.8	58.8	58.7	58.5	58.1	57.5
33	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
34	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
35	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
36	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
37	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
38	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
39	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	348H	S34809	...	...	75
2	18Cr–10Ni–Cb	Bar	SA-479	348H	S34809	...	...	75
3	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP348H	S34809	...	...	75
4	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP348H	S34809	...	...	75
5	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...	> 3/8	70
6	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321H	S32109	...	> 3/8	70
7	18Cr–10Ni–Ti	Forgings	SA-182	F321	S32100	...	> 5	70
8	18Cr–10Ni–Ti	Forgings	SA-336	F321	S32100	...	...	70
9	18Cr–10Ni–Ti	Forged pipe	SA-430	FP321	S32100	...	...	70
10	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...	> 5	70
11	18Cr–10Ni–Ti	Forgings	SA-336	F321H	S32109	...	...	70
12	18Cr–10Ni–Ti	Forged pipe	SA-430	FP321H	S32109	...	...	70
13	18Cr–10Ni–Ti	Forgings	SA-182	F321	S32100	...	≤ 5	75
14	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321	S32100	...	...	75
15	18Cr–10Ni–Ti	Plate	SA-240	321	S32100	...	...	75
16	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321	S32100	...	...	75
17	18Cr–10Ni–Ti	Smls. & wld. pipe	SA-312	TP321	S32100	...	≤ 3/8	75
18	18Cr–10Ni–Ti	Wld. pipe	SA-358	321	S32100	1	...	75
19	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...	≤ 3/8	75
20	18Cr–10Ni–Ti	Smls. & wld. fittings	SA-403	321	S32100	...	...	75
21	18Cr–10Ni–Ti	Wld. pipe	SA-409	TP321	S32100	...	...	75
22	18Cr–10Ni–Ti	Bar	SA-479	321	S32100	...	...	75
23	18Cr–10Ni–Ti	Wld. pipe	SA-813	TP321	S32100	...	...	75
24	18Cr–10Ni–Ti	Wld. pipe	SA-814	TP321	S32100	...	...	75
25	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...	≤ 5	75
26	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321H	S32109	...	...	75
27	18Cr–10Ni–Ti	Plate	SA-240	321H	S32109	...	...	75
28	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321H	S32109	...	...	75
29	18Cr–10Ni–Ti	Smls. pipe	SA-312	TP321H	S32109	...	≤ 3/8	75
30	18Cr–10Ni–Ti	Wld. pipe	SA-312	TP321H	S32109	...	...	75
31	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321H	S32109	...	≤ 3/8	75
32	18Cr–10Ni–Ti	Smls. & wld. fittings	SA-403	321H	S32109	...	...	75
33	18Cr–10Ni–Ti	Bar	SA-479	321H	S32109	...	...	75
34	18Cr–10Ni–Ti	Wld. pipe	SA-813	TP321H	S32109	...	...	75
35	18Cr–10Ni–Ti	Wld. pipe	SA-814	TP321H	S32109	...	...	75
36	18Cr–11Ni	Plate	SA-240	305	S30500	...	...	75

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials (Cont'd)
1	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
2	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
3	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
4	75.0	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5
5	70.0	66.4	62.4	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	59.6
6	70.0	66.4	62.4	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	59.6
7	70.0	66.4	62.4	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	59.6
8	70.0	66.4	62.4	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	59.6
9	70.0	66.4	62.4	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	59.6
10	70.0	66.4	62.4	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	59.6
11	70.0	66.4	62.4	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	59.6
12	70.0	66.4	62.4	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	59.6
13	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
14	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
15	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
16	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
17	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
18	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
19	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
20	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
21	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
22	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
23	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
24	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
25	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
26	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
27	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
28	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
29	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
30	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
31	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
32	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
33	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
34	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
35	75.0	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8
36	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	18Cr–13Ni–3Mo	Forgings	SA-182	F317L	S31703	...	> 5	65
2	18Cr–13Ni–3Mo	Forgings	SA-182	F317L	S31703	...	≤ 5	70
3	18Cr–13Ni–3Mo	Forgings	SA-182	F317	S31700	...	≤ 5	75
4	18Cr–13Ni–3Mo	Plate	SA-240	317	S31700	...	...	75
5	18Cr–13Ni–3Mo	Plate	SA-240	317L	S31703	...	...	75
6	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317	S31700	...	...	75
7	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317L	S31703	...	...	75
8	18Cr–13Ni–3Mo	Smls. & wld. pipe	SA-312	TP317	S31700	...	...	75
9	18Cr–13Ni–3Mo	Smls. & wld. pipe	SA-312	TP317L	S31703	...	...	75
10	18Cr–13Ni–3Mo	Smls. & wld. fittings	SA-403	317	S31700	...	...	75
11	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	...	...	75
12	18Cr–18Ni–2Si	Smls. tube	SA-213	XM-15	S38100	...	...	75
13	18Cr–18Ni–2Si	Plate	SA-240	XM-15	S38100	...	...	75
14	18Cr–18Ni–2Si	Wld. tube	SA-249	TPXM-15	S38100	...	...	75
15	18Cr–18Ni–2Si	Wld. pipe	SA-312	TPXM-15	S38100	...	...	75
16	19Cr–9Ni–½Mo	Castings	SA-351	CF10	J92590	...	...	70
17	19Cr–9Ni–2Mo	Castings	SA-351	CF10M	...	...	...	70
18	19Cr–10Ni–3Mo	Castings	SA-351	CG8M	J93000	...	...	75
19	19Cr–15Ni–4Mo	Smls. tube	SA-213	...	S31725	...	...	75
20	19Cr–15Ni–4Mo	Plate	SA-240	...	S31725	...	...	75
21	19Cr–15Ni–4Mo	Wld. tube	SA-249	...	S31725	...	...	75
22	19Cr–15Ni–4Mo	Smls. & wld. pipe	SA-312	...	S31725	...	...	75
23	19Cr–15Ni–4Mo	Wld. pipe	SA-358	...	S31725	...	...	75
24	19Cr–15Ni–4Mo	Smls. pipe	SA-376	...	S31725	...	...	75
25	19Cr–15Ni–4Mo	Wld. pipe	SA-409	...	S31725	...	...	75
26	19Cr–15Ni–4Mo	Bar	SA-479	...	S31725	...	...	75
27	20Cr–10Ni	Bar	SA-479	ER308	S30880	...	...	75
28	20Cr–18Ni–6Mo	Castings	SA-351	CK3MCuN	J93254	...	...	80
29	20Cr–18Ni–6Mo	Forgings	SA-182	F44	S31254	...	...	94
30	20Cr–18Ni–6Mo	Wld. tube	SA-249	...	S31254	...	...	94
31	20Cr–18Ni–6Mo	Smls. & wld. pipe	SA-312	...	S31254	...	...	94
32	20Cr–18Ni–6Mo	Wld. pipe	SA-358	...	S31254	...	...	94
01 33	20Cr–18Ni–6Mo	Plate	SA-240	...	S31254	...	...	100
34	21Cr–6Ni–9Mn	Forgings	SA-182	FXM-11	S21904	...	...	90
35	21Cr–6Ni–9Mn	Smls. & wld. pipe	SA-312	TPXM-11	S21904	...	...	90
36	21Cr–6Ni–9Mn	Forgings	SA-336	FXM-11	S21904	...	...	90
37	21Cr–6Ni–9Mn	Plate	SA-666	XM-11	S21904	...	...	90

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials (Cont'd)
1	65.0	63.2	59.5	57.8	57.3	57.3	57.2	57.1	56.7	56.2	55.4	54.4	53.0	51.4
2	70.0	68.1	64.0	62.2	61.8	61.7	61.6	61.5	61.1	60.5	59.7	58.6	57.1	55.4
3	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
4	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
5	75.0	72.9	68.6	66.7	66.2	66.1	66.1	65.9	65.5	64.9	64.0	62.7	61.2	59.3
6	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
7	75.0	72.9	68.6	66.7	66.2	66.1	66.1	65.9	65.5	64.9	64.0	62.7	61.2	59.3
8	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
9	75.0	72.9	68.6	66.7	66.2	66.1	66.1	65.9	65.5	64.9	64.0	62.7	61.2	59.3
10	75.0	75.0	72.9	71.9	71.8	71.8	71.8	71.8	71.5	70.8	69.7	68.3	66.5	64.3
11	75.0	72.9	68.6	66.7	66.2	66.1	66.1	65.9	65.5	64.9	64.0	62.7	61.2	59.3
12	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
13	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
14	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
15	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
16	70.0	66.4	62.1	60.1	59.4	59.3	59.2	59.1	58.8	58.4	57.7	56.8	55.6	54.0
17	70.0	69.9	68.2	67.7	67.4	66.6	66.0	65.3	64.5	63.7	62.8	61.9	61.0	60.0
18	75.0	72.8	68.8	66.8	66.1	66.0	66.0	66.0	65.9	65.5	65.0	64.0	62.7	60.8
19	75.0	72.7	68.5	66.6	66.1	66.1	66.1	65.9	65.6	64.9	64.0	62.8	61.2	59.2
20	75.0	72.7	68.5	66.6	66.1	66.1	66.1	65.9	65.6	64.9	64.0	62.8	61.2	59.2
21	75.0	72.7	68.5	66.6	66.1	66.1	66.1	65.9	65.6	64.9	64.0	62.8	61.2	59.2
22	75.0	72.7	68.5	66.6	66.1	66.1	66.1	65.9	65.6	64.9	64.0	62.8	61.2	59.2
23	75.0	72.7	68.5	66.6	66.1	66.1	66.1	65.9	65.6	64.9	64.0	62.8	61.2	59.2
24	75.0	72.7	68.5	66.6	66.1	66.1	66.1	65.9	65.6	64.9	64.0	62.8	61.2	59.2
25	75.0	72.7	68.5	66.6	66.1	66.1	66.1	65.9	65.6	64.9	64.0	62.8	61.2	59.2
26	75.0	72.7	68.5	66.6	66.1	66.1	66.1	65.9	65.6	64.9	64.0	62.8	61.2	59.2
27	75.0	71.0	66.2	64.0	63.4	63.4	63.4	63.4	63.3	62.8	62.0	60.8	59.3	57.4
28	80.0	80.0	76.0	72.5	70.0	68.4	68.0	67.7	67.4	67.0	66.4	...	...	...
29	94.0	94.0	89.4	85.2	82.2	80.4	79.9	79.5	79.2	78.7	78.0	...	...	...
30	94.0	94.0	89.4	85.2	82.2	80.4	79.9	79.5	79.2	78.7	78.0	...	...	...
31	94.0	94.0	89.4	85.2	82.2	80.4	79.9	79.5	79.2	78.7	78.0	...	...	...
32	94.0	94.0	89.4	85.2	82.2	80.4	79.9	79.5	79.2	78.7	78.0	...	...	...
33	100.0	100.0	95.1	90.6	87.5	85.6	85.0	84.6	84.2	83.3	83.0	...	...	... **01**
34	90.0	90.0	84.1	79.7	76.9	75.3	74.6	74.0	73.2	72.3	71.1	69.6	67.8	65.7
35	90.0	90.0	84.1	79.7	76.9	75.3	74.6	74.0	73.2	72.3	71.1	69.6	67.8	65.7
36	90.0	90.0	84.1	79.7	76.9	75.3	74.6	74.0	73.2	72.3	71.1	69.6	67.8	65.7
37	90.0	90.0	84.1	79.7	76.9	75.3	74.6	74.0	73.2	72.3	71.1	69.6	67.8	65.7

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	21Cr–11Ni–N	Forgings	SA-182	F45	S30815	...	...	87
2	21Cr–11Ni–N	Smls. tube	SA-213	...	S30815	...	...	87
3	21Cr–11Ni–N	Plate	SA-240	...	S30815	...	...	87
4	21Cr–11Ni–N	Wld. tube	SA-249	...	S30815	...	...	87
5	21Cr–11Ni–N	Smls. & wld. pipe	SA-312	...	S30815	...	...	87
6	21Cr–11Ni–N	Bar	SA-479	...	S30815	...	...	87
7	22Cr–5Ni–3Mo–N	Forgings	SA-182	F51	S31803	...	...	90
8	22Cr–5Ni–3Mo–N	Plate	SA-240	...	S31803	...	...	90
9	22Cr–5Ni–3Mo–N	Smls. & wld. tube	SA-789	...	S31803	...	...	90
10	22Cr–5Ni–3Mo–N	Smls. & wld. pipe	SA-790	...	S31803	...	...	90
11	22Cr–5Ni–3Mo–N	Smls. & wld. fittings	SA-815	...	S31803	...	...	90
12	22Cr–13Ni–5Mn	Castings	SA-351	CG6MMN	J93790	...	...	85
13	22Cr–13Ni–5Mn	Forgings	SA-182	FXM-19	S20910	...	...	100
14	22Cr–13Ni–5Mn	Smls. tube	SA-213	XM-19	S20910	...	...	100
15	22Cr–13Ni–5Mn	Plate	SA-240	XM-19	S20910	...	...	100
16	22Cr–13Ni–5Mn	Wld. tube	SA-249	TPXM-19	S20910	...	...	100
17	22Cr–13Ni–5Mn	Smls. & wld. pipe	SA-312	TPXM-19	S20910	...	...	100
18	22Cr–13Ni–5Mn	Wld. pipe	SA-358	XM-19	S20910	1	...	100
19	22Cr–13Ni–5Mn	Smls. & wld. fittings	SA-403	XM-19	S20910	...	...	100
20	22Cr–13Ni–5Mn	Bar	SA-479	XM-19	S20910	...	...	100
21	22Cr–13Ni–5Mn	Wld. pipe	SA-813	TPXM-19	S20910	...	...	100
22	22Cr–13Ni–5Mn	Wld. pipe	SA-814	TPXM-19	S20910	...	...	100
23	23Cr–4Ni–Mo–Cu	Plate	SA-240	...	S32304	...	...	87
24	23Cr–4Ni–Mo–Cu–N	Smls. & wld. tube	SA-789	...	S32304	...	> 1	87
25	23Cr–4Ni–Mo–Cu–N	Smls. & wld. pipe	SA-790	...	S32304	...	...	87
01 26	23Cr–4Ni–Mo–Cu–N	Smls. & wld. tube	SA-789	...	S32304	...	≤ 1	100
27	23Cr–12Ni	Smls. & wld. fittings	SA-403	309	S30900	...	...	75
28	23Cr–12Ni	Smls. tube	SA-213	TP309S	S30908	...	...	75
29	23Cr–12Ni	Plate	SA-240	309S	S30908	...	...	75
30	23Cr–12Ni	Wld. tube	SA-249	TP309S	S30908	...	...	75
31	23Cr–12Ni	Smls. & wld. pipe	SA-312	TP309S	S30908	...	...	75
32	23Cr–12Ni	Wld. pipe	SA-358	309S	S30908	1	...	75
33	23Cr–12Ni	Bar	SA-479	309S	S30908	...	...	75
34	23Cr–12Ni	Wld. pipe	SA-813	TP309S	S30908	...	...	75
35	23Cr–12Ni	Wld. pipe	SA-814	TP309S	S30908	...	...	75
36	23Cr–12Ni	Smls. tube	SA-213	TP309H	S30909	...	...	75
37	23Cr–12Ni	Plate	SA-240	309H	S30909	...	...	75
38	23Cr–12Ni	Wld. tube	SA-249	TP309H	S30909	...	...	75
39	23Cr–12Ni	Smls. & wld. pipe	SA-312	TP309H	S30909	...	...	75
40	23Cr–12Ni	Bar	SA-479	309H	S30909	...	...	75

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
													Ferrous Materials (Cont'd)	
1	87.0	86.4	81.6	78.5	76.4	74.8	74.1	73.5	72.8	72.0	71.1	70.1	68.9	67.5
2	87.0	86.4	81.6	78.5	76.4	74.8	74.1	73.5	72.8	72.0	71.1	70.1	68.9	67.5
3	87.0	86.4	81.6	78.5	76.4	74.8	74.1	73.5	72.8	72.0	71.1	70.1	68.9	67.5
4	87.0	86.4	81.6	78.5	76.4	74.8	74.1	73.5	72.8	72.0	71.1	70.1	68.9	67.5
5	87.0	86.4	81.6	78.5	76.4	74.8	74.1	73.5	72.8	72.0	71.1	70.1	68.9	67.5
6	87.0	86.4	81.6	78.5	76.4	74.8	74.1	73.5	72.8	72.0	71.1	70.1	68.9	67.5
7	90.0	90.0	86.8	83.5	81.6	80.7	80.5	...	...	...	...	...	...	...
8	90.0	90.0	86.8	83.5	81.6	80.7	80.5	...	...	...	...	...	...	...
9	90.0	90.0	86.8	83.5	81.6	80.7	80.5	...	...	...	...	...	...	...
10	90.0	90.0	86.8	83.5	81.6	80.7	80.5	...	...	...	...	...	...	...
11	90.0	90.0	86.8	83.5	81.6	80.7	80.5	...	...	...	...	...	...	...
12	85.0	84.6	80.1	77.3	75.6	74.5	74.0	73.5	72.9	72.1	71.2	70.1	68.7	67.0
13	100.0	99.4	94.2	91.1	89.1	87.7	87.0	86.4	85.6	84.8	83.8	82.6	81.3	79.7
14	100.0	99.4	94.2	91.1	89.1	87.7	87.0	86.4	85.6	84.8	83.8	82.6	81.3	79.7
15	100.0	99.4	94.2	91.1	89.1	87.7	87.0	86.4	85.6	84.8	83.8	82.6	81.3	79.7
16	100.0	99.4	94.2	91.1	89.1	87.7	87.0	86.4	85.6	84.8	83.8	82.6	81.3	79.7
17	100.0	99.4	94.2	91.1	89.1	87.7	87.0	86.4	85.6	84.8	83.8	82.6	81.3	79.7
18	100.0	99.4	94.2	91.1	89.1	87.7	87.0	86.4	85.6	84.8	83.8	82.6	81.3	79.7
19	100.0	99.4	94.2	91.1	89.1	87.7	87.0	86.4	85.6	84.8	83.8	82.6	81.3	79.7
20	100.0	99.4	94.2	91.1	89.1	87.7	87.0	86.4	85.6	84.8	83.8	82.6	81.3	79.7
21	100.0	99.4	94.2	91.1	89.1	87.7	87.0	86.4	85.6	84.8	83.8	82.6	81.3	79.7
22	100.0	99.4	94.2	91.1	89.1	87.7	87.0	86.4	85.6	84.8	83.8	82.6	81.3	79.7
23	87.0	83.9	78.7	76.0	74.6	73.5	72.9	72.1	71.2	70.3	...	...	...	...
24	87.0	83.9	78.7	76.0	74.6	73.5	72.9	72.1	71.2	70.3	...	...	...	...
25	87.0	83.9	78.7	76.0	74.6	73.5	72.9	72.1	71.2	70.3	...	...	...	...
26	100.0	96.5	90.6	87.6	86.1	84.9	84.2	83.4	...	...	...	...	...	... **01**
27	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
28	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
29	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
30	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
31	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
32	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
33	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
34	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
35	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
36	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
37	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
38	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
39	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
40	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	23Cr–12Ni–Cb	Smls. tube	SA-213	TP309Cb	S30940	...	...	75
2	23Cr–12Ni–Cb	Plate	SA-240	309Cb	S30940	...	...	75
3	23Cr–12Ni–Cb	Wld. tube	SA-249	TP309Cb	S30940	...	...	75
4	23Cr–12Ni–Cb	Smls. & wld. pipe	SA-312	TP309Cb	S30940	...	...	75
5	23Cr–12Ni–Cb	Bar	SA-479	309Cb	S30940	...	...	75
6	23Cr–12Ni–Cb	Wld. pipe	SA-813	TP309Cb	S30940	...	...	75
7	23Cr–12Ni–Cb	Wld. pipe	SA-814	TP309Cb	S30940	...	...	75
8	24Cr–10Ni–4Mo–N	Castings	SA-351	CE8MN	J93345	...	...	95
9	25Cr–4Ni–4Mo–Ti	Plate	SA-240	...	S44635	...	...	90
10	25Cr–4Ni–4Mo–Ti	Wld. tube	SA-268	...	S44635	...	...	90
11	25Cr–5Ni–3Mo–2Cu	Castings	SA-351	CD4MCu	J93370	...	...	100
12	25Cr–5Ni–3Mo–2Cu	Plate	SA-240	...	S32550	...	...	110
13	25Cr–5Ni–3Mo–2Cu	Bar	SA-479	...	S32550	...	...	110
14	25Cr–5Ni–3Mo–2Cu	Smls. & wld. tube	SA-789	...	S32550	...	...	110
15	25Cr–5Ni–3Mo–2Cu	Smls. & wld. pipe	SA-790	...	S32550	...	...	110
16	25Cr–6Ni–Mo–N	Plate	SA-240	...	S31200	...	...	100
17	25Cr–6.5Ni–3Mo–N	Smls. & wld. tube	SA-789	...	S31260	...	...	100
18	25Cr–6.5Ni–3Mo–N	Smls. & wld. pipe	SA-790	...	S31260	...	...	100
19	25Cr–6.5Ni–3Mo–N	Plate	SA-240	...	S31260	...	...	100
20	25Cr–7Ni–4Mo–N	Smls. & wld. tube	SA-789	...	S32750	...	≤ 1	116
21	25Cr–7Ni–4Mo–N	Smls. & wld. pipe	SA-790	...	S32750	...	≤ 1	116
22	25Cr–12Ni	Castings	SA-351	CH8	J93400	...	...	65
23	25Cr–12Ni	Cast pipe	SA-451	CPH8	J93400	...	...	65
24	25Cr–12Ni	Castings	SA-351	CH20	J93402	...	...	70
25	25Cr–12Ni	Cast pipe	SA-451	CPH20	J93402	...	...	70
26	25Cr–20Ni	Castings	SA-351	CK20	J94202	...	...	65
27	25Cr–20Ni	Cast pipe	SA-451	CPK20	J94202	...	...	65
28	25Cr–20Ni	Forgings	SA-182	F310	S31000	...	≤ 5	75
29	25Cr–20Ni	Forgings	SA-336	F310	S31000	...	...	75
30	25Cr–20Ni	Smls. & wld. fittings	SA-403	310	S31000	...	...	75
31	25Cr–20Ni	Smls. tube	SA-213	TP310S	S31008	...	...	75
32	25Cr–20Ni	Plate	SA-240	310S	S31008	...	...	75
33	25Cr–20Ni	Wld. tube	SA-249	TP310S	S31008	...	...	75
34	25Cr–20Ni	Smls. & wld. pipe	SA-312	TP310S	S31008	...	...	75
35	25Cr–20Ni	Wld. pipe	SA-358	310S	S31008	1	...	75
36	25Cr–20Ni	Bar	SA-479	310S	S31008	...	...	75
37	25Cr–20Ni	Wld. pipe	SA-813	TP310S	S31008	...	...	75
38	25Cr–20Ni	Wld. pipe	SA-814	TP310S	S31008	...	...	75

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials (Cont'd)
1	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
2	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
3	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
4	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
5	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
6	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
7	75.0	75.0	74.7	73.0	71.6	70.2	69.3	68.3	67.2	65.8	64.2	62.5	60.4	58.2
8	95.0	94.9	87.8	84.6	84.6	84.6	84.6	81.3	...	...	...	...	...	...
9	90.0	87.1	82.1	78.8	77.0	76.3	75.7	...	...	...	...	...	...	...
10	90.0	87.1	82.1	78.8	77.0	76.3	75.7	...	...	...	...	...	...	...
11	100.0	...	...	...	...	...	...	...	...	...	...	...	...	...
12	110.0	109.6	103.4	100.1	98.7	...	...	...	...	...	...	...	...	...
13	110.0	109.6	103.4	100.1	98.7	...	...	...	...	...	...	...	...	...
14	110.0	109.6	103.4	100.1	98.7	...	...	...	...	...	...	...	...	...
15	110.0	109.6	103.4	100.1	98.7	...	...	...	...	...	...	...	...	...
16	100.0	100.0	94.8	92.0	91.5	91.5	...	...	...	...	...	...	...	...
17	100.0	99.9	94.9	92.5	92.2	92.2	92.2	...	...	...	...	...	...	...
18	100.0	99.9	94.9	92.5	92.2	92.2	92.2	...	...	...	...	...	...	...
19	100.0	99.9	94.9	92.5	92.2	92.2	92.2	...	...	...	...	...	...	...
20	116.0	115.5	109.1	105.4	103.6	103.0	...	...	...	...	...	...	...	...
21	116.0	115.5	109.1	105.4	103.6	103.0	...	...	...	...	...	...	...	...
22	65.0	59.5	55.4	53.9	53.8	53.8	53.7	53.3	52.6	51.6	50.2	48.5	46.3	43.8
23	65.0	59.5	55.4	53.9	53.8	53.8	53.7	53.3	52.6	51.6	50.2	48.5	46.3	43.8
24	70.0	64.0	59.6	58.1	57.9	57.9	57.8	57.4	56.7	55.6	54.1	52.2	49.9	47.2
25	70.0	64.0	59.6	58.1	57.9	57.9	57.8	57.4	56.7	55.6	54.1	52.2	49.9	47.2
26	65.0	59.5	55.4	53.9	53.8	53.8	53.7	53.3	52.6	51.6	50.2	48.5	46.3	43.8
27	65.0	59.5	55.4	53.9	53.8	53.8	53.7	53.3	52.6	51.6	50.2	48.5	46.3	43.8
28	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
29	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
30	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
31	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
32	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
33	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
34	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
35	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
36	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
37	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
38	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Ferrous Materials (Cont'd)							
1	25Cr–20Ni	Smls. tube	SA-213	TP310H	S31009	...	...	75
2	25Cr–20Ni	Plate	SA-240	310H	S31009	...	...	75
3	25Cr–20Ni	Wld. tube	SA-249	TP310H	S31009	...	...	75
4	25Cr–20Ni	Smls. & wld. pipe	SA-312	TP310H	S31009	...	...	75
5	25Cr–20Ni	Bar	SA-479	310H	S31009	...	...	75
6	25Cr–20Ni–Cb	Smls. tube	SA-213	TP310Cb	S31040	...	...	75
7	25Cr–20Ni–Cb	Plate	SA-240	310Cb	S31040	...	...	75
8	25Cr–20Ni–Cb	Wld. tube	SA-249	TP310Cb	S31040	...	...	75
9	25Cr–20Ni–Cb	Smls. & wld. pipe	SA-312	TP310Cb	S31040	...	...	75
10	25Cr–20Ni–Cb	Bar	SA-479	310Cb	S31040	...	...	75
11	25Cr–20Ni–Cb	Wld. pipe	SA-813	TP310Cb	S31040	...	...	75
12	25Cr–20Ni–Cb	Wld. pipe	SA-814	TP310Cb	S31040	...	...	75
13	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...	$0.250 < t \le 1.250$	78
14	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...	$0.250 < t \le 1.250$	78
15	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...	$0.250 < t \le 1.250$	78
16	25Cr–22Ni–2Mo–N	Plate	SA-240	310MoLN	S31050	...	...	80
17	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...	≤ 0.250, wall	84
18	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...	≤ 0.250, wall	84
19	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...	≤ 0.250, wall	84
	Nonferrous Materials							
20	...	Smls. pipe	SB-42	...	C10200	O61	$\frac{1}{8} <$ NPS ≤ 2	30
21	...	Smls. tube	SB-75	...	C10200	O60	...	30
22	...	Plate, sheet, strip	SB-152	...	C10200	O25	...	30
23	...	Rod	SB-187	...	C10200	O60	...	30
24	...	Smls. pipe	SB-42	...	C10200	H55	2 < NPS ≤ 12	36
25	...	Smls. tube	SB-75	...	C10200	H55	...	36
26	...	Smls. cond. tube	SB-111	...	C10200	H55	< 3	36
27	...	Smls. U-bend tube	SB-395	...	C10200	H55	...	36
28	...	Smls. pipe	SB-42	...	C10200	H80	$\frac{1}{8} <$ NPS ≤ 2	45
29	...	Smls. tube	SB-75	...	C10200	H80	< 4	45
30	...	Smls. cond. tube	SB-111	...	C10200	H80	< 3	45
31	...	Plate, sheet, strip	SB-152	...	C10400	O25	...	30
32	...	Plate, sheet, strip	SB-152	...	C10500	O25	...	30
33	...	Plate, sheet, strip	SB-152	...	C10700	O25	...	30
34	...	Plate, sheet, strip, bar	SB-152	...	C11000	O25	≤ 2	30
35	...	Bar, rod	SB-187	...	C11000	O60	...	30

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Ferrous Materials (Cont'd)
1	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
2	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
3	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
4	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
5	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
6	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
7	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
8	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
9	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
10	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
11	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
12	75.0	74.2	70.8	69.6	69.5	69.5	69.5	69.3	68.8	68.0	66.9	65.5	63.8	61.6
13	78.0	77.0	72.9	70.1	68.1	66.6	66.0	65.4	64.9	64.3	63.6	62.8	61.5	59.7
14	78.0	77.0	72.9	70.1	68.1	66.6	66.0	65.4	64.9	64.3	63.6	62.8	61.5	59.7
15	78.0	77.0	72.9	70.1	68.1	66.6	66.0	65.4	64.9	64.3	63.6	62.8	61.5	59.7
16	80.0	79.0	74.8	71.9	69.8	68.3	67.7	67.1	66.5	66.0	65.3	64.4	63.1	61.2
17	84.0	83.0	78.5	75.5	73.3	71.7	71.0	70.4	69.9	69.3	68.5	67.6	66.2	64.3
18	84.0	83.0	78.5	75.5	73.3	71.7	71.0	70.4	69.9	69.3	68.5	67.6	66.2	64.3
19	84.0	83.0	78.5	75.5	73.3	71.7	71.0	70.4	69.9	69.3	68.5	67.6	66.2	64.3
														Nonferrous Materials
20	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...
21	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...
22	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...
23	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...
24	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...
25	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...
26	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...
27	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...
28	45.0	45.0	43.9	38.2	...	...	...	...	...	...	...	...	...	...
29	45.0	45.0	43.9	38.2	...	...	...	...	...	...	...	...	...	...
30	45.0	45.0	43.9	38.2	...	...	...	...	...	...	...	...	...	...
31	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...
32	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...
33	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...
34	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...
35	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Nonferrous Materials (Cont'd)							
1	...	Smls. tube	SB-75	...	C12000	O50	...	30
2	...	Smls. tube	SB-75	...	C12000	O60	...	30
3	...	Smls. pipe	SB-42	...	C12000	O61	$\frac{1}{8} < \text{NPS} \leq 2$	30
4	...	Smls. pipe	SB-42	...	C12000	H55	$2 < \text{NPS} \leq 12$	36
5	...	Smls. tube	SB-75	...	C12000	H55	...	36
6	...	Smls. cond. tube	SB-111	...	C12000	H55	< 3	36
7	...	Smls. U-bend tube	SB-395	...	C12000	H55	< 2	36
8	...	Smls. pipe	SB-42	...	C12000	H80	$\frac{1}{8} < \text{NPS} \leq 2$	45
9	...	Smls. tube	SB-75	...	C12000	H80	...	45
10	...	Smls. cond. tube	SB-111	...	C12000	H80	< 3	45
11	...	Smls. tube	SB-75	...	C12200	O50	...	30
12	...	Smls. tube	SB-75	...	C12200	O60	...	30
13	...	Smls. pipe	SB-42	...	C12200	O61	$\frac{1}{8} < t \leq 2$	30
14	...	Finned tube	SB-359	...	C12200	O61	...	30
15	...	Plate, sheet, strip	SB-152	...	C12200	O25	...	30
16	...	Wld. cond. tube	SB-543	...	C12200	Light cold worked	...	32
17	...	Smls. pipe	SB-42	...	C12200	H55	$2 < t \leq 12$	36
18	...	Smls. tube	SB-75	...	C12200	H55	...	36
19	...	Smls. cond. tube	SB-111	...	C12200	H55	< 3	36
20	...	Smls. U-bend tube	SB-395	...	C12200	H55	< 2	36
21	...	Smls. pipe	SB-42	...	C12200	H80	$\frac{1}{8} < t \leq 2$	45
22	...	Smls. cond. tube	SB-75	...	C12200	H80	< 4	45
23	...	Smls. tube	SB-111	...	C12200	H80	< 3	45
24	...	Plate, sheet, strip, bar	SB-152	...	C12300	O25	...	30
25	...	Plate, sheet	SB-152	...	C12500	O25	≤ 2	30
26	...	Plate, sheet, strip	SB-152	...	C14200	O25	...	30
27	...	Smls. cond. tube	SB-111	...	C14200	H55	< 3	36
28	...	Smls. U-bend tube	SB-395	...	C14200	H55	...	36
29	...	Smls. cond. tube	SB-111	...	C14200	H80	< 3	45
30	...	Smls. cond. tube	SB-111	...	C19200	O61	< 3	38
31	...	Smls. U-bend tube	SB-395	...	C19200	O61	...	38
32	...	Wld. cond. tube	SB-543	...	C19400	Annealed	...	45
33	...	Wld. cond. tube	SB-543	...	C19400	Light cold worked	...	45
34	...	Smls. cond. tube	SB-111	...	C60800	O61	...	50
35	...	Smls. U-bend tube	SB-395	...	C60800	O61	...	50
36	...	Plate, sheet	SB-169	...	C61400	O25 or O60	$2 < t \leq 5$	65
37	...	Plate	SB-171	...	C61400	O25	$2 < t \leq 5$	65
38	...	Plate, sheet	SB-169	...	C61400	O25 or O60	$\frac{1}{2} < t \leq 2$	70
39	...	Plate	SB-171	...	C61400	O25	≤ 2	70
40	...	Plate, sheet	SB-169	...	C61400	O25 or O60	$\leq \frac{1}{2}$	72

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Nonferrous Materials (Cont'd)
1	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...
2	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...
3	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...
4	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...
5	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...
6	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...
7	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...
8	45.0	45.0	43.9	38.2	...	...	...	...	...	...	...	...	...	...
9	45.0	45.0	43.9	38.2	...	...	...	...	...	...	...	...	...	...
10	45.0	45.0	43.9	38.2	...	...	...	...	...	...	...	...	...	...
11	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...
12	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...
13	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...
14	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...
15	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...
16	32.0	32.0	31.0	29.3	...	...	...	...	...	...	...	...	...	...
17	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...
18	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...
19	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...
20	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...
21	45.0	45.0	43.9	38.2	...	...	...	...	...	...	...	...	...	...
22	45.0	45.0	43.9	38.2	...	...	...	...	...	...	...	...	...	...
23	45.0	45.0	43.9	38.2	...	...	...	...	...	...	...	...	...	...
24	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...
25	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...
26	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...
27	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...
28	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...
29	45.0	45.0	43.9	38.2	...	...	...	...	...	...	...	...	...	...
30	38.0	35.9	32.6	29.7	...	...	...	...	...	...	...	...	...	...
31	38.0	35.9	32.6	29.7	...	...	...	...	...	...	...	...	...	...
32	45.0	45.0	41.7	38.6	...	...	...	...	...	...	...	...	...	...
33	45.0	45.0	41.7	38.6	...	...	...	...	...	...	...	...	...	...
34	50.0	50.0	50.0	47.3	38.5	...	...	...	...	...	...	...	...	...
35	50.0	50.0	50.0	47.3	38.5	...	...	...	...	...	...	...	...	...
36	65.0	65.0	65.0	63.7	59.4	...	...	...	...	...	...	...	...	...
37	65.0	65.0	65.0	63.7	59.4	...	...	...	...	...	...	...	...	...
38	70.0	70.0	70.0	68.6	63.9	...	...	...	...	...	...	...	...	...
39	70.0	70.0	70.0	68.6	63.9	...	...	...	...	...	...	...	...	...
40	72.0	72.0	72.0	70.6	65.8	...	...	...	...	...	...	...	...	...

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Nonferrous Materials (Cont'd)							
1	...	Plate	SB-171	...	C63000	O25	$3.5 < t \le 5$	80
2	...	Plate	SB-171	...	C63000	O25	$2 < t \le 3.5$	85
3	...	Plate	SB-171	...	C63000	O25	≤ 2	90
4	...	Forgings	SB-283	...	C64200	M10	$> 1\frac{1}{2}$	68
5	...	Forgings	SB-283	...	C64200	M10	$\le 1\frac{1}{2}$	70
6	...	Plate, sheet	SB-96	...	C65500	O61	≤ 2	50
7	...	Smls. pipe & tube	SB-466	...	C70600	O60	...	38
8	...	Wld. pipe	SB-467	...	C70600	WO61	$> 4\frac{1}{2}$	38
9	...	Bar, rod	SB-151	...	C70600	O60	...	38
10	...	Smls. cond. tube	SB-111	...	C70600	O61	...	40
11	...	Plate	SB-171	...	C70600	O25	...	40
12	...	Plate, sheet	SB-171	...	C70600	O25	≤ 2.5	40
13	...	Finned tube	SB-359	...	C70600	O61	...	40
14	...	Smls. U-bend tube	SB-395	...	C70600	O61	...	40
15	...	Wld. pipe	SB-467	...	C70600	WO61	$\le 4\frac{1}{2}$	40
16	...	Wld. tube	SB-543	...	C70600	WO61	$2\frac{1}{2} < t \le 5$	40
17	...	Wld. pipe	SB-467	...	C70600	WO61	$\le 4\frac{1}{2}$	45
18	...	Wld. tube	SB-543	...	C70600	Light cold worked	...	45
19	...	Smls. tube	SB-111	...	C70600	H55	...	45
20	...	Wld. pipe	SB-467	...	C70600	Wld. fr. cold rld. strip	$\le 4\frac{1}{2}$	54
21	...	Plate, sheet	SB-171	...	C71500	O25	$2.5 < t \le 5$	45
22	...	Plate, sheet	SB-171	...	C71500	O25	≤ 2.5	50
23	...	Smls. cond. tube	SB-111	...	C71500	O61	...	52
24	...	Smls. cond. tube	SB-111	...	C71500	HR50	...	72
25	...	Castings	SB-148	...	C95200	M01	...	65
26	...	Castings	SB-271	...	C95200	M02	...	65
27	...	Castings	SB-505	...	C95200	M07	...	68
28	...	Castings	SB-148	...	C95400	M01	...	75
29	...	Castings	SB-271	...	C95400	M02	...	75
30	99Ni	Plate, sheet, strip	SB-162	...	N02200	As rolled	...	55
31	99Ni	Smls. pipe & tube	SB-161	...	N02200	Stress rel.	...	65
32	99Ni	Smls. tube	SB-163	...	N02200	Stress rel.	...	65
33	99Ni–Low C	Smls. pipe & tube	SB-161	...	N02201	Annealed	> 5 O.D.	50
34	99Ni–Low C	Smls. & wld. fittings	SB-366	...	N02201	Annealed	...	50
35	99Ni–Low C	Bar, rod	SB-160	...	N02201	Hot rolled/ann.	...	50
36	99Ni–Low C	Smls. pipe & tube	SB-161	...	N02201	Annealed	≤ 5 O.D.	50
37	99Ni–Low C	Smls. tube	SB-163	...	N02201	Annealed	...	50
38	99Ni–Low C	Plate, sheet, strip	SB-162	...	N02201	Hot rolled/ann.	...	50

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Nonferrous Materials (Cont'd)
1	80.0	80.0	80.0	80.0	78.9	64.0	48.4	25.4	...	...	...	...	...	...
2	85.0	85.0	85.0	85.0	83.9	68.0	51.4	27.0	...	...	...	...	...	...
3	90.0	90.0	90.0	90.0	88.8	72.0	54.4	28.6	...	...	...	...	...	...
4	68.0	...	...	...	...	...	...	...	...	...	...	...	...	...
5	70.0	...	...	...	...	...	...	...	...	...	...	...	...	...
6	50.0	50.0	50.0	47.0	43.3	...	...	...	...	...	...	...	...	...
7	38.0	37.6	34.7	32.6	31.4	30.9	...	...	...	...	...	...	...	...
8	38.0	37.6	34.7	32.6	31.4	30.9	...	...	...	...	...	...	...	...
9	38.0	37.6	34.7	32.6	31.4	30.9	...	...	...	...	...	...	...	...
10	40.0	39.6	36.5	34.3	33.0	32.6	...	...	...	...	...	...	...	...
11	40.0	39.6	36.5	34.3	33.0	32.6	...	...	...	...	...	...	...	...
12	40.0	39.6	36.5	34.3	33.0	32.6	...	...	...	...	...	...	...	...
13	40.0	39.6	36.5	34.3	33.0	32.6	...	...	...	...	...	...	...	...
14	40.0	39.6	36.5	34.3	33.0	32.6	...	...	...	...	...	...	...	...
15	40.0	39.6	36.5	34.3	33.0	32.6	...	...	...	...	...	...	...	...
16	40.0	39.6	36.5	34.3	33.0	32.6	...	...	...	...	...	...	...	...
17	45.0	44.5	41.1	38.6	37.1	36.6	...	...	...	...	...	...	...	...
18	45.0	44.5	41.1	38.6	37.1	36.6	...	...	...	...	...	...	...	...
19	45.0	44.5	41.1	38.6	37.1	36.6	...	...	...	...	...	...	...	...
20	54.0	53.4	49.3	46.3	44.6	44.0	...	...	...	...	...	...	...	...
21	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	...	...	...	...	...	...
22	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	...	...	...	...	...	...
23	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	...	...	...	...	...	...
24	72.0	72.0	72.0	68.9	66.1	64.6	64.0	62.8	60.2	...	...	...	...	...
25	65.0	65.0	65.0	62.1	56.5	48.6	...	...	...	...	...	...	...	...
26	65.0	65.0	65.0	62.1	56.5	48.6	...	...	...	...	...	...	...	...
27	68.0	68.0	68.0	65.0	59.2	50.9	...	...	...	...	...	...	...	...
28	75.0	75.0	75.0	75.0	75.0	...	...	...	...	...	...	...	...	...
29	75.0	75.0	75.0	75.0	75.0	...	...	...	...	...	...	...	...	...
30	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	...	...	...
31	65.0	65.0	65.0	65.0	64.1	61.8	59.8	...	...	...	...	...	...	...
32	65.0	65.0	65.0	65.0	64.1	61.8	59.8	...	...	...	...	...	...	...
33	50.0	50.0	50.0	49.8	47.8	45.6	44.4	43.2	42.2	41.3	40.5	40.0	39.6	39.5
34	50.0	50.0	50.0	49.8	47.8	45.6	44.4	43.2	42.2	41.3	40.5	40.0	39.6	39.5
35	50.0	50.0	50.0	49.8	47.8	45.6	44.4	43.2	42.2	41.3	40.5	40.0	39.6	39.5
36	50.0	50.0	50.0	49.8	47.8	45.6	44.4	43.2	42.2	41.3	40.5	40.0	39.6	39.5
37	50.0	50.0	50.0	49.8	47.8	45.6	44.4	43.2	42.2	41.3	40.5	40.0	39.6	39.5
38	50.0	50.0	50.0	49.8	47.8	45.6	44.4	43.2	42.2	41.3	40.5	40.0	39.6	39.5

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Nonferrous Materials (Cont'd)							
1	67Ni–30Cu	Bar	SB-164	...	N04400	Annealed	...	70
2	67Ni–30Cu	Smls. pipe & tube	SB-165	...	N04400	Annealed	> 5 O.D.	70
3	67Ni–30Cu	Forgings	SB-564	...	N04400	Annealed	...	70
4	67Ni–30Cu	Plate	SB-127	...	N04400	Annealed	...	70
5	67Ni–30Cu	Smls. tube	SB-163	...	N04400	Annealed	≤ 3	70
6	67Ni–30Cu	Smls. pipe & tube	SB-165	...	N04400	Annealed	≤ 5 O.D.	70
7	67Ni–30Cu	Smls. & wld. fittings	SB-366	...	N04400	Annealed	...	70
8	67Ni–30Cu	Bar	SB-164	...	N04400	Hot worked	...	75
9	67Ni–30Cu	Plate	SB-127	...	N04400	As rolled	...	75
10	67Ni–30Cu	Bar, rod	SB-164	...	N04400	Hot worked	...	75
11	67Ni–30Cu	Smls. tube	SB-163	...	N04400	Stress rel.	...	85
12	67Ni–30Cu	Smls. pipe & tube	SB-165	...	N04400	Stress rel.	...	85
13	67Ni–30Cu–S	Bar	SB-164	...	N04405	Annealed	...	70
14	67Ni–30Cu–S	Bar	SB-164	...	N04405	Hot worked	...	75
15	47Ni–22Cr–9Mo–18Fe	Plate	SB-435	...	N06002	Annealed	> 3/16	95
16	47Ni–22Cr–9Mo–18Fe	Sheet	SB-435	...	N06002	Solution ann.	≤ 3/16	95
17	47Ni–22Cr–9Mo–18Fe	Rod	SB-572	...	N06002	Annealed	...	95
18	47Ni–22Cr–9Mo–18Fe	Smls. & wld. fittings	SB-366	...	N06002	Annealed	...	100
19	47Ni–22Cr–9Mo–18Fe	Sheet	SB-435	...	N06002	Annealed	1/16 < t ≤ 3/16	100
20	47Ni–22Cr–9Mo–18Fe	Wld. pipe	SB-619	...	N06002	Solution ann.	...	100
21	47Ni–22Cr–9Mo–18Fe	Smls. pipe & tube	SB-622	...	N06002	Solution ann.	...	100
22	47Ni–22Cr–9Mo–18Fe	Wld. tube	SB-626	...	N06002	Solution ann.	...	100
23	47Ni–22Cr–19Fe–6Mo	Rod	SB-581	...	N06007	Solution ann.	> 3/4	85
24	47Ni–22Cr–19Fe–6Mo	Plate, sheet, strip	SB-582	...	N06007	Solution ann.	> 3/4	85
25	47Ni–22Cr–19Fe–6Mo	Smls. & wld. fittings	SB-366	...	N06007	Annealed	...	90
26	47Ni–22Cr–19Fe–6Mo	Rod	SB-581	...	N06007	Solution ann.	≤ 3/4	90
27	47Ni–22Cr–19Fe–6Mo	Plate, sheet, strip	SB-582	...	N06007	Solution ann.	≤ 3/4	90
28	47Ni–22Cr–19Fe–6Mo	Wld. pipe	SB-619	...	N06007	Solution ann.	...	90
29	47Ni–22Cr–19Fe–6Mo	Smls. pipe & tube	SB-622	...	N06007	Solution ann.	...	90
30	47Ni–22Cr–19Fe–6Mo	Wld. tube	SB-626	...	N06007	Solution ann.	...	90
31	55Ni–21Cr–13.5Mo	Smls. & wld. fittings	SB-366	...	N06022	Solution ann.	...	100
32	55Ni–21Cr–13.5Mo	Forgings	SB-564	...	N06022	Solution ann.	...	100
33	55Ni–21Cr–13.5Mo	Rod	SB-574	...	N06022	Solution ann.	...	100
34	55Ni–21Cr–13.5Mo	Plate, sheet, strip	SB-575	...	N06022	Solution ann.	...	100
35	55Ni–21Cr–13.5Mo	Wld. pipe	SB-619	...	N06022	Solution ann.	...	100
36	55Ni–21Cr–13.5Mo	Smls. pipe & tube	SB-622	...	N06022	Solution ann.	...	100
37	55Ni–21Cr–13.5Mo	Wld. tube	SB-626	...	N06022	Solution ann.	...	100

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
														Nonferrous Materials (Cont'd)
1	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.7	67.3	64.1	60.3	56.4	52.9	50.5
2	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.7	67.3	64.1	60.3	56.4	52.9	50.5
3	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.7	67.3	64.1	60.3	56.4	52.9	50.5
4	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.7	67.3	64.1	60.3	56.4	52.9	50.5
5	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.7	67.3	64.1	60.3	56.4	52.9	50.5
6	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.7	67.3	64.1	60.3	56.4	52.9	50.5
7	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.7	67.3	64.1	60.3	56.4	52.9	50.5
8	75.0	75.0	75.0	75.0	75.0	75.0	74.9	72.3	69.0	65.1	60.8	56.6	53.1	50.8
9	75.0	75.0	75.0	75.0	75.0	75.0	74.9	72.3	69.0	65.1	60.8	56.6	53.1	50.8
10	75.0	75.0	75.0	75.0	75.0	75.0	74.9	72.3	69.0	65.1	60.8	56.6	53.1	50.8
11	85.0	85.0	85.0	84.9	84.9	83.7	82.2	79.9	76.8	72.9	68.6	64.2	60.2	57.5
12	85.0	85.0	85.0	84.9	84.9	83.7	82.2	79.9	76.8	72.9	68.6	64.2	60.2	57.5
13	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.7	67.3	64.1	60.3	56.4	52.9	50.5
14	75.0	75.0	75.0	75.0	75.0	75.0	74.9	72.3	69.0	65.1	60.8	56.6	53.1	50.8
15	95.0	95.0	93.8	91.4	89.0	86.4	85.1	83.7	82.5	81.3	80.2	79.3	78.6	78.1
16	95.0	95.0	93.8	91.4	89.0	86.4	85.1	83.7	82.5	81.3	80.2	79.3	78.6	78.1
17	95.0	95.0	93.8	91.4	89.0	86.4	85.1	83.7	82.5	81.3	80.2	79.3	78.6	78.1
18	100.0	100.0	98.8	96.3	93.7	91.0	89.6	88.2	86.8	85.6	84.5	83.5	82.8	82.2
19	100.0	100.0	98.8	96.3	93.7	91.0	89.6	88.2	86.8	85.6	84.5	83.5	82.8	82.2
20	100.0	100.0	98.8	96.3	93.7	91.0	89.6	88.2	86.8	85.6	84.5	83.5	82.8	82.2
21	100.0	100.0	98.8	96.3	93.7	91.0	89.6	88.2	86.8	85.6	84.5	83.5	82.8	82.2
22	100.0	100.0	98.8	96.3	93.7	91.0	89.6	88.2	86.8	85.6	84.5	83.5	82.8	82.2
23	85.0	85.0	83.7	82.7	81.4	79.8	79.0	78.3	77.7	77.2	76.5	75.7	74.1	71.5
24	85.0	85.0	83.7	82.7	81.4	79.8	79.0	78.3	77.7	77.2	76.5	75.7	74.1	71.5
25	90.0	90.0	88.6	87.6	86.2	84.5	83.7	82.9	82.3	81.7	81.1	80.1	78.5	75.7
26	90.0	90.0	88.6	87.6	86.2	84.5	83.7	82.9	82.3	81.7	81.1	80.1	78.5	75.7
27	90.0	90.0	88.6	87.6	86.2	84.5	83.7	82.9	82.3	81.7	81.1	80.1	78.5	75.7
28	90.0	90.0	88.6	87.6	86.2	84.5	83.7	82.9	82.3	81.7	81.1	80.1	78.5	75.7
29	90.0	90.0	88.6	87.6	86.2	84.5	83.7	82.9	82.3	81.7	81.1	80.1	78.5	75.7
30	90.0	90.0	88.6	87.6	86.2	84.5	83.7	82.9	82.3	81.7	81.1	80.1	78.5	75.7
31	100.0	100.0	98.5	95.3	92.9	91.1	90.4	89.7	89.1	88.4	87.8	87.1	86.3	85.4
32	100.0	100.0	98.5	95.3	92.9	91.1	90.4	89.7	89.1	88.4	87.8	87.1	86.3	85.4
33	100.0	100.0	98.5	95.3	92.9	91.1	90.4	89.7	89.1	88.4	87.8	87.1	86.3	85.4
34	100.0	100.0	98.5	95.3	92.9	91.1	90.4	89.7	89.1	88.4	87.8	87.1	86.3	85.4
35	100.0	100.0	98.5	95.3	92.9	91.1	90.4	89.7	89.1	88.4	87.8	87.1	86.3	85.4
36	100.0	100.0	98.5	95.3	92.9	91.1	90.4	89.7	89.1	88.4	87.8	87.1	86.3	85.4
37	100.0	100.0	98.5	95.3	92.9	91.1	90.4	89.7	89.1	88.4	87.8	87.1	86.3	85.4

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
		Nonferrous Materials (Cont'd)							
	1	40Ni–29Cr–15Fe–5Mo	Smls. & wld. fittings	SB-366	...	N06030	Solution ann.	...	85
	2	40Ni–29Cr–15Fe–5Mo	Rod	SB-581	...	N06030	Solution ann.	...	85
	3	40Ni–29Cr–15Fe–5Mo	Plate, sheet, strip	SB-582	...	N06030	Solution ann.	...	85
	4	40Ni–29Cr–15Fe–5Mo	Wld. pipe	SB-619	...	N06030	Solution ann.	...	85
	5	40Ni–29Cr–15Fe–5Mo	Smls. pipe & tube	SB-622	...	N06030	Solution ann.	...	85
	6	40Ni–29Cr–15Fe–5Mo	Wld. tube	SB-626	...	N06030	Solution ann.	...	85
01	7	46Ni–27Cr–23Fe–2.75Si	Rod	SB-166	...	N06045	...	...	90
01	8	46Ni–27Cr–23Fe–2.75Si	Smls. pipe & tube	SB-167	...	N06045	...	...	90
01	9	46Ni–27Cr–23Fe–2.75Si	Plate, sheet, strip	SB-168	...	N06045	...	...	90
01	10	46Ni–27Cr–23Fe–2.75Si	Smls. & wld. fittings	SB-366	...	N06045	...	...	90
01	11	46Ni–27Cr–23Fe–2.75Si	Wld. tube	SB-516	...	N06045	...	...	90
01	12	46Ni–27Cr–23Fe–2.75Si	Wld. pipe	SB-517	...	N06045	...	...	90
01	13	46Ni–27Cr–23Fe–2.75Si	Forgings	SB-564	...	N06045	...	...	90
	14	59Ni–23Cr–16Mo	Fittings	SB-366	CR5923	N06059	Annealed	...	100
	15	59Ni–23Cr–16Mo	Fittings	SB-366	WP5923	N06059	Annealed	...	100
	16	59Ni–23Cr–16Mo	Wld. fittings	SB-366	WP5923W	N06059	Annealed	...	100
	17	59Ni–23Cr–16Mo	Fittings	SB-366	WP5923WX	N06059	Annealed	...	100
	18	59Ni–23Cr–16Mo	Forgings	SB-564	...	N06059	Solution ann.	...	100
	19	59Ni–23Cr–16Mo	Rod	SB-574	...	N06059	Solution ann.	...	100
	20	59Ni–23Cr–16Mo	Plate, sheet, strip	SB-575	...	N06059	Solution ann.	...	100
	21	59Ni–23Cr–16Mo	Wld. pipe	SB-619	...	N06059	Solution ann.	...	100
	22	59Ni–23Cr–16Mo	Smls. pipe & tube	SB-622	...	N06059	Solution ann.	...	100
	23	59Ni–23Cr–16Mo	Wld. tube	SB-626	...	N06059	Solution ann.	...	100
	24	57Ni–22Cr–14W–2Mo–La	Plate, sheet, strip	SB-435	...	N06230	Solution ann.	...	110
	25	57Ni–22Cr–14W–2Mo–La	Forgings	SB-564	...	N06230	Solution ann.	...	110
	26	57Ni–22Cr–14W–2Mo–La	Bar	SB-572	...	N06230	Solution ann.	...	110
	27	57Ni–22Cr–14W–2Mo–La	Wld. pipe	SB-619	...	N06230	Solution ann.	...	110
	28	57Ni–22Cr–14W–2Mo–La	Smls. pipe & tube	SB-622	...	N06230	Solution ann.	...	110
	29	57Ni–22Cr–14W–2Mo–La	Wld. tube	SB-626	...	N06230	Solution ann.	...	110
	30	61Ni–16Mo–16Cr	Smls. & wld. fittings	SB-366	...	N06455	Annealed	...	100
	31	61Ni–16Mo–16Cr	Rod	SB-574	...	N06455	Solution ann.	...	100
	32	61Ni–16Mo–16Cr	Plate, sheet, strip	SB-575	...	N06455	Solution ann.	...	100
	33	61Ni–16Mo–16Cr	Wld. pipe	SB-619	...	N06455	Solution ann.	...	100
	34	61Ni–16Mo–16Cr	Wld. pipe & tube	SB-622	...	N06455	Solution ann.	...	100
	35	61Ni–16Mo–16Cr	Wld. tube	SB-626	...	N06455	Solution ann.	...	100
	36	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.	...	75
	37	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.	...	80
	38	72Ni–15Cr–8Fe	Smls. & wld. fittings	SB-366	...	N06600	Annealed	...	80
	39	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Cold drawn/ann.	...	80
	40	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.	...	80

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	
														Nonferrous Materials (Cont'd)	
1	85.0	85.0	81.5	78.8	76.7	75.0	74.3	73.6	73.0	72.4	71.7	70.9	69.9	68.5	
2	85.0	85.0	81.5	78.8	76.7	75.0	74.3	73.6	73.0	72.4	71.7	70.9	69.9	68.5	
3	85.0	85.0	81.5	78.8	76.7	75.0	74.3	73.6	73.0	72.4	71.7	70.9	69.9	68.5	
4	85.0	85.0	81.5	78.8	76.7	75.0	74.3	73.6	73.0	72.4	71.7	70.9	69.9	68.5	
5	85.0	85.0	81.5	78.8	76.7	75.0	74.3	73.6	73.0	72.4	71.7	70.9	69.9	68.5	
6	85.0	85.0	81.5	78.8	76.7	75.0	74.3	73.6	73.0	72.4	71.7	70.9	69.9	68.5	
7	90.0	90.0	87.1	82.3	79.1	77.2	76.6	76.0	75.4	74.8	74.0	72.9	71.6	70.1	**01**
8	90.0	90.0	87.1	82.3	79.1	77.2	76.6	76.0	75.4	74.8	74.0	72.9	71.6	70.1	**01**
9	90.0	90.0	87.1	82.3	79.1	77.2	76.6	76.0	75.4	74.8	74.0	72.9	71.6	70.1	**01**
10	90.0	90.0	87.1	82.3	79.1	77.2	76.6	76.0	75.4	74.8	74.0	72.9	71.6	70.1	**01**
11	90.0	90.0	87.1	82.3	79.1	77.2	76.6	76.0	75.4	74.8	74.0	72.9	71.6	70.1	**01**
12	90.0	90.0	87.1	82.3	79.1	77.2	76.6	76.0	75.4	74.8	74.0	72.9	71.6	70.1	**01**
13	90.0	90.0	87.1	82.3	79.1	77.2	76.6	76.0	75.4	74.8	74.0	72.9	71.6	70.1	**01**
14	100.0	100.0	100.0	96.6	93.1	90.0	88.6	87.2	85.8	84.4	83.1	82.0	...	...	
15	100.0	100.0	100.0	96.6	93.1	90.0	88.6	87.2	85.8	84.4	83.1	82.0	...	...	
16	100.0	100.0	100.0	96.6	93.1	90.0	88.6	87.2	85.8	84.4	83.1	82.0	...	...	
17	100.0	100.0	100.0	96.6	93.1	90.0	88.6	87.2	85.8	84.4	83.1	82.0	...	...	
18	100.0	100.0	100.0	96.6	93.1	90.0	88.6	87.2	85.8	84.4	83.1	82.0	...	...	
19	100.0	100.0	100.0	96.6	93.1	90.0	88.6	87.2	85.8	84.4	83.1	82.0	...	...	
20	100.0	100.0	100.0	96.6	93.1	90.0	88.6	87.2	85.8	84.4	83.1	82.0	...	...	
21	100.0	100.0	100.0	96.6	93.1	90.0	88.6	87.2	85.8	84.4	83.1	82.0	...	...	
22	100.0	100.0	100.0	96.6	93.1	90.0	88.6	87.2	85.8	84.4	83.1	82.0	...	...	
23	100.0	100.0	100.0	96.6	93.1	90.0	88.6	87.2	85.8	84.4	83.1	82.0	...	...	
24	110.0	110.0	110.0	107.7	104.8	102.9	102.3	101.9	101.5	101.3	101.0	100.7	100.4	99.8	
25	110.0	110.0	110.0	107.7	104.8	102.9	102.3	101.9	101.5	101.3	101.0	100.7	100.4	99.8	
26	110.0	110.0	110.0	107.7	104.8	102.9	102.3	101.9	101.5	101.3	101.0	100.7	100.4	99.8	
27	110.0	110.0	110.0	107.7	104.8	102.9	102.3	101.9	101.5	101.3	101.0	100.7	100.4	99.8	
28	110.0	110.0	110.0	107.7	104.8	102.9	102.3	101.9	101.5	101.3	101.0	100.7	100.4	99.8	
29	110.0	110.0	110.0	107.7	104.8	102.9	102.3	101.9	101.5	101.3	101.0	100.7	100.4	99.8	
30	100.0	100.0	100.0	100.0	98.9	97.7	97.1	96.3	95.4	94.5	93.5	92.6	92.0	92.0	
31	100.0	100.0	100.0	100.0	98.9	97.7	97.1	96.3	95.4	94.5	93.5	92.6	92.0	92.0	
32	100.0	100.0	100.0	100.0	98.9	97.7	97.1	96.3	95.4	94.5	93.5	92.6	92.0	92.0	
33	100.0	100.0	100.0	100.0	98.9	97.7	97.1	96.3	95.4	94.5	93.5	92.6	92.0	92.0	
34	100.0	100.0	100.0	100.0	98.9	97.7	97.1	96.3	95.4	94.5	93.5	92.6	92.0	92.0	
35	100.0	100.0	100.0	100.0	98.9	97.7	97.1	96.3	95.4	94.5	93.5	92.6	92.0	92.0	
36	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	73.4	70.6	...	...	
37	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...	
38	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...	
39	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...	
40	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...	

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Nonferrous Materials (Cont'd)							
1	72Ni–15Cr–8Fe	Smls. tube	SB-163	...	N06600	Annealed	≤ 3	80
2	72Ni–15Cr–8Fe	Bar	SB-166	...	N06600	Annealed	...	80
3	72Ni–15Cr–8Fe	Plate	SB-168	...	N06600	Annealed	...	80
4	72Ni–15Cr–8Fe	Wld. tube	SB-516	...	N06600	Annealed	...	80
5	72Ni–15Cr–8Fe	Forgings	SB-564	...	N06600	...	...	80
6	72Ni–15Cr–8Fe	Pipe, tube	SB-167	...	N06600	Cold drawn/ann.	...	80
7	72Ni–15Cr–8Fe	Wld. pipe	SB-517	...	N06600	Cold drawn/ann.	...	80
8	72Ni–15Cr–8Fe	Bar, rod	SB-166	...	N06600	Hot fin.	...	85
9	72Ni–15Cr–8Fe	Plate, sheet, strip	SB-168	...	N06600	Hot rolled	...	85
10	60Ni–22Cr–9Mo–3.5Cb	Smls. & wld. fittings	SB-366	...	N06625	Annealed	...	110
11	60Ni–22Cr–9Mo–3.5Cb	Bar	SB-446	1	N06625	Annealed	> 4	110
12	60Ni–22Cr–9Mo–3.5Cb	Forgings	SB-564	1	N06625	Annealed	> 4	110
13	60Ni–22Cr–9Mo–3.5Cb	Plate	SB-443	...	N06625	Annealed	...	110
14	60Ni–22Cr–9Mo–3.5Cb	Plate, sheet, strip	SB-443	1	N06625	Annealed	...	110
15	60Ni–22Cr–9Mo–3.5Cb	Plate, sheet, strip	SB-443	1	N06625	Annealed	...	120
16	60Ni–22Cr–9Mo–3.5Cb	Smls. pipe	SB-444	1	N06625	Annealed	...	120
17	60Ni–22Cr–9Mo–3.5Cb	Bar	SB-446	1	N06625	Annealed	≤ 4	120
18	60Ni–22Cr–9Mo–3.5Cb	Forgings	SB-564	...	N06625	Hot fin.	≤ 4	120
19	60Ni–22Cr–9Mo–3.5Cb	Forgings	SB-564	1	N06625	Annealed	≤ 4	120
20	60Ni–22Cr–9Mo–3.5Cb	Wld. tube	SB-704	...	N06625	Annealed	...	120
21	60Ni–22Cr–9Mo–3.5Cb	Wld. pipe	SB-705	...	N06625	Annealed	...	120
22	58Ni–29Cr–9Fe	Smls. tube	SB-163	...	N06690	Annealed	...	85
23	58Ni–29Cr–9Fe	Bar, rod	SB-166	...	N06690	Annealed	...	85
24	58Ni–29Cr–9Fe	Smls. pipe & tube	SB-167	...	N06690	Annealed	...	85
25	58Ni–29Cr–9Fe	Plate, sheet, strip	SB-168	...	N06690	Annealed	...	85
26	58Ni–29Cr–9Fe	Forgings	SB-564	...	N06690	Annealed	...	85
27	49Ni–25Cr–18Fe–6Mo	Plate, sheet, strip	SB-582	...	N06975	Solution ann.	...	85
28	49Ni–25Cr–18Fe–6Mo	Wld. pipe	SB-619	...	N06975	Solution ann.	...	85
29	49Ni–25Cr–18Fe–6Mo	Smls. pipe & tube	SB-622	...	N06975	Solution ann.	...	85
30	49Ni–25Cr–18Fe–6Mo	Wld. tube	SB-626	...	N06975	Solution ann.	...	85
31	47Ni–22Cr–20Fe–7Mo	Rod	SB-581	...	N06985	Annealed	> 3/4	85
32	47Ni–22Cr–20Fe–7Mo	Plate, sheet, strip	SB-582	...	N06985	Annealed	> 3/4	85
33	47Ni–22Cr–20Fe–7Mo	Smls. & wld. fittings	SB-366	...	N06985	Annealed	...	90
34	47Ni–22Cr–20Fe–7Mo	Rod	SB-581	...	N06985	Annealed	≤ 3/4	90
35	47Ni–22Cr–20Fe–7Mo	Plate, sheet, strip	SB-582	...	N06985	Annealed	≤ 3/4	90
36	47Ni–22Cr–20Fe–7Mo	Wld. pipe	SB-619	...	N06985	Annealed	...	90
37	47Ni–22Cr–20Fe–7Mo	Smls. pipe & tube	SB-622	...	N06985	Annealed	...	90
38	47Ni–22Cr–20Fe–7Mo	Wld. tube	SB-626	...	N06985	Annealed	...	90

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000
													Nonferrous Materials (Cont'd)	
1	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...
2	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...
3	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...
4	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...
5	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...
6	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...
7	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...
8	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	...	...
9	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	...	...
10	110.0	110.0	110.0	107.7	105.6	103.8	102.9	102.0	101.0	100.1	99.2	98.2	97.1	95.9
11	110.0	110.0	110.0	107.7	105.6	103.8	102.9	102.0	101.0	100.1	99.2	98.2	97.1	95.9
12	110.0	110.0	110.0	107.7	105.6	103.8	102.9	102.0	101.0	100.1	99.2	98.2	97.1	95.9
13	110.0	110.0	110.0	107.7	105.6	103.8	102.9	102.0	101.0	100.1	99.2	98.2	97.1	95.9
14	110.0	110.0	110.0	107.7	105.6	103.8	102.9	102.0	101.0	100.1	99.2	98.2	97.1	95.9
15	120.0	120.0	120.0	117.4	115.3	113.2	112.2	111.2	110.2	109.2	108.2	107.1	105.9	104.7
16	120.0	120.0	120.0	117.4	115.3	113.2	112.2	111.2	110.2	109.2	108.2	107.1	105.9	104.7
17	120.0	120.0	120.0	117.4	115.3	113.2	112.2	111.2	110.2	109.2	108.2	107.1	105.9	104.7
18	120.0	120.0	120.0	117.4	115.3	113.2	112.2	111.2	110.2	109.2	108.2	107.1	105.9	104.7
19	120.0	120.0	120.0	117.4	115.3	113.2	112.2	111.2	110.2	109.2	108.2	107.1	105.9	104.7
20	120.0	120.0	120.0	117.4	115.3	113.2	112.2	111.2	110.2	109.2	108.2	107.1	105.9	104.7
21	120.0	120.0	120.0	117.4	115.3	113.2	112.2	111.2	110.2	109.2	108.2	107.1	105.9	104.7
22	85.0	85.0	84.0	82.0	80.8	80.2	80.0	79.8	79.6	79.3	78.7	78.0	76.9	75.3
23	85.0	85.0	84.0	82.0	80.8	80.2	80.0	79.8	79.6	79.3	78.7	78.0	76.9	75.3
24	85.0	85.0	84.0	82.0	80.8	80.2	80.0	79.8	79.6	79.3	78.7	78.0	76.9	75.3
25	85.0	85.0	84.0	82.0	80.8	80.2	80.0	79.8	79.6	79.3	78.7	78.0	76.9	75.3
26	85.0	85.0	84.0	82.0	80.8	80.2	80.0	79.8	79.6	79.3	78.7	78.0	76.9	75.3
27	85.0	85.0	85.0	83.5	81.7	80.3	79.7	79.1	78.5	78.0	77.3	76.6	75.7	74.4
28	85.0	85.0	85.0	83.5	81.7	80.3	79.7	79.1	78.5	78.0	77.3	76.6	75.7	74.4
29	85.0	85.0	85.0	83.5	81.7	80.3	79.7	79.1	78.5	78.0	77.3	76.6	75.7	74.4
30	85.0	85.0	85.0	83.5	81.7	80.3	79.7	79.1	78.5	78.0	77.3	76.6	75.7	74.4
31	85.0	85.0	83.8	80.4	77.9	76.2	75.6	75.0	74.4	73.8	73.0	72.1	70.9	69.5
32	85.0	85.0	83.8	80.4	77.9	76.2	75.6	75.0	74.4	73.8	73.0	72.1	70.9	69.5
33	90.0	90.0	88.7	85.1	82.5	80.7	80.0	79.4	78.8	78.1	77.3	76.3	75.1	73.6
34	90.0	90.0	88.7	85.1	82.5	80.7	80.0	79.4	78.8	78.1	77.3	76.3	75.1	73.6
35	90.0	90.0	88.7	85.1	82.5	80.7	80.0	79.4	78.8	78.1	77.3	76.3	75.1	73.6
36	90.0	90.0	88.7	85.1	82.5	80.7	80.0	79.4	78.8	78.1	77.3	76.3	75.1	73.6
37	90.0	90.0	88.7	85.1	82.5	80.7	80.0	79.4	78.8	78.1	77.3	76.3	75.1	73.6
38	90.0	90.0	88.7	85.1	82.5	80.7	80.0	79.4	78.8	78.1	77.3	76.3	75.1	73.6

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
		Nonferrous Materials (Cont'd)							
	1	35Ni–35Fe–20Cr–Cb	Forgings	SB-462	...	N08020	Annealed	...	80
	2	35Ni–35Fe–20Cr–Cb	Plate	SB-463	...	N08020	Annealed	...	80
	3	35Ni–35Fe–20Cr–Cb	Bar	SB-473	...	N08020	Annealed	...	80
	4	35Ni–35Fe–20Cr–Cb	Smls. pipe & tube	SB-729	...	N08020	Annealed	...	80
	5	35Ni–35Fe–20Cr–Cb	Wld. pipe	SB-464	...	N08020	Wld. ann.	...	80
	6	35Ni–35Fe–20Cr–Cb	Wld. tube	SB-468	...	N08020	Wld. ann.	...	80
	7	35Ni–35Fe–20Cr–Cb	Smls. & wld. fittings	SB-366	...	N08020	Annealed	...	85
	8	37Ni–33Fe–23Cr–4Mo–Cu	Plate, sheet, strip	SB-463	...	N08024	Annealed	...	80
	9	37Ni–33Fe–23Cr–4Mo–Cu	Wld. pipe	SB-464	...	N08024	Wld. ann.	...	80
	10	37Ni–33Fe–23Cr–4Mo–Cu	Wld. tube	SB-468	...	N08024	Wld. ann.	...	80
	11	35Ni–30Fe–24Cr–6Mo–Cu	Plate, sheet, strip	SB-463	...	N08026	Annealed	...	80
	12	35Ni–30Fe–24Cr–6Mo–Cu	Wld. pipe	SB-464	...	N08026	Wld. ann.	...	80
	13	35Ni–30Fe–24Cr–6Mo–Cu	Wld. tube	SB-468	...	N08026	Wld. ann.	...	80
	14	31Ni–31Fe–29Cr–Mo	Smls. tube	SB-668	...	N08028	Annealed	...	73
	15	31Ni–31Fe–29Cr–Mo	Plate, sheet, strip	SB-709	...	N08028	Annealed	...	73
01	16	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Smls. & wld. fittings	SB-366	...	N08031	...	...	94
01	17	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Forgings	SB-564	...	N08031	...	...	94
01	18	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Rod	SB-581	...	N08031	...	...	94
01	19	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Wld. pipe	SB-619	...	N08031	...	...	94
01	20	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Smls. pipe & tube	SB-622	...	N08031	...	...	94
01	21	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Plate, sheet, strip	SB-625	...	N08031	...	...	94
01	22	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Wld. tube	SB-626	...	N08031	...	...	94
	23	26Ni–43Fe–22Cr–5Mo	Wld. pipe	SB-619	...	N08320	Solution ann.	...	75
	24	26Ni–43Fe–22Cr–5Mo	Plate, sheet, strip	SB-620	...	N08320	Solution ann.	...	75
	25	26Ni–43Fe–22Cr–5Mo	Rod	SB-621	...	N08320	Solution ann.	...	75
	26	26Ni–43Fe–22Cr–5Mo	Smls. pipe & tube	SB-622	...	N08320	Solution ann.	...	75
	27	26Ni–43Fe–22Cr–5Mo	Wld. tube	SB-626	...	N08320	Solution ann.	...	75
	28	35Ni–19Cr–1¼Si	Bar	SB-511	...	N08330	...	...	70
	29	35Ni–19Cr–1¼Si	Pipe	SB-535	...	N08330	...	...	70
	30	35Ni–19Cr–1¼Si	Plate	SB-536	...	N08330	...	...	70
	31	35Ni–19Cr–1¼Si	Smls. & wld. fittings	SB-366	...	N08330	Annealed	...	70
	32	35Ni–19Cr–1¼Si	Smls. & wld. pipe	SB-535	...	N08330	Annealed	...	70
	33	35Ni–19Cr–1¼Si	Plate, sheet, strip	SB-536	...	N08330	Annealed	...	70
	34	35Ni–19Cr–1¼Si	Wld. pipe	SB-710	...	N08330	Annealed	...	70

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	
														Nonferrous Materials (Cont'd)	
1	80.0	80.0	79.2	77.6	77.3	77.3	77.0	76.7	76.3	76.3	...	...	...	...	
2	80.0	80.0	79.2	77.6	77.3	77.3	77.0	76.7	76.3	76.3	...	...	...	...	
3	80.0	80.0	79.2	77.6	77.3	77.3	77.0	76.7	76.3	76.3	...	...	...	...	
4	80.0	80.0	79.2	77.6	77.3	77.3	77.0	76.7	76.3	76.3	...	...	...	...	
5	80.0	80.0	79.2	77.6	77.3	77.3	77.0	76.7	76.3	76.3	...	...	...	...	
6	80.0	80.0	79.2	77.6	77.3	77.3	77.0	76.7	76.3	76.3	...	...	...	...	
7	85.0	85.0	84.1	82.4	82.2	82.1	81.9	81.5	81.1	81.1	...	...	...	...	
8	80.0	80.0	79.0	76.8	74.8	72.9	72.1	71.4	70.8	70.3	69.9	69.5	69.2	68.6	
9	80.0	80.0	79.0	76.8	74.8	72.9	72.1	71.4	70.8	70.3	69.9	69.5	69.2	68.6	
10	80.0	80.0	79.0	76.8	74.8	72.9	72.1	71.4	70.8	70.3	69.9	69.5	69.2	68.6	
11	80.0	80.0	78.6	76.2	74.1	72.1	71.1	70.1	69.1	68.1	67.2	66.4	65.7	65.0	
12	80.0	80.0	78.6	76.2	74.1	72.1	71.1	70.1	69.1	68.1	67.2	66.4	65.7	65.0	
13	80.0	80.0	78.6	76.2	74.1	72.1	71.1	70.1	69.1	68.1	67.2	66.4	65.7	65.0	
14	73.0	73.0	70.4	67.6	65.4	63.6	62.9	62.1	61.4	60.7	59.9	59.0	58.1	57.1	
15	73.0	73.0	70.4	67.6	65.4	63.6	62.9	62.1	61.4	60.7	59.9	59.0	58.1	57.1	
16	94.0	94.0	90.5	85.8	81.6	78.1	76.7	75.6	74.7	74.0	73.2	72.2	...	...	**01**
17	94.0	94.0	90.5	85.8	81.6	78.1	76.7	75.6	74.7	74.0	73.2	72.2	...	...	**01**
18	94.0	94.0	90.5	85.8	81.6	78.1	76.7	75.6	74.7	74.0	73.2	72.2	...	...	**01**
19	94.0	94.0	90.5	85.8	81.6	78.1	76.7	75.6	74.7	74.0	73.2	72.2	...	...	**01**
20	94.0	94.0	90.5	85.8	81.6	78.1	76.7	75.6	74.7	74.0	73.2	72.2	...	...	**01**
21	94.0	94.0	90.5	85.8	81.6	78.1	76.7	75.6	74.7	74.0	73.2	72.2	...	...	**01**
22	94.0	94.0	90.5	85.8	81.6	78.1	76.7	75.6	74.7	74.0	73.2	72.2	...	...	**01**
23	75.0	75.0	74.2	71.7	70.4	70.0	69.9	69.9	69.8	69.5	...	...	...	...	
24	75.0	75.0	74.2	71.7	70.4	70.0	69.9	69.9	69.8	69.5	...	...	...	...	
25	75.0	75.0	74.2	71.7	70.4	70.0	69.9	69.9	69.8	69.5	...	...	...	...	
26	75.0	75.0	74.2	71.7	70.4	70.0	69.9	69.9	69.8	69.5	...	...	...	...	
27	75.0	75.0	74.2	71.7	70.4	70.0	69.9	69.9	69.8	69.5	...	...	...	...	
28	70.0	70.0	70.0	68.6	68.0	68.0	68.0	68.0	68.0	68.0	68.0	67.9	66.7	64.9	
29	70.0	70.0	70.0	68.6	68.0	68.0	68.0	68.0	68.0	68.0	68.0	67.9	66.7	64.9	
30	70.0	70.0	70.0	68.6	68.0	68.0	68.0	68.0	68.0	68.0	68.0	67.9	66.7	64.9	
31	70.0	70.0	70.0	68.6	68.0	68.0	68.0	68.0	68.0	68.0	68.0	67.9	66.7	64.9	
32	70.0	70.0	70.0	68.6	68.0	68.0	68.0	68.0	68.0	68.0	68.0	67.9	66.7	64.9	
33	70.0	70.0	70.0	68.6	68.0	68.0	68.0	68.0	68.0	68.0	68.0	67.9	66.7	64.9	
34	70.0	70.0	70.0	68.6	68.0	68.0	68.0	68.0	68.0	68.0	68.0	67.9	66.7	64.9	

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
		Nonferrous Materials (Cont'd)							
	1	46Fe–24Ni–21Cr–6Mo	Bar, rod, wire	SB-691	...	N08366	Annealed	...	75
	2	46Fe–24Ni–21Cr–6Mo	Wld. pipe	SB-675	...	N08366	Sol. treat.	...	75
	3	46Fe–24Ni–21Cr–6Mo	Wld. tube	SB-676	...	N08366	Sol. treat.	...	75
	4	46Fe–24Ni–21Cr–6Mo	Smls. pipe & tube	SB-690	...	N08366	Sol. treat.	...	75
	5	46Fe–24Ni–21Cr–6Mo	Plate, sheet, strip	SB-688	...	N08366	Annealed	...	75
	6	46Fe–24Ni–21Cr–6Mo–Cu–N	Forgings	SB-462	...	N08367	Solution ann.	...	95
	7	46Fe–24Ni–21Cr–6Mo–Cu–N	Forgings	SB-564	...	N08367	Solution ann.	...	95
01	8	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. pipe	SB-675	...	N08367	Solution ann.	> 3/16	95
01	9	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. tube	SB-676	...	N08367	Solution ann.	> 3/16	95
01	10	46Fe–24Ni–21Cr–6Mo–Cu–N	Plate, sheet, strip	SB-688	...	N08367	Solution ann.	> 3/16	95
01	11	46Fe–24Ni–21Cr–6Mo–Cu–N	Smls. pipe & tube	SB-690	...	N08367	Solution ann.	> 3/16	95
	12	46Fe–24Ni–21Cr–6Mo–Cu–N	Bar, rod, wire	SB-691	...	N08367	Solution ann.	...	95
01	13	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. pipe	SB-804	...	N08367	Solution ann.	> 3/16	95
01	14	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. pipe	SB-675	...	N08367	Solution ann.	≤ 3/16	100
01	15	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. tube	SB-676	...	N08367	Solution ann.	≤ 3/16	100
01	16	46Fe–24Ni–21Cr–6Mo–Cu–N	Plate, sheet, strip	SB-688	...	N08367	Solution ann.	≤ 3/16	100
01	17	...	...	...	...	...	...	...	...
01	18	46Fe–24Ni–21Cr–6Mo–Cu–N	Smls. pipe & tube	SB-690	...	N08367	Solution ann.	≤ 3/16	100
01	19	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. pipe	SB-804	...	N08367	Solution ann.	≤ 3/16	100
	20	46Fe–24Ni–21Cr–6Mo–Cu–N	Castings	SA-351	CN-3MN	J94651	Solution ann.	...	80
	21	25Ni–47Fe–21Cr–5Mo	Plate, sheet, strip	SB-599	...	N08700	Solution ann.	...	80
	22	25Ni–47Fe–21Cr–5Mo	Bar, wire	SB-672	...	N08700	Solution ann.	...	80
	23	32Ni–45Fe–20Cr–Cb	Castings	SA-351	CT15C	...	As cast	...	63
	24	33Ni–42Fe–21Cr	Smls. tube	SB-163	...	N08800	Annealed	...	75
	25	33Ni–42Fe–21Cr	Smls. & wld. fittings	SB-366	...	N08800	Annealed	...	75
	26	33Ni–42Fe–21Cr	Smls. pipe & tube	SB-407	...	N08800	Annealed	...	75
	27	33Ni–42Fe–21Cr	Bar	SB-408	...	N08800	Annealed	...	75
	28	33Ni–42Fe–21Cr	Plate	SB-409	...	N08800	Annealed	...	75
	29	33Ni–42Fe–21Cr	Wld. pipe	SB-514	...	N08800	Annealed	...	75
	30	33Ni–42Fe–21Cr	Wld. tube	SB-515	...	N08800	Annealed	...	75
	31	33Ni–42Fe–21Cr	Forgings	SB-564	...	N08800	Annealed	...	75
	32	33Ni–42Fe–21Cr	Smls. tube	SB-163	...	N08800	Cold worked	...	83
	33	33Ni–42Fe–21Cr	Smls. tube	SB-163	...	N08810	Annealed	...	65
	34	33Ni–42Fe–21Cr	Smls. pipe & tube	SB-407	...	N08810	Annealed	...	65
	35	33Ni–42Fe–21Cr	Bar	SB-408	...	N08810	Annealed	...	65
	36	33Ni–42Fe–21Cr	Plate	SB-409	...	N08810	Annealed	...	65
	37	33Ni–42Fe–21Cr	Wld. pipe	SB-514	...	N08810	Annealed	...	65
	38	33Ni–42Fe–21Cr	Wld. tube	SB-515	...	N08810	Annealed	...	65
	39	33Ni–42Fe–21Cr	Forgings	SB-564	...	N08810	Annealed	...	65

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	
														Nonferrous Materials (Cont'd)	
1	75.0	75.0	71.9	69.2	67.3	65.6	...	...	...	...	...	...	...	...	
2	75.0	75.0	71.9	69.2	67.3	65.6	...	...	...	...	...	...	...	...	
3	75.0	75.0	71.9	69.2	67.3	65.6	...	...	...	...	...	...	...	...	
4	75.0	75.0	71.9	69.2	67.3	65.6	...	...	...	...	...	...	...	...	
5	75.0	75.0	71.9	69.2	67.3	65.6	...	...	...	...	...	...	...	...	
6	95.0	95.0	89.8	85.9	83.3	81.5	80.8	80.2	79.7	79.2	78.7	78.0	...	...	
7	95.0	95.0	89.8	85.9	83.3	81.5	80.8	80.2	79.7	79.2	78.7	78.0	...	...	
8	95.0	95.0	89.8	85.9	83.3	81.5	80.8	80.2	79.7	79.2	78.7	78.0	...	...	**01**
9	95.0	95.0	89.8	85.9	83.3	81.5	80.8	80.2	79.7	79.2	78.7	78.0	...	...	**01**
10	95.0	95.0	89.8	85.9	83.3	81.5	80.8	80.2	79.7	79.2	78.7	78.0	...	...	**01**
11	95.0	95.0	89.8	85.9	83.3	81.5	80.8	80.2	79.7	79.2	78.7	78.0	...	...	**01**
12	95.0	95.0	89.8	85.9	83.3	81.5	80.8	80.2	79.7	79.2	78.7	78.0	...	...	
13	95.0	95.0	89.8	85.9	83.3	81.5	80.8	80.2	79.7	79.2	78.7	78.0	...	...	**01**
14	100.0	100.0	94.5	90.5	87.7	85.8	85.1	84.4	83.9	83.4	82.8	82.2	...	...	**01**
15	100.0	100.0	94.5	90.5	87.7	85.8	85.1	84.4	83.9	83.4	82.8	82.2	...	...	**01**
16	100.0	100.0	94.5	90.5	87.7	85.8	85.1	84.4	83.9	83.4	82.8	82.2	...	...	**01**
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**01**
18	100.0	100.0	94.5	90.5	87.7	85.8	85.1	84.4	83.9	83.4	82.8	82.2	...	...	**01**
19	100.0	100.0	94.5	90.5	87.7	85.8	85.1	84.4	83.9	83.4	82.8	82.2	...	...	**01**
20	80.0	75.5	69.6	65.7	63.0	60.8	59.8	58.9	58.0	57.2	56.5	55.9	55.3	54.8	
21	80.0	80.0	79.2	77.2	75.2	75.0	74.8	...	...	...	...	...	...	...	
22	80.0	80.0	79.2	77.2	75.2	75.0	74.8	...	...	...	...	...	...	...	
23	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	...	...	...	
24	75.0	75.0	75.0	75.0	74.7	74.6	74.6	74.5	74.2	73.9	73.3	72.5	71.4	70.0	
25	75.0	75.0	75.0	75.0	74.7	74.6	74.6	74.5	74.2	73.9	73.3	72.5	71.4	70.0	
26	75.0	75.0	75.0	75.0	74.7	74.6	74.6	74.5	74.2	73.9	73.3	72.5	71.4	70.0	
27	75.0	75.0	75.0	75.0	74.7	74.6	74.6	74.5	74.2	73.9	73.3	72.5	71.4	70.0	
28	75.0	75.0	75.0	75.0	74.7	74.6	74.6	74.5	74.2	73.9	73.3	72.5	71.4	70.0	
29	75.0	75.0	75.0	75.0	74.7	74.6	74.6	74.5	74.2	73.9	73.3	72.5	71.4	70.0	
30	75.0	75.0	75.0	75.0	74.7	74.6	74.6	74.5	74.2	73.9	73.3	72.5	71.4	70.0	
31	75.0	75.0	75.0	75.0	74.7	74.6	74.6	74.5	74.2	73.9	73.3	72.5	71.4	70.0	
32	83.0	83.0	83.0	82.5	80.7	80.0	79.9	...	...	...	...	...	...	...	
33	65.0	65.0	65.0	64.6	64.0	63.8	63.8	63.8	63.8	63.8	63.8	63.6	63.1	62.3	
34	65.0	65.0	65.0	64.6	64.0	63.8	63.8	63.8	63.8	63.8	63.8	63.6	63.1	62.3	
35	65.0	65.0	65.0	64.6	64.0	63.8	63.8	63.8	63.8	63.8	63.8	63.6	63.1	62.3	
36	65.0	65.0	65.0	64.6	64.0	63.8	63.8	63.8	63.8	63.8	63.8	63.6	63.1	62.3	
37	65.0	65.0	65.0	64.6	64.0	63.8	63.8	63.8	63.8	63.8	63.8	63.6	63.1	62.3	
38	65.0	65.0	65.0	64.6	64.0	63.8	63.8	63.8	63.8	63.8	63.8	63.6	63.1	62.3	
39	65.0	65.0	65.0	64.6	64.0	63.8	63.8	63.8	63.8	63.8	63.8	63.6	63.1	62.3	

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
	Nonferrous Materials (Cont'd)							
1	42Ni–21.5Cr–3Mo–2.3Cu	Smls. tube	SB-163	...	N08825	Annealed	...	85
2	42Ni–21.5Cr–3Mo–2.3Cu	Smls. & wld. fittings	SB-366	...	N08825	Annealed	...	85
3	42Ni–21.5Cr–3Mo–2.3Cu	Smls. pipe & tube	SB-423	...	N08825	Cold worked/ann.	...	85
4	42Ni–21.5Cr–3Mo–2.3Cu	Plate	SB-424	...	N08825	Annealed	...	85
5	42Ni–21.5Cr–3Mo–2.3Cu	Bar, rod	SB-425	...	N08825	Annealed	...	85
6	42Ni–21.5Cr–3Mo–2.3Cu	Wld. tube	SB-704	...	N08825	Annealed	...	85
7	42Ni–21.5Cr–3Mo–2.3Cu	Wld. pipe	SB-705	...	N08825	Annealed	...	85
8	44Fe–25Ni–21Cr–Mo	Plate, sheet, strip	SB-625	...	N08904	Annealed	...	71
9	44Fe–25Ni–21Cr–Mo	Bar, wire	SB-649	...	N08904	Annealed	...	71
10	44Fe–25Ni–21Cr–Mo	Wld. pipe	SB-673	...	N08904	Annealed	...	71
11	44Fe–25Ni–21Cr–Mo	Wld. tube	SB-674	...	N08904	Annealed	...	71
12	44Fe–25Ni–21Cr–Mo	Smls. pipe & tube	SB-677	...	N08904	Annealed	...	71
13	25Ni–20Cr–6Mo–Cu–N	Plate, sheet, strip	SB-625	...	N08925	Annealed	...	87
14	25Ni–20Cr–6Mo–Cu–N	Bar, wire	SB-649	...	N08925	Annealed	...	87
15	25Ni–20Cr–6Mo–Cu–N	Wld. pipe	SB-673	...	N08925	Annealed	...	87
16	25Ni–20Cr–6Mo–Cu–N	Wld. tube	SB-674	...	N08925	Annealed	...	87
17	25Ni–20Cr–6Mo–Cu–N	Smls. pipe & tube	SB-677	...	N08925	Annealed	...	87
18	62Ni–28Mo–5Fe	Plate, sheet, strip	SB-333	...	N10001	Annealed	...	100
19	62Ni–28Mo–5Fe	Smls. & wld. fittings	SB-366	...	N10001	Annealed	...	100
20	62Ni–28Mo–5Fe	Wld. pipe	SB-619	...	N10001	Solution ann.	...	100
21	62Ni–28Mo–5Fe	Smls. pipe & tube	SB-622	...	N10001	Solution ann.	...	100
22	62Ni–28Mo–5Fe	Wld. tube	SB-626	...	N10001	Solution ann.	...	100
23	62Ni–28Mo–5Fe	Rod	SB-335	...	N10001	Annealed	...	100
24	62Ni–28Mo–5Fe	Plate, strip	SB-333	...	N10001	Annealed	...	115
25	70Ni–16Mo–7Cr–5Fe	Smls. & wld. fittings	SB-366	...	N10003	Annealed	...	100
26	70Ni–16Mo–7Cr–5Fe	Plate, sheet, strip	SB-434	...	N10003	Annealed	...	100
27	70Ni–16Mo–7Cr–5Fe	Rod	SB-573	...	N10003	Annealed	...	100
28	54Ni–16Mo–15Cr	Smls. & wld. fittings	SB-366	...	N10276	Solution ann.	...	100
29	54Ni–16Mo–15Cr	Forgings	SB-564	...	N10276	Solution ann.	...	100
30	54Ni–16Mo–15Cr	Rod	SB-574	...	N10276	Solution ann.	...	100
31	54Ni–16Mo–15Cr	Plate, sheet, strip	SB-575	...	N10276	Solution ann.	...	100
32	54Ni–16Mo–15Cr	Wld. pipe	SB-619	...	N10276	Solution ann.	...	100
33	54Ni–16Mo–15Cr	Smls. pipe & tube	SB-622	...	N10276	Solution ann.	...	100
34	54Ni–16Mo–15Cr	Wld. tube	SB-626	...	N10276	Solution ann.	...	100
01 35	Ni–28Mo–3Fe–1.3Cr–0.25Al	Plate, sheet, strip	SB-333	...	N10629	...	...	110
01 36	Ni–28Mo–3Fe–1.3Cr–0.25Al	Rod	SB-335	...	N10629	...	...	110
01 37	Ni–28Mo–3Fe–1.3Cr–0.25Al	Smls. & wld. fittings	SB-366	...	N10629	...	...	110

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	
														Nonferrous Materials (Cont'd)	
1	85.0	85.0	85.0	85.0	85.0	85.0	84.6	84.2	83.7	83.1	82.4	81.5	80.4	79.0	
2	85.0	85.0	85.0	85.0	85.0	85.0	84.6	84.2	83.7	83.1	82.4	81.5	80.4	79.0	
3	85.0	85.0	85.0	85.0	85.0	85.0	84.6	84.2	83.7	83.1	82.4	81.5	80.4	79.0	
4	85.0	85.0	85.0	85.0	85.0	85.0	84.6	84.2	83.7	83.1	82.4	81.5	80.4	79.0	
5	85.0	85.0	85.0	85.0	85.0	85.0	84.6	84.2	83.7	83.1	82.4	81.5	80.4	79.0	
6	85.0	85.0	85.0	85.0	85.0	85.0	84.6	84.2	83.7	83.1	82.4	81.5	80.4	79.0	
7	85.0	85.0	85.0	85.0	85.0	85.0	84.6	84.2	83.7	83.1	82.4	81.5	80.4	79.0	
8	71.0	71.0	67.8	65.4	63.6	62.2	61.6	61.0	60.5	...	...	...	...	...	
9	71.0	71.0	67.8	65.4	63.6	62.2	61.6	61.0	60.5	...	...	...	...	...	
10	71.0	71.0	67.8	65.4	63.6	62.2	61.6	61.0	60.5	...	...	...	...	...	
11	71.0	71.0	67.8	65.4	63.6	62.2	61.6	61.0	60.5	...	...	...	...	...	
12	71.0	71.0	67.8	65.4	63.6	62.2	61.6	61.0	60.5	...	...	...	...	...	
13	87.0	87.0	83.8	80.4	77.4	74.9	73.8	72.7	71.5	70.2	...	...	...	...	
14	87.0	87.0	83.8	80.4	77.4	74.9	73.8	72.7	71.5	70.2	...	...	...	...	
15	87.0	87.0	83.8	80.4	77.4	74.9	73.8	72.7	71.5	70.2	...	...	...	...	
16	87.0	87.0	83.8	80.4	77.4	74.9	73.8	72.7	71.5	70.2	...	...	...	...	
17	87.0	87.0	83.8	80.4	77.4	74.9	73.8	72.7	71.5	70.2	...	...	...	...	
18	100.0	100.0	100.0	98.4	97.4	96.8	96.4	96.0	95.6	95.2	...	...	...	...	
19	100.0	100.0	100.0	98.4	97.4	96.8	96.4	96.0	95.6	95.2	...	...	...	...	
20	100.0	100.0	100.0	98.4	97.4	96.8	96.4	96.0	95.6	95.2	...	...	...	...	
21	100.0	100.0	100.0	98.4	97.4	96.8	96.4	96.0	95.6	95.2	...	...	...	...	
22	100.0	100.0	100.0	98.4	97.4	96.8	96.4	96.0	95.6	95.2	...	...	...	...	
23	100.0	100.0	100.0	98.4	97.4	96.8	96.4	96.0	95.6	95.2	...	...	...	...	
24	115.0	115.0	115.0	113.1	112.0	111.3	110.9	110.4	109.9	109.5	...	...	...	...	
25	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...	...	...	...	
26	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...	...	...	...	
27	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...	...	...	...	
28	100.0	100.0	100.0	97.7	95.7	93.9	93.1	92.4	91.7	90.9	90.2	89.4	88.5	87.6	
29	100.0	100.0	100.0	97.7	95.7	93.9	93.1	92.4	91.7	90.9	90.2	89.4	88.5	87.6	
30	100.0	100.0	100.0	97.7	95.7	93.9	93.1	92.4	91.7	90.9	90.2	89.4	88.5	87.6	
31	100.0	100.0	100.0	97.7	95.7	93.9	93.1	92.4	91.7	90.9	90.2	89.4	88.5	87.6	
32	100.0	100.0	100.0	97.7	95.7	93.9	93.1	92.4	91.7	90.9	90.2	89.4	88.5	87.6	
33	100.0	100.0	100.0	97.7	95.7	93.9	93.1	92.4	91.7	90.9	90.2	89.4	88.5	87.6	
34	100.0	100.0	100.0	97.7	95.7	93.9	93.1	92.4	91.7	90.9	90.2	89.4	88.5	87.6	
35	110.0	110.0	110.0	110.0	108.7	107.1	106.4	105.8	105.2	104.7	104.2	103.8	103.0	...	**01**
36	110.0	110.0	110.0	110.0	108.7	107.1	106.4	105.8	105.2	104.7	104.2	103.8	103.0	...	**01**
37	110.0	110.0	110.0	110.0	108.7	107.1	106.4	105.8	105.2	104.7	104.2	103.8	103.0	...	**01**

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
		Nonferrous Materials (Cont'd)							
01	1	Ni–28Mo–3Fe–1.3Cr–0.25Al	Forgings	SB-564	...	N10629	...	...	110
01	2	Ni–28Mo–3Fe–1.3Cr–0.25Al	Wld. pipe	SB-619	...	N10629	...	...	110
01	3	Ni–28Mo–3Fe–1.3Cr–0.25Al	Smls. pipe & tube	SB-622	...	N10629	...	...	110
01	4	Ni–28Mo–3Fe–1.3Cr–0.25Al	Wld. tube	SB-626	...	N10629	...	...	110
	5	65Ni–28Mo–2Fe	Smls. & wld. fittings	SB-366	...	N10665	Annealed	...	100
	6	65Ni–28Mo–2Fe	Wld. pipe	SB-619	...	N10665	Annealed	...	110
	7	65Ni–28Mo–2Fe	Wld. tube	SB-626	...	N10665	Annealed	...	110
	8	65Ni–28Mo–2Fe	Plate, strip	SB-333	...	N10665	Solution ann.	...	110
	9	65Ni–28Mo–2Fe	Rod	SB-335	...	N10665	Solution ann.	...	110
	10	65Ni–28Mo–2Fe	Wld. pipe	SB-619	...	N10665	Solution ann.	...	110
	11	65Ni–28Mo–2Fe	Smls. pipe & tube	SB-622	...	N10665	Solution ann.	...	110
	12	65Ni–28Mo–2Fe	Wld. tube	SB-626	...	N10665	Solution ann.	...	110
	13	65Ni–29.5Mo–2Fe–2Cr	Plate, sheet, strip	SB-333	...	N10675	Solution ann.	...	110
	14	65Ni–29.5Mo–2Fe–2Cr	Rod	SB-335	...	N10675	Solution ann.	...	110
	15	65Ni–29.5Mo–2Fe–2Cr	Smls. & wld. fittings	SB-366	...	N10675	Solution ann.	...	110
	16	65Ni–29.5Mo–2Fe–2Cr	Forgings	SB-564	...	N10675	Solution ann.	...	110
	17	65Ni–29.5Mo–2Fe–2Cr	Wld. pipe	SB-619	...	N10675	Solution ann.	...	110
	18	65Ni–29.5Mo–2Fe–2Cr	Smls. pipe & tube	SB-622	...	N10675	Solution ann.	...	110
	19	65Ni–29.5Mo–2Fe–2Cr	Wld. tube	SB-626	...	N10675	Solution ann.	...	110
01	20	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Smls. & wld. fittings	SB-366	...	R20033	...	...	109
01	21	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Forgings	SB-564	...	R20033	...	...	109
01	22	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Wld. pipe	SB-619	...	R20033	...	...	109
01	23	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Smls. pipe & tube	SB-622	...	R20033	...	...	109
01	24	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Plate, sheet, strip	SB-625	...	R20033	...	...	109
01	25	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Wld. tube	SB-626	...	R20033	...	...	109
01	26	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Rod	SB-649	...	R20033	...	...	109

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	
														Nonferrous Materials (Cont'd)	
1	110.0	110.0	110.0	110.0	108.7	107.1	106.4	105.8	105.2	104.7	104.2	103.8	103.0	...	**01**
2	110.0	110.0	110.0	110.0	108.7	107.1	106.4	105.8	105.2	104.7	104.2	103.8	103.0	...	**01**
3	110.0	110.0	110.0	110.0	108.7	107.1	106.4	105.8	105.2	104.7	104.2	103.8	103.0	...	**01**
4	110.0	110.0	110.0	110.0	108.7	107.1	106.4	105.8	105.2	104.7	104.2	103.8	103.0	...	**01**
5	100.0	100.0	100.0	100.0	100.0	99.3	98.8	98.3	97.8	97.3	96.8	96.3	95.9	95.8	
6	110.0	110.0	110.0	110.0	110.0	109.2	108.7	108.1	107.6	107.0	106.5	105.9	105.5	105.3	
7	110.0	110.0	110.0	110.0	110.0	109.2	108.7	108.1	107.6	107.0	106.5	105.9	105.5	105.3	
8	110.0	110.0	110.0	110.0	110.0	109.2	108.7	108.1	107.6	107.0	106.5	105.9	105.5	105.3	
9	110.0	110.0	110.0	110.0	110.0	109.2	108.7	108.1	107.6	107.0	106.5	105.9	105.5	105.3	
10	110.0	110.0	110.0	110.0	110.0	109.2	108.7	108.1	107.6	107.0	106.5	105.9	105.5	105.3	
11	110.0	110.0	110.0	110.0	110.0	109.2	108.7	108.1	107.6	107.0	106.5	105.9	105.5	105.3	
12	110.0	110.0	110.0	110.0	110.0	109.2	108.7	108.1	107.6	107.0	106.5	105.9	105.5	105.3	
13	110.0	110.0	110.0	110.0	108.7	107.1	106.4	105.8	105.2	104.7	104.2	103.8	103.3	102.8	
14	110.0	110.0	110.0	110.0	108.7	107.1	106.4	105.8	105.2	104.7	104.2	103.8	103.3	102.8	
15	110.0	110.0	110.0	110.0	108.7	107.1	106.4	105.8	105.2	104.7	104.2	103.8	103.3	102.8	
16	110.0	110.0	110.0	110.0	108.7	107.1	106.4	105.8	105.2	104.7	104.2	103.8	103.3	102.8	
17	110.0	110.0	110.0	110.0	108.7	107.1	106.4	105.8	105.2	104.7	104.2	103.8	103.3	102.8	
18	110.0	110.0	110.0	110.0	108.7	107.1	106.4	105.8	105.2	104.7	104.2	103.8	103.3	102.8	
19	110.0	110.0	110.0	110.0	108.7	107.1	106.4	105.8	105.2	104.7	104.2	103.8	103.3	102.8	
20	109.0	109.0	103.2	97.8	93.7	90.6	89.3	88.2	87.1	86.0	84.9	83.5	...	...	**01**
21	109.0	109.0	103.2	97.8	93.7	90.6	89.3	88.2	87.1	86.0	84.9	83.5	...	...	**01**
22	109.0	109.0	103.2	97.8	93.7	90.6	89.3	88.2	87.1	86.0	84.9	83.5	...	...	**01**
23	109.0	109.0	103.2	97.8	93.7	90.6	89.3	88.2	87.1	86.0	84.9	83.5	...	...	**01**
24	109.0	109.0	103.2	97.8	93.7	90.6	89.3	88.2	87.1	86.0	84.9	83.5	...	...	**01**
25	109.0	109.0	103.2	97.8	93.7	90.6	89.3	88.2	87.1	86.0	84.9	83.5	...	...	**01**
26	109.0	109.0	103.2	97.8	93.7	90.6	89.3	88.2	87.1	86.0	84.9	83.5	...	...	**01**

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
		Nonferrous Materials (Cont'd)							
	1	21Ni–30Fe–22Cr–18Co–3Mo–3W	Plate, sheet, strip	SB-435	...	R30556	Annealed	...	100
	2	21Ni–30Fe–22Cr–18Co–3Mo–3W	Rod	SB-572	...	R30556	Annealed	...	100
	3	21Ni–30Fe–22Cr–18Co–3Mo–3W	Wld. pipe	SB-619	...	R30556	Annealed	...	100
	4	21Ni–30Fe–22Cr–18Co–3Mo–3W	Smls. pipe & tube	SB-622	...	R30556	Annealed	...	100
	5	21Ni–30Fe–22Cr–18Co–3Mo–3W	Wld. tube	SB-626	...	R30556	Annealed	...	100
	6	Ti	Plate, sheet, strip	SB-265	1	R50250	Annealed	...	35
	7	Ti	Smls. & wld. tube	SB-338	1	R50250	Annealed	...	35
	8	Ti	Bar, billet	SB-348	1	R50250	Annealed	...	35
	9	Ti	Smls. & wld. fittings	SB-363	WPT1	R50250	Annealed	...	35
	10	Ti	Forgings	SB-381	F1	R50250	Annealed	...	35
01	11	Ti	Smls. pipe	SB-861	1	R50250	Annealed	...	35
01	12	Ti	Wld. pipe	SB-862	1	R50250	Annealed	...	35
01	13	Ti	Castings	SB-367	C-2	R50400	...	...	50
	14	Ti	Forgings	SB-381	F2	R50400	Annealed	...	50
01	15	Ti	Castings	SB-367	C-3	R50550	...	...	65
	16	Ti	Plate, sheet, strip	SB-265	3	R50550	Annealed	...	65
	17	Ti	Smls. & wld. tube	SB-338	3	R50550	Annealed	...	65
	18	Ti	Bar, billet	SB-348	3	R50550	Annealed	...	65
	19	Ti	Smls. & wld. fittings	SB-363	WPT3	R50550	Annealed	...	65
	20	Ti	Forgings	SB-381	F3	R50550	Annealed	...	65
01	21	Ti	Smls. pipe	SB-861	3	R50550	Annealed	...	65
01	22	Ti	Wld. pipe	SB-862	3	R50550	Annealed	...	65
01	23	Ti–Pd	Plate, sheet, strip	SB-265	11	R52250	Annealed	...	35
	24	Ti–Pd	Plate, sheet, strip	SB-265	17	R52252	Annealed	...	35
	25	Ti–Pd	Plate, sheet, strip	SB-265	7	R52400	Annealed	...	50
01	26	Ti–Pd	Plate, sheet, strip	SB-265	16	R52402	Annealed	...	50
	27	Ti–Pd	Bar, billet	SB-348	16	R52402	Annealed	...	50
	28	Ti–Pd	Forgings	SB-381	F16	R52402	Annealed	...	50
	29	Ti–0.3Mo–0.8Ni	Forgings	SB-381	F12	R53400	Annealed	...	70
	30	Ti–3Al–2.5V	Plate, sheet, strip	SB-265	9	R56320	Annealed	...	90
	31	Ti–3Al–2.5V	Smls. & wld. tube	SB-338	9	R56320	Annealed	...	90
	32	Ti–3Al–2.5V	Bar, billet	SB-348	9	R56320	Annealed	...	90

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	
														Nonferrous Materials (Cont'd)	
1	100.0	100.0	97.9	94.7	92.5	91.1	90.5	90.1	89.7	89.3	88.8	88.2	87.5	86.6	
2	100.0	100.0	97.9	94.7	92.5	91.1	90.5	90.1	89.7	89.3	88.8	88.2	87.5	86.6	
3	100.0	100.0	97.9	94.7	92.5	91.1	90.5	90.1	89.7	89.3	88.8	88.2	87.5	86.6	
4	100.0	100.0	97.9	94.7	92.5	91.1	90.5	90.1	89.7	89.3	88.8	88.2	87.5	86.6	
5	100.0	100.0	97.9	94.7	92.5	91.1	90.5	90.1	89.7	89.3	88.8	88.2	87.5	86.6	
6	35.0	28.9	23.1	19.3	16.3	12.5	...	...	...	...	...	...	...	...	
7	35.0	28.9	23.1	19.3	16.3	12.5	...	...	...	...	...	...	...	...	
8	35.0	28.9	23.1	19.3	16.3	12.5	...	...	...	...	...	...	...	...	
9	35.0	28.9	23.1	19.3	16.3	12.5	...	...	...	...	...	...	...	...	
10	35.0	28.9	23.1	19.3	16.3	12.5	...	...	...	...	...	...	...	...	
11	35.0	28.9	23.1	19.3	16.3	12.5	...	...	...	...	...	...	...	...	**01**
12	35.0	28.9	23.1	19.3	16.3	12.5	...	...	...	...	...	...	...	...	**01**
13	50.0	41.3	34.1	28.4	23.8	...	...	...	...	...	...	...	...	...	**01**
14	50.0	43.6	36.2	30.9	26.6	22.8	...	...	...	...	...	...	...	...	
15	65.0	55.2	44.6	36.2	29.8	...	...	...	...	...	...	...	...	...	**01**
16	65.0	55.2	44.6	36.2	29.8	25.8	...	...	...	...	...	...	...	...	
17	65.0	55.2	44.6	36.2	29.8	25.8	...	...	...	...	...	...	...	...	
18	65.0	55.2	44.6	36.2	29.8	25.8	...	...	...	...	...	...	...	...	
19	65.0	55.2	44.6	36.2	29.8	25.8	...	...	...	...	...	...	...	...	
20	65.0	55.2	44.6	36.2	29.8	25.8	...	...	...	...	...	...	...	...	
21	65.0	55.2	44.6	36.2	29.8	25.8	...	...	...	...	...	...	...	...	**01**
22	65.0	55.2	44.6	36.2	29.8	25.8	...	...	...	...	...	...	...	...	**01**
23	35.0	28.9	23.1	19.3	16.3	12.5	...	...	...	...	...	...	...	...	**01**
24	35.0	29.2	23.2	19.2	16.4	12.4	...	...	...	...	...	...	...	...	
25	50.0	43.6	36.2	30.9	26.6	22.8	...	...	...	...	...	...	...	...	
26	50.0	43.6	36.0	30.8	26.4	22.8	...	...	...	...	...	...	...	...	**01**
27	50.0	43.6	36.0	30.8	26.4	22.8	...	...	...	...	...	...	...	...	
28	50.0	43.6	36.0	30.8	26.4	22.8	...	...	...	...	...	...	...	...	
29	70.0	65.4	56.8	50.0	45.7	43.2	...	...	...	...	...	...	...	...	
30	90.0	86.6	79.1	70.5	63.4	60.3	...	...	...	...	...	...	...	...	
31	90.0	86.6	79.1	70.5	63.4	60.3	...	...	...	...	...	...	...	...	
32	90.0	86.6	79.1	70.5	63.4	60.3	...	...	...	...	...	...	...	...	

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper	Size/ Thickness, in.	Min. Tensile Str., ksi
		Nonferrous Materials (Cont'd)							
01	1	Ti–3Al–2.5V	Smls. fittings	SB-363	WPT9	R56320	Annealed	...	90
	2	Ti–3Al–2.5V	Wld. fittings	SB-363	WPT9W	R56320	Annealed	...	90
	3	Ti–3Al–2.5V	Forgings	SB-381	F9	R56320	Annealed	...	90
01	4	Ti–3Al–2.5V	Smls. pipe	SB-861	9	R56320	Annealed	...	90
01	5	Ti–3Al–2.5V	Wld. pipe	SB-862	9	R56320	Annealed	...	90
01	6	99.2Zr	Forgings	SB-493	...	R60702	Annealed	...	55
01	7	99.2Zr	Smls. tube	SB-523	...	R60702	Annealed	...	55
01	8	99.2Zr	Wld. tube	SB-523	...	R60702	Annealed	...	55
01	9	99.2Zr	Bar, wire	SB-550	...	R60702	Annealed	...	55
01	10	99.2Zr	Plate, sheet, strip	SB-551	...	R60702	Annealed	...	55
01	11	99.2Zr	Smls. & wld. pipe	SB-658	...	R60702	Annealed	...	55

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TABLE U (CONT'D)
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	–20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	
														Nonferrous Materials (Cont'd)	
1	90.0	86.6	79.1	70.5	63.4	60.3	...	...	...	...	...	...	...	...	**01**
2	90.0	86.6	79.1	70.5	63.4	60.3	...	...	...	...	...	...	...	...	
3	90.0	86.6	79.1	70.5	63.4	60.3	...	...	...	...	...	...	...	...	
4	90.0	86.6	79.1	70.5	63.4	60.3	...	...	...	...	...	...	...	...	**01**
5	90.0	86.6	79.1	70.5	63.4	60.3	...	...	...	...	...	...	...	...	**01**
6	55.0	47.9	39.0	31.9	26.6	23.1	21.8	20.8	19.9	19.2	...	...	...	...	**01**
7	55.0	47.9	39.0	31.9	26.6	23.1	21.8	20.8	19.9	19.2	...	...	...	...	**01**
8	55.0	47.9	39.0	31.9	26.6	23.1	21.8	20.8	19.9	19.2	...	...	...	...	**01**
9	55.0	47.9	39.0	31.9	26.6	23.1	21.8	20.8	19.9	19.2	...	...	...	...	**01**
10	55.0	47.9	39.0	31.9	26.6	23.1	21.8	20.8	19.9	19.2	...	...	...	...	**01**
11	55.0	47.9	39.0	31.9	26.6	23.1	21.8	20.8	19.9	19.2	...	...	...	...	**01**

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NOTES TO TABLE U

GENERAL NOTES:

(a) The following abbreviations are used: ann., annealed; Cond., Condition; cond., condenser; Desig., Designation; fin., finished; fr., from; rel., relieved; rld., rolled; Smls., Seamless; Sol., Solution; Str., Strength; treat., treated; and Wld., Welded.

(b) The tabulated values of tensile strength are those which the Committee believes are suitable for use in design calculations. At temperatures above room temperature, the values of tensile strength tend toward an average or expected value which may be as much as 10% above the tensile strength trend curve adjusted to the minimum specified room temperature tensile strength. The tensile strength values do not correspond exactly to "average" as this term is applied to a statistical treatment of a homogeneous set of data. Neither the ASME Material Specifications nor the rules of Sections I, III, or VIII require elevated temperature testing for tensile strengths of production material for use in Code components. It is not intended that results of such tests, if performed, be compared with these tabulated tensile strength values for ASME Code acceptance/rejection purposes for materials. If some elevated temperature test results on production material appear lower than the tabulated values by a large amount (more than the typical variability of material and suggesting the possibility of some error), further investigation by retest or other means should be considered.

(c) Notes limiting applications of these materials appear in Tables 1A, 1B, 2A, 2B, 3, and 4.

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TABLE U-2
SECTION VIII, DIVISION 3 TENSILE STRENGTH VALUES S_u FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	UNS No.	Temper	Diameter, in.	Specified Minimum Tensile, ksi	Notes
1	1Cr–¼Si–V	Wire	SA-232	...	...	Oil	0.020	300	(1)
2	1Cr–¼Si–V	Wire	SA-232	...	...	Oil	0.032	290	(1)
3	1Cr–¼Si–V	Wire	SA-232	...	...	Oil	0.041	280	(1)
4	1Cr–¼Si–V	Wire	SA-232	...	...	Oil	0.054	270	(1)
5	1Cr–¼Si–V	Wire	SA-232	...	...	Oil	0.062	265	(1)
6	1Cr–¼Si–V	Wire	SA-232	...	...	Oil	0.080	255	(2)
7	1Cr–¼Si–V	Wire	SA-232	...	...	Oil	0.106	245	(2)
8	1Cr–¼Si–V	Wire	SA-232	...	...	Oil	0.135	235	(2)
9	1Cr–¼Si–V	Wire	SA-232	...	...	Oil	0.162	225	(2)
10	1Cr–¼Si–V	Wire	SA-232	...	...	Oil	0.192	220	(2)
11	1Cr–¼Si–V	Wire	SA-232	...	...	Oil	0.244	210	(2)
12	1Cr–¼Si–V	Wire	SA-232	...	...	Oil	0.283	205	(2)
13	1Cr–¼Si–V	Wire	SA-232	...	...	Oil	0.312	203	(2)
14	1Cr–¼Si–V	Wire	SA-232	...	...	Oil	0.375	200	(2)
15	1Cr–¼Si–V	Wire	SA-232	...	...	Oil	0.438	195	(2)
16	1Cr–¼Si–V	Wire	SA-232	...	...	Oil	0.500	190	(2)

GENERAL NOTES:

(a) These wire materials are suitable only for use in special closure parts designed in accordance with Article KD-6 of Section VIII, Division 3, for which it is impractical or impossible to obtain yield strength data. The materials shall not be used for fabrication of other pressure retaining components, such as bolting, wire wound vessels, or wire wound frames.

(b) The wire may be reshaped for final use from a round to some other cross section, provided the processing does not adversely affect the tensile strength of the material.

(c) Tensile strength values for intermediate diameters may be interpolated.

(d) These materials are not intended for use over 100°F.

NOTES:

(1) Material of this diameter shall have a maximum tensile strength not in excess of 25 ksi above the specified minimum.

(2) Material of this diameter shall have a maximum tensile strength not in excess of 20 ksi above the specified minimum.

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TABLE Y-1
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials					
1	Carbon steel	Sheet	SA-620	...	K00040	...
2	Carbon steel	Bar	SA-675	45	...	...
3	Carbon steel	Wld. pipe	SA-134	A283A	...	...
4	Carbon steel	Plate	SA-283	A	...	...
5	Carbon steel	Plate	SA-285	A	K01700	...
6	Carbon steel	Wld. pipe	SA-672	A45	K01700	...
7	Carbon steel	Sheet	SA-414	A	K01501	...
8	Carbon steel	Wld. tube	SA-178	A	K01200	...
9	Carbon steel	Smls. tube	SA-179	...	K01200	...
10	Carbon steel	Smls. tube	SA-192	...	K01201	...
11	Carbon steel	Wld. tube	SA-214	...	K01807	...
12	Carbon steel	Wld. tube	SA-226	...	K01201	...
13	Carbon steel	Smls. tube	SA-556	A2	K01807	...
14	Carbon steel	Wld. tube	SA-557	A2	K01807	...
15	Carbon steel	Wld. pipe	SA-53	E/A	K02504	...
16	Carbon steel	Wld. pipe	SA-53	F	...	...
17	Carbon steel	Smls. pipe	SA-53	S/A	K02504	...
18	Carbon steel	Smls. pipe	SA-106	A	K02501	...
19	Carbon steel	Wld. pipe	SA-135	A	...	...
20	Carbon steel	Forged pipe	SA-369	FPA	K02501	...
21	Carbon steel	Wld. pipe	SA-587	...	K11500	...
22	Carbon steel	Bar	SA-675	50	...	...
23	Carbon steel	Wld. pipe	SA-134	A283B	...	...
24	Carbon steel	Plate	SA-283	B	...	...
25	Carbon steel	Plate	SA-285	B	K02200	...
26	Carbon steel	Wld. pipe	SA-672	A50	K02200	...
27	Carbon steel	Sheet	SA-414	B	K02201	...
28	Carbon steel	Bar	SA-675	55	...	...
29	Carbon steel	Wld. pipe	SA-134	A283C	K02401	...
30	Carbon steel	Plate	SA-283	C	K02401	...
31	Carbon steel	Plate	SA-285	C	K02801	...
32	Carbon steel	Smls. & wld. pipe	SA-333	1	K03008	...
33	Carbon steel	Smls. & wld. tube	SA-334	1	K03008	...
34	Carbon steel	Plate	SA-516	55	K01800	...
35	Carbon steel	Smls. pipe	SA-524	II	K02104	...
36	Carbon steel	Wld. pipe	SA-671	CA55	K02801	...
37	Carbon steel	Wld. pipe	SA-671	CE55	K02202	...

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TABLE Y-1
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Ferrous Materials
1	...	40	20	...
2	...	45	22.5	...
3	...	45	24	...
4	...	45	24	...
5	...	45	24	...
6	...	45	24	...
7	...	45	25	...
8	...	47	26	...
9	...	47	26	...
10	...	47	26	...
11	...	47	26	...
12	...	47	26	...
13	...	47	26	...
14	...	47	26	...
15	...	48	30	...
16	...	48	30	...
17	...	48	30	...
18	...	48	30	...
19	...	48	30	...
20	...	48	30	...
21	...	48	30	...
22	...	50	25	...
23	...	50	27	...
24	...	50	27	...
25	...	50	27	...
26	...	50	27	...
27	...	50	30	...
28	...	55	27.5	...
29	...	55	30	...
30	...	55	30	...
31	...	55	30	...
32	...	55	30	...
33	...	55	30	...
34	...	55	30	...
35	...	55	30	...
36	...	55	30	...
37	...	55	30	...

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TABLE Y-1
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	–20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials								
1	20.0	18.8	18.3	18.0	17.7	...	17.1	...	16.3
2	22.5	21.1	20.6	20.2	19.9	...	19.2	...	18.3
3	24.0	22.6	22.0	21.6	21.2	...	20.5	...	19.6
4	24.0	22.6	22.0	21.6	21.2	...	20.5	...	19.6
5	24.0	22.6	22.0	21.6	21.2	...	20.5	...	19.6
6	24.0	22.6	22.0	21.6	21.2	...	20.5	...	19.6
7	25.0	23.5	22.9	22.5	22.1	...	21.4	...	20.4
8	26.0	24.4	23.8	23.4	23.0	...	22.2	...	21.2
9	26.0	24.4	23.8	23.4	23.0	...	22.2	...	21.2
10	26.0	24.4	23.8	23.4	23.0	...	22.2	...	21.2
11	26.0	24.4	23.8	23.4	23.0	...	22.2	...	21.2
12	26.0	24.4	23.8	23.4	23.0	...	22.2	...	21.2
13	26.0	24.4	23.8	23.4	23.0	...	22.2	...	21.2
14	26.0	24.4	23.8	23.4	23.0	...	22.2	...	21.2
15	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
16	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
17	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
18	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
19	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
20	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
21	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
22	25.0	23.5	22.9	22.5	22.1	...	21.4	...	20.4
23	27.0	25.4	24.7	24.3	23.9	...	23.1	...	22.0
24	27.0	25.4	24.7	24.3	23.9	...	23.1	...	22.0
25	27.0	25.4	24.7	24.3	23.9	...	23.1	...	22.0
26	27.0	25.4	24.7	24.3	23.9	...	23.1	...	22.0
27	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
28	27.5	25.8	25.2	24.7	24.3	...	23.5	...	22.4
29	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
30	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
31	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
32	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
33	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
34	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
35	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
36	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
37	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4

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TABLE Y-1
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Ferrous Materials
1	...	15.3	14.8	14.3	13.8	13.4	13.0	12.6	12.3	11.9
2	...	17.2	16.7	16.1	15.6	15.1	14.6	14.2	13.8	13.4
3	...	18.4	17.8	17.2	16.6	16.1	15.6	15.2	14.7	14.3
4	...	18.4	17.8	17.2	16.6	16.1	15.6	15.2	14.7	14.3
5	...	18.4	17.8	17.2	16.6	16.1	15.6	15.2	14.7	14.3
6	...	18.4	17.8	17.2	16.6	16.1	15.6	15.2	14.7	14.3
7	...	19.2	18.5	17.9	17.3	16.8	16.3	15.8	15.4	14.9
8	...	19.9	19.3	18.6	18.0	17.4	16.9	16.4	16.0	15.5
9	...	19.9	19.3	18.6	18.0	17.4	16.9	16.4	16.0	15.5
10	...	19.9	19.3	18.6	18.0	17.4	16.9	16.4	16.0	15.5
11	...	19.9	19.3	18.6	18.0	17.4	16.9	16.4	16.0	15.5
12	...	19.9	19.3	18.6	18.0	17.4	16.9	16.4	16.0	15.5
13	...	19.9	19.3	18.6	18.0	17.4	16.9	16.4	16.0	15.5
14	...	19.9	19.3	18.6	18.0	17.4	16.9	16.4	16.0	15.5
15	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
16	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
17	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
18	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
19	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
20	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
21	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
22	...	19.2	18.5	17.9	17.3	16.8	16.3	15.8	15.4	14.9
23	...	20.7	20.0	19.3	18.7	18.1	17.6	17.1	16.6	16.0
24	...	20.7	20.0	19.3	18.7	18.1	17.6	17.1	16.6	16.0
25	...	20.7	20.0	19.3	18.7	18.1	17.6	17.1	16.6	16.0
26	...	20.7	20.0	19.3	18.7	18.1	17.6	17.1	16.6	16.0
27	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
28	...	21.1	20.4	19.7	19.0	18.4	17.9	17.4	16.9	16.3
29	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
30	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
31	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
32	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
33	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
34	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
35	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
36	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
37	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	Carbon steel	Wld. pipe	SA-672	A55	K02801	...
2	Carbon steel	Wld. pipe	SA-672	B55	K02001	...
3	Carbon steel	Wld. pipe	SA-672	C55	K01800	...
4	Carbon steel	Wld. pipe	SA-672	E55	K02202	...
5	Carbon steel	Sheet	SA-414	C	K02503	...
6	Carbon steel	Plate, sheet, bar	SA-36	...	K02600	...
7	Carbon steel	Plate, sheet	SA-662	A	K01701	...
8	Carbon steel	Forgings	SA-181	...	K03502	60
9	Carbon steel	Castings	SA-216	WCA	J02502	...
10	Carbon steel	Forgings	SA-266	1	K03506	...
11	Carbon steel	Forgings	SA-350	LF1	K03009	1
12	Carbon steel	Castings	SA-352	LCA	J02504	...
13	Carbon steel	Cast pipe	SA-660	WCA	J02504	...
14	Carbon steel	Bar	SA-675	60	...	...
15	Carbon steel	Forgings	SA-765	I	K03046	...
16	Carbon steel	Plate	SA-515	60	K02401	...
17	Carbon steel	Plate	SA-516	60	K02100	...
18	Carbon steel	Wld. pipe	SA-671	CB60	K02401	...
19	Carbon steel	Wld. pipe	SA-671	CC60	K02100	...
20	Carbon steel	Wld. pipe	SA-671	CE60	K02402	...
21	Carbon steel	Wld. pipe	SA-672	B60	K02401	...
22	Carbon steel	Wld. pipe	SA-672	C60	K02100	...
23	Carbon steel	Wld. pipe	SA-672	E60	K02402	...
24	Carbon steel	Wld. pipe	SA-134	A283D	K02702	...
25	Carbon steel	Plate	SA-283	D	K02702	...
26	Carbon steel	Wld. pipe	SA-53	E/B	K03005	...
27	Carbon steel	Smls. pipe	SA-53	S/B	K03005	...
28	Carbon steel	Smls. pipe	SA-106	B	K03006	...
29	Carbon steel	Wld. pipe	SA-135	B	...	...
30	Carbon steel	Smls. & wld. fittings	SA-234	WPB	K03006	...
31	Carbon steel	Smls. & wld. pipe	SA-333	6	K03006	...
32	Carbon steel	Smls. & wld. tube	SA-334	6	K03006	...
33	Carbon steel	Forged pipe	SA-369	FPB	K03006	...
34	Carbon steel	Forgings	SA-372	A	K03002	...
35	Carbon steel	Sheet	SA-414	D	K02505	...
36	Carbon steel	Smls. & wld. fittings	SA-420	WPL6	...	...
37	Carbon steel	Smls. pipe	SA-524	I	K02104	...
38	Carbon steel	Bar	SA-695	B/35	K03504	...
39	Carbon steel	Bar	SA-696	B	K03200	...
40	Carbon steel	Forgings	SA-727	...	K02506	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Ferrous Materials (Cont'd)
1	...	55	30	...
2	...	55	30	...
3	...	55	30	...
4	...	55	30	...
5	...	55	33	...
6	...	58	36	...
7	...	58	40	...
8	...	60	30	...
9	...	60	30	...
10	...	60	30	...
11	...	60	30	...
12	...	60	30	...
13	...	60	30	...
14	...	60	30	...
15	...	60	30	...
16	...	60	32	...
17	...	60	32	...
18	...	60	32	...
19	...	60	32	...
20	...	60	32	...
21	...	60	32	...
22	...	60	32	...
23	...	60	32	...
24	...	60	33	...
25	...	60	33	...
26	...	60	35	...
27	...	60	35	...
28	...	60	35	...
29	...	60	35	...
30	...	60	35	...
31	...	60	35	...
32	...	60	35	...
33	...	60	35	...
34	...	60	35	...
35	...	60	35	...
36	...	60	35	...
37	...	60	35	...
38	...	60	35	...
39	...	60	35	...
40	...	60	36	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	–20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
2	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
3	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
4	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
5	33.0	31.0	30.2	29.7	29.2	...	28.2	...	26.9
6	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
7	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
8	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
9	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
10	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
11	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
12	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
13	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
14	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
15	30.0	28.2	27.5	27.0	26.5	...	25.6	...	24.4
16	32.0	30.1	29.3	28.8	28.3	...	27.3	...	26.1
17	32.0	30.1	29.3	28.8	28.3	...	27.3	...	26.1
18	32.0	30.1	29.3	28.8	28.3	...	27.3	...	26.1
19	32.0	30.1	29.3	28.8	28.3	...	27.3	...	26.1
20	32.0	30.1	29.3	28.8	28.3	...	27.3	...	26.1
21	32.0	30.1	29.3	28.8	28.3	...	27.3	...	26.1
22	32.0	30.1	29.3	28.8	28.3	...	27.3	...	26.1
23	32.0	30.1	29.3	28.8	28.3	...	27.3	...	26.1
24	33.0	31.0	30.2	29.7	29.2	...	28.2	...	26.9
25	33.0	31.0	30.2	29.7	29.2	...	28.2	...	26.9
26	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
27	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
28	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
29	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
30	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
31	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
32	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
33	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
34	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
35	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
36	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
37	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
38	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
39	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
40	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Ferrous Materials (Cont'd)
1	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
2	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
3	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
4	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
5	...	25.3	24.5	23.6	22.8	22.1	21.5	20.9	20.3	19.6
6	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4
7	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8
8	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
9	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
10	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
11	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
12	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
13	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
14	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
15	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
16	...	24.5	23.7	22.9	22.2	21.5	20.8	20.2	19.7	19.0
17	...	24.5	23.7	22.9	22.2	21.5	20.8	20.2	19.7	19.0
18	...	24.5	23.7	22.9	22.2	21.5	20.8	20.2	19.7	19.0
19	...	24.5	23.7	22.9	22.2	21.5	20.8	20.2	19.7	19.0
20	...	24.5	23.7	22.9	22.2	21.5	20.8	20.2	19.7	19.0
21	...	24.5	23.7	22.9	22.2	21.5	20.8	20.2	19.7	19.0
22	...	24.5	23.7	22.9	22.2	21.5	20.8	20.2	19.7	19.0
23	...	24.5	23.7	22.9	22.2	21.5	20.8	20.2	19.7	19.0
24	...	25.3	24.5	23.6	22.8	22.1	21.5	20.9	20.3	19.6
25	...	25.3	24.5	23.6	22.8	22.1	21.5	20.9	20.3	19.6
26	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8
27	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8
28	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8
29	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8
30	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8
31	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8
32	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8
33	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8
34	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8
35	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8
36	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8
37	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8
38	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8
39	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8
40	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
		Ferrous Materials (Cont'd)					
	1	Carbon steel	Wld. tube	SA-178	C	K03503	...
	2	Carbon steel	Smls. tube	SA-210	A-1	K02707	...
	3	Carbon steel	Smls. tube	SA-556	B2	K02707	...
	4	Carbon steel	Wld. tube	SA-557	B2	K03007	...
	5	Carbon steel	Plate, bar	SA/CSA-G40.21	38W	...	...
01	6	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...
	7	Carbon steel	Bar	SA-675	65	...	...
	8	Carbon steel	Castings	SA-352	LCB	J03003	...
	9	Carbon steel	Plate	SA-515	65	K02800	...
	10	Carbon steel	Plate	SA-516	65	K02403	...
	11	Carbon steel	Wld. pipe	SA-671	CB65	K02800	...
	12	Carbon steel	Wld. pipe	SA-671	CC65	K02403	...
	13	Carbon steel	Wld. pipe	SA-672	B65	K02800	...
	14	Carbon steel	Wld. pipe	SA-672	C65	K02403	...
	15	Carbon steel	Sheet	SA-414	E	K02704	...
	16	Carbon steel	Plate	SA-662	B	K02203	...
	17	Carbon steel	Plate	SA-537	...	K12437	1
	18	Carbon steel	Wld. pipe	SA-691	CMSH-70	K12437	...
01	19	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...
01	20	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...
01	21	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...
01	22	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...
01	23	...	...	...	...	...	...
	24	Carbon steel	Plate	SA-455	...	K03300	...
	25	Carbon steel	Bar	SA-675	70	...	...
	26	Carbon steel	Forgings	SA-105	...	K03504	...
	27	Carbon steel	Forgings	SA-181	...	K03502	70
	28	Carbon steel	Castings	SA-216	WCB	J03002	...
	29	Carbon steel	Forgings	SA-266	2	K03506	...
	30	Carbon steel	Forgings	SA-266	4	K03017	...
	31	Carbon steel	Forgings	SA-350	LF2	K03011	...
	32	Carbon steel	Forgings	SA-508	1	K13502	...
	33	Carbon steel	Forgings	SA-508	1A	K13502	...
	34	Carbon steel	Forgings	SA-541	1	K03506	...
	35	Carbon steel	Forgings	SA-541	1A	K03506	...
	36	Carbon steel	Cast pipe	SA-660	WCB	J03003	...
	37	Carbon steel	Forgings	SA-765	II	K03047	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes	
				Ferrous Materials (Cont'd)	
1	...	60	37	...	
2	...	60	37	...	
3	...	60	37	...	
4	...	60	37	...	
5	...	60	38	...	
6	> 4	64	34	...	**01**
7	...	65	32.5	...	
8	...	65	35	...	
9	...	65	35	...	
10	...	65	35	...	
11	...	65	35	...	
12	...	65	35	...	
13	...	65	35	...	
14	...	65	35	...	
15	...	65	38	...	
16	...	65	40	...	
17	$2\frac{1}{2} < t \le 4$	65	45	...	
18	$2\frac{1}{2} < t \le 4$	65	45	...	
19	$2\frac{1}{4} < t \le 4$	66.5	37.5	...	**01**
20	$1\frac{1}{2} < t \le 2\frac{1}{4}$	66.5	41.5	...	**01**
21	$\frac{5}{8} < t \le 1\frac{1}{2}$	66.5	42	...	**01**
22	$\le \frac{5}{8}$	66.5	43	...	**01**
23	...	...	...	...	**01**
24	$0.58 < t \le \frac{3}{4}$	70	35	...	
25	...	70	35	...	
26	...	70	36	...	
27	...	70	36	...	
28	...	70	36	...	
29	...	70	36	...	
30	...	70	36	...	
31	...	70	36	...	
32	...	70	36	...	
33	...	70	36	...	
34	...	70	36	...	
35	...	70	36	...	
36	...	70	36	...	
37	...	70	36	...	

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
		–20 to 100	150	200	250	300	350	400	450	500
		Ferrous Materials (Cont'd)								
	1	37.0	34.8	33.9	33.3	32.7	...	31.6	...	30.2
	2	37.0	34.8	33.9	33.3	32.7	...	31.6	...	30.2
	3	37.0	34.8	33.9	33.3	32.7	...	31.6	...	30.2
	4	37.0	34.8	33.9	33.3	32.7	...	31.6	...	30.2
	5	38.0	35.7	34.8	34.2	33.6	...	32.5	...	31.0
01	6	34.0	32.0	31.1	30.6	30.1	...	29.1	...	27.7
	7	32.5	30.5	29.8	29.2	28.8	...	27.8	...	26.5
	8	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
	9	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
	10	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
	11	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
	12	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
	13	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
	14	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
	15	38.0	35.7	34.8	34.2	33.6	...	32.5	...	31.0
	16	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
	17	45.0	42.3	41.2	40.5	39.8	...	38.4	...	36.7
	18	45.0	42.3	41.2	40.5	39.8	...	38.4	...	36.7
01	19	37.5	35.2	34.4	33.7	33.2	...	32.0	...	30.6
01	20	41.5	39.0	38.0	37.3	36.7	...	35.5	...	33.8
01	21	42.0	39.5	38.5	37.8	37.2	...	35.9	...	34.2
01	22	43.0	40.4	39.4	38.7	38.0	...	36.7	...	35.0
01	23	...	...	...	...	...	...	...	...	...
	24	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
	25	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
	26	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	27	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	28	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	29	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	30	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	31	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	32	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	33	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	34	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	35	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	36	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	37	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding										
	550	600	650	700	750	800	850	900	950	1000	
										Ferrous Materials (Cont'd)	
1	...	28.4	27.4	26.5	25.6	24.8	24.1	23.4	22.7	22.0	
2	...	28.4	27.4	26.5	25.6	24.8	24.1	23.4	22.7	22.0	
3	...	28.4	27.4	26.5	25.6	24.8	24.1	23.4	22.7	22.0	
4	...	28.4	27.4	26.5	25.6	24.8	24.1	23.4	22.7	22.0	
5	...	29.1	28.2	27.2	26.3	25.5	24.7	24.0	23.3	21.4	
6	...	26.1	25.2	24.3	23.5	22.8	22.1	21.5	20.9	20.2	**01**
7	...	24.9	24.1	23.3	22.5	21.8	21.1	20.5	20.0	19.3	
8	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8	
9	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8	
10	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8	
11	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8	
12	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8	
13	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8	
14	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8	
15	...	29.1	28.2	27.2	26.3	25.5	24.7	24.0	23.3	22.6	
16	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8	
17	...	34.5	33.4	32.2	31.2	30.2	29.3	28.4	27.6	26.7	
18	...	34.5	33.4	32.2	31.2	30.2	29.3	28.4	27.6	26.7	
19	...	28.7	27.8	26.9	26.0	25.1	24.4	23.7	23.0	22.3	**01**
20	...	31.8	30.8	29.7	28.7	27.8	27.0	26.2	25.5	24.7	**01**
21	...	32.2	31.1	30.1	29.1	28.2	27.3	26.5	25.8	25.0	**01**
22	...	33.0	31.9	30.8	29.8	28.8	28.0	27.2	26.4	25.6	**01**
23	...	...	...	...	...	...	...	...	...	...	**01**
24	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8	
25	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8	
26	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
27	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
28	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
29	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
30	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
31	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
32	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
33	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
34	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
35	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
36	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
37	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	Carbon steel	Plate	SA-515	70	K03101	...
2	Carbon steel	Plate	SA-516	70	K02700	...
3	Carbon steel	Wld. pipe	SA-671	CB70	K03101	...
4	Carbon steel	Wld. pipe	SA-671	CC70	K02700	...
5	Carbon steel	Wld. pipe	SA-672	B70	K03101	...
6	Carbon steel	Wld. pipe	SA-672	C70	K02700	...
7	Carbon steel	Smls. pipe	SA-106	C	K03501	...
8	Carbon steel	Wld. tube	SA-178	D	...	...
9	Carbon steel	Smls. tube	SA-210	C	K03501	...
10	Carbon steel	Castings	SA-216	WCC	J02503	...
11	Carbon steel	Smls. & wld. fittings	SA-234	WPC	K03501	...
12	Carbon steel	Castings	SA-352	LCC	J02505	...
13	Carbon steel	Castings	SA-487	16	...	A
14	Carbon steel	Plate	SA-537	...	K12437	3
15	Carbon steel	Smls. tube	SA-556	C2	K03006	...
16	Carbon steel	Tube	SA-557	C2	K03505	...
17	Carbon steel	Cast pipe	SA-660	WCC	J02505	...
18	Carbon steel	Bar	SA-695	B/40	K03504	...
19	Carbon steel	Bar	SA-696	C	K03200	...
20	Carbon steel	Sheet	SA-414	F	K03102	...
21	Carbon steel	Plate	SA-662	C	K02007	...
22	Carbon steel	Plate	SA-537	...	K12437	2
23	Carbon steel	Plate	SA-738	C	...	...
24	Carbon steel	Plate	SA-537	...	K12437	1
25	Carbon steel	Wld. pipe	SA-671	CD70	K12437	...
26	Carbon steel	Wld. pipe	SA-672	D70	K12437	...
27	Carbon steel	Wld. pipe	SA-691	CMSH-70	K12437	...
28	Carbon steel	Plate	SA-455	...	K03300	...
29	Carbon steel	Forgings	SA-266	3	K05001	...
30	Carbon steel	Plate	SA-455	...	K03300	...
31	Carbon steel	Plate	SA-299	...	K02803	...
32	Carbon steel	Wld. pipe	SA-671	CK75	K02803	...
33	Carbon steel	Wld. pipe	SA-672	N75	K02803	...
34	Carbon steel	Wld. pipe	SA-691	CMS-75	K02803	...
35	Carbon steel	Plate	SA-299	...	K02803	...
36	Carbon steel	Wld. pipe	SA-691	CMS-75	K02803	...
37	Carbon steel	Forgings	SA-372	B	K04001	...
38	Carbon steel	Sheet	SA-414	G	K03103	...
39	Carbon steel	Plate	SA-738	A	K12447	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Ferrous Materials (Cont'd)
1	...	70	38	...
2	...	70	38	...
3	...	70	38	...
4	...	70	38	...
5	...	70	38	...
6	...	70	38	...
7	...	70	40	...
8	...	70	40	...
9	...	70	40	...
10	...	70	40	...
11	...	70	40	...
12	...	70	40	...
13	...	70	40	...
14	$4 < t \le 6$	70	40	...
15	...	70	40	...
16	...	70	40	...
17	...	70	40	...
18	...	70	40	...
19	...	70	40	...
20	...	70	42	...
21	...	70	43	...
22	$4 < t \le 6$	70	46	...
23	$4 < t \le 6$	70	46	...
24	$\le 2\frac{1}{2}$	70	50	...
25	$\le 2\frac{1}{2}$	70	50	...
26	$\le 2\frac{1}{2}$	70	50	...
27	$\le 2\frac{1}{2}$	70	50	...
28	$\frac{3}{8} < t \le \frac{5}{8}$	73	37	...
29	...	75	37.5	...
30	$\le \frac{3}{8}$	75	38	...
31	> 1	75	40	...
32	> 1	75	40	...
33	> 1	75	40	...
34	> 1	75	40	...
35	≤ 1	75	42	...
36	≤ 1	75	42	...
37	...	75	45	...
38	...	75	45	...
39	...	75	45	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	–20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	38.0	35.7	34.8	34.2	33.6	...	32.5	...	31.0
2	38.0	35.7	34.8	34.2	33.6	...	32.5	...	31.0
3	38.0	35.7	34.8	34.2	33.6	...	32.5	...	31.0
4	38.0	35.7	34.8	34.2	33.6	...	32.5	...	31.0
5	38.0	35.7	34.8	34.2	33.6	...	32.5	...	31.0
6	38.0	35.7	34.8	34.2	33.6	...	32.5	...	31.0
7	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
8	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
9	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
10	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
11	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
12	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
13	40.0	37.2	35.7	34.4	33.4	...	31.8	...	30.5
14	40.0	37.1	35.3	33.8	32.4	...	30.0	...	28.3
15	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
16	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
17	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
18	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
19	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
20	42.0	39.5	38.5	37.8	37.2	...	35.9	...	34.2
21	43.0	40.4	39.4	38.7	38.0	...	36.7	...	35.0
22	46.0	42.6	40.6	38.8	37.2	...	34.6	...	32.5
23	46.0	42.6	40.6	38.8	37.2	...	34.6	...	32.5
24	50.0	46.3	44.2	42.2	40.5	...	37.6	...	35.4
25	50.0	46.3	44.2	42.2	40.5	...	37.6	...	35.4
26	50.0	46.3	44.2	42.2	40.5	...	37.6	...	35.4
27	50.0	46.3	44.2	42.2	40.5	...	37.6	...	35.4
28	37.0	34.8	33.9	33.3	32.7	...	31.6	...	30.2
29	37.5	35.2	34.4	33.7	33.2	...	32.0	...	30.6
30	38.0	35.7	34.8	34.2	33.6	...	32.5	...	31.0
31	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
32	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
33	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
34	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
35	42.0	39.5	38.5	37.8	37.2	...	35.9	...	34.2
36	42.0	39.5	38.5	37.8	37.2	...	35.9	...	34.2
37	45.0	42.3	41.2	40.5	39.8	...	38.4	...	36.7
38	45.0	42.3	41.2	40.5	39.8	...	38.4	...	36.7
39	45.0	42.3	41.2	40.5	39.8	...	38.4	...	36.7

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Ferrous Materials (Cont'd)
1	...	29.1	28.2	27.2	26.3	25.5	24.7	24.0	23.3	22.6
2	...	29.1	28.2	27.2	26.3	25.5	24.7	24.0	23.3	22.6
3	...	29.1	28.2	27.2	26.3	25.5	24.7	24.0	23.3	22.6
4	...	29.1	28.2	27.2	26.3	25.5	24.7	24.0	23.3	22.6
5	...	29.1	28.2	27.2	26.3	25.5	24.7	24.0	23.3	22.6
6	...	29.1	28.2	27.2	26.3	25.5	24.7	24.0	23.3	22.6
7	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8
8	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8
9	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8
10	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8
11	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8
12	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8
13	...	29.3	28.7	28.0	27.1	26.2	...	...	...	...
14	...	27.0	26.4	25.8	25.2	24.4	...	...	...	...
15	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8
16	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8
17	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8
18	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8
19	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8
20	...	32.2	31.1	30.1	29.1	28.2	27.3	26.5	25.8	25.0
21	...	33.0	31.9	30.8	29.8	28.8	28.0	27.2	26.4	25.6
22	...	31.0	30.3	29.7	28.9	28.1	...	...	...	...
23	...	31.0	30.3	29.7	28.9	28.1	...	...	...	...
24	...	33.7	33.0	32.3	31.5	30.5	...	...	...	...
25	...	33.7	33.0	32.3	31.5	30.5	...	...	...	...
26	...	33.7	33.0	32.3	31.5	30.5	...	...	...	...
27	...	33.7	33.0	32.3	31.5	30.5	...	...	...	...
28	...	28.4	27.4	26.5	25.6	24.8	24.1	23.4	22.7	22.0
29	...	28.7	27.8	26.9	26.0	25.1	24.4	23.7	23.0	22.3
30	...	29.1	28.2	27.2	26.3	25.5	24.7	24.0	23.3	22.6
31	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8
32	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8
33	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8
34	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8
35	...	32.2	31.1	30.1	29.1	28.2	27.3	26.5	25.8	25.0
36	...	32.2	31.1	30.1	29.1	28.2	27.3	26.5	25.8	25.0
37	...	34.5	33.4	32.2	31.2	30.2	29.3	28.4	27.6	26.7
38	...	34.5	33.4	32.2	31.2	30.2	29.3	28.4	27.6	26.7
39	...	34.5	33.4	32.2	31.2	30.2	29.3	28.4	27.6	26.7

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	Carbon steel	Plate	SA-537	...	K12437	3
2	Carbon steel	Plate	SA-537	...	K12437	2
3	Carbon steel	Wld. pipe	SA-691	CMSH-80	K12437	...
4	Carbon steel	Plate	SA-738	C	...	...
5	Carbon steel	Plate	SA-537	...	K12437	3
6	Carbon steel	Plate	SA-537	...	K12437	2
7	Carbon steel	Wld. pipe	SA-671	CD80	K12437	...
8	Carbon steel	Wld. pipe	SA-672	D80	K12437	...
9	Carbon steel	Wld. pipe	SA-691	CMSH-80	K12437	...
10	Carbon steel	Plate	SA-738	C	...	...
11	Carbon steel	Plate	SA-612	...	K02900	...
12	Carbon steel	Plate	SA-738	B	K12447	...
13	Carbon steel	Forgings	SA-372	C	K04801	...
14	Carbon steel	Plate	SA-724	A	K11831	...
15	Carbon steel	Plate	SA-724	C	K12037	...
16	Carbon steel	Plate	SA-724	B	K12031	...
17	C–Mn–Cb	Sheet	SA-812	65	...	...
18	C–Mn–Si–Cb	Plate	SA-737	B	K12001	...
19	C–Mn–Si–Cb	Sheet	SA-812	80	...	...
20	C–Mn–Si–V	Plate	SA-737	C	K12202	...
21	C–Mn–Ti	Plate, sheet	SA-562	...	K11224	...
22	C–Si–Ti	Forgings	SA-836	...	...	1
23	C–½Mo	Smls. tube	SA-209	T1b	K11422	...
24	C–½Mo	Wld. tube	SA-250	T1b	K11422	...
25	C–½Mo	Smls. tube	SA-209	T1	K11522	...
26	C–½Mo	Smls. & wld. fittings	SA-234	WP1	K12821	...
27	C–½Mo	Wld. tube	SA-250	T1	K11522	...
28	C–½Mo	Smls. pipe	SA-335	P1	K11522	...
29	C–½Mo	Forged pipe	SA-369	FP1	K11522	...
30	C–½Mo	Smls. tube	SA-209	T1a	K12023	...
31	C–½Mo	Wld. tube	SA-250	T1a	K12023	...
32	C–½Mo	Castings	SA-217	WC1	J12524	...
33	C–½Mo	Castings	SA-352	LC1	J12522	...
34	C–½Mo	Cast pipe	SA-426	CP1	J12521	...
35	C–½Mo	Plate	SA-204	A	K11820	...
36	C–½Mo	Wld. pipe	SA-672	L65	K11820	...
37	C–½Mo	Wld. pipe	SA-691	CM-65	K11820	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Ferrous Materials (Cont'd)
1	$2\frac{1}{2} < t \le 4$	75	50	...
2	$2\frac{1}{2} < t \le 4$	75	55	...
3	$2\frac{1}{2} < t \le 4$	75	55	...
4	$2\frac{1}{2} < t \le 4$	75	55	...
5	$\le 2\frac{1}{2}$	80	55	...
6	$\le 2\frac{1}{2}$	80	60	...
7	$\le 2\frac{1}{2}$	80	60	...
8	$\le 2\frac{1}{2}$	80	60	...
9	$\le 2\frac{1}{2}$	80	60	...
10	$\le 2\frac{1}{2}$	80	60	...
11	$\frac{1}{2} < t \le 1$	81	50	...
12	...	85	60	...
13	...	90	55	...
14	...	90	70	...
15	...	90	70	...
16	...	95	75	...
17	...	85	65	...
18	...	70	50	...
19	...	100	80	...
20	...	80	60	...
21	...	55	30	...
22	...	55	25	...
23	...	53	28	...
24	...	53	28	...
25	...	55	30	...
26	...	55	30	...
27	...	55	30	...
28	...	55	30	...
29	...	55	30	...
30	...	60	32	...
31	...	60	32	...
32	...	65	35	...
33	...	65	35	...
34	...	65	35	...
35	...	65	37	...
36	...	65	37	...
37	...	65	37	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	−20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	50.0	46.3	44.2	42.2	40.5	...	37.6	...	35.4
2	55.0	51.0	48.6	46.4	44.5	...	41.3	...	38.9
3	55.0	51.0	48.6	46.4	44.5	...	41.3	...	38.9
4	55.0	51.0	48.6	46.4	44.5	...	41.3	...	38.9
5	55.0	51.0	48.6	46.4	44.5	...	41.3	...	38.9
6	60.0	55.6	53.0	50.7	48.6	...	45.1	...	42.4
7	60.0	55.6	53.0	50.7	48.6	...	45.1	...	42.4
8	60.0	55.6	53.0	50.7	48.6	...	45.1	...	42.4
9	60.0	55.6	53.0	50.7	48.6	...	45.1	...	42.4
10	60.0	55.6	53.0	50.7	48.6	...	45.1	...	42.4
11	50.0	46.3	44.2	42.2	40.5	...	37.6	...	35.4
12	60.0	55.6	53.0	50.7	48.6	...	45.1	...	42.4
13	55.0	51.7	50.4	49.4	48.7	...	47.0	...	44.8
14	70.0	64.9	61.8	59.1	56.7	...	52.6	...	49.5
15	70.0	64.9	61.8	59.1	56.7	...	52.6	...	49.5
16	75.0	69.5	66.3	63.3	60.7	...	56.3	...	53.1
17	65.0	63.2	61.9	60.6	59.6	...	58.2	...	57.7
18	50.0	47.9	45.8	43.6	41.4	...	37.7	...	35.3
19	80.0	73.9	71.4	69.8	68.8	...	67.6	...	67.2
20	60.0	57.5	55.0	52.3	49.7	...	45.2	...	42.3
21	30.0	27.3	25.8	24.7	24.0	...	23.4	...	23.4
22	25.0	22.7	21.5	20.6	20.0	...	19.5	...	19.5
23	28.0	26.9	26.3	25.8	25.2	...	24.4	...	23.6
24	28.0	26.9	26.3	25.8	25.2	...	24.4	...	23.6
25	30.0	28.9	28.2	27.6	27.1	...	26.1	...	25.3
26	30.0	28.9	28.2	27.6	27.1	...	26.1	...	25.3
27	30.0	28.9	28.2	27.6	27.1	...	26.1	...	25.3
28	30.0	28.9	28.2	27.6	27.1	...	26.1	...	25.3
29	30.0	28.9	28.2	27.6	27.1	...	26.1	...	25.3
30	32.0	30.8	30.1	29.4	28.9	...	27.9	...	27.0
31	32.0	30.8	30.1	29.4	28.9	...	27.9	...	27.0
32	35.0	33.7	32.9	32.2	31.6	...	30.5	...	29.5
33	35.0	33.7	32.9	32.2	31.6	...	30.5	...	29.5
34	35.0	33.7	32.9	32.2	31.6	...	30.5	...	29.5
35	37.0	35.6	34.8	34.0	33.4	...	32.2	...	31.2
36	37.0	35.6	34.8	34.0	33.4	...	32.2	...	31.2
37	37.0	35.6	34.8	34.0	33.4	...	32.2	...	31.2

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Ferrous Materials (Cont'd)
1	...	33.7	33.0	32.3	31.5	30.5	...	...	...	...
2	...	37.1	36.3	35.5	34.6	33.5	...	...	...	...
3	...	37.1	36.3	35.5	34.6	33.5	...	...	...	...
4	...	37.1	36.3	35.5	34.6	33.5	...	...	...	...
5	...	37.1	36.3	35.5	34.6	33.5	...	...	...	...
6	...	40.5	39.6	38.7	37.7	36.6	...	...	...	...
7	...	40.5	39.6	38.7	37.7	36.6	...	...	...	...
8	...	40.5	39.6	38.7	37.7	36.6	...	...	...	...
9	...	40.5	39.6	38.7	37.7	36.6	...	...	...	...
10	...	40.5	39.6	38.7	37.7	36.6	...	...	...	...
11	...	33.7	33.0	32.3	31.5	30.5	...	...	...	...
12	...	40.5	39.6	38.7	37.7	36.6	...	...	...	...
13	...	42.2	40.8	39.4	38.1	36.9	35.8	34.8	33.8	32.7
14	...	47.2	46.2	45.2	44.0	42.7	...	...	...	...
15	...	47.2	46.2	45.2	44.0	42.7	...	...	...	...
16	...	50.6	49.5	48.4	47.2	45.7	...	...	...	...
17	...	57.6	57.3	56.7	55.6	...	...	...	...	...
18	...	33.9	33.4	32.9	32.2	31.2	29.9	28.1	25.9	25.9
19	...	66.8	66.4	...	...	...	...	...	...	...
20	...	40.7	40.1	39.5	38.6	37.5	35.9	33.7	31.0	31.0
21	...	23.4	23.4	23.3	22.9	...	...	...	...	...
22	...	19.5	19.5	19.4	19.1	...	...	...	...	...
23	...	22.9	22.5	22.0	21.5	20.9	20.3	19.5	18.7	17.7
24	...	22.9	22.5	22.0	21.5	20.9	20.3	19.5	18.7	17.7
25	...	24.5	24.1	23.6	23.1	22.4	21.7	20.9	20.0	19.0
26	...	24.5	24.1	23.6	23.1	22.4	21.7	20.9	20.0	19.0
27	...	24.5	24.1	23.6	23.1	22.4	21.7	20.9	20.0	19.0
28	...	24.5	24.1	23.6	23.1	22.4	21.7	20.9	20.0	19.0
29	...	24.5	24.1	23.6	23.1	22.4	21.7	20.9	20.0	19.0
30	...	26.2	25.7	25.2	24.6	23.9	23.2	22.3	21.3	20.3
31	...	26.2	25.7	25.2	24.6	23.9	23.2	22.3	21.3	20.3
32	...	28.6	28.1	27.5	26.9	26.2	25.3	24.4	23.3	22.2
33	...	28.6	28.1	27.5	26.9	26.2	25.3	24.4	23.3	22.2
34	...	28.6	28.1	27.5	26.9	26.2	25.3	24.4	23.3	22.2
35	...	30.2	29.7	29.1	28.4	27.7	26.8	25.8	24.7	23.4
36	...	30.2	29.7	29.1	28.4	27.7	26.8	25.8	24.7	23.4
37	...	30.2	29.7	29.1	28.4	27.7	26.8	25.8	24.7	23.4

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	C–½Mo	Forgings	SA-182	F1	K12822	...
2	C–½Mo	Plate	SA-204	B	K12020	...
3	C–½Mo	Forgings	SA-336	F1	K12520	...
4	C–½Mo	Wld. pipe	SA-672	L70	K12020	...
5	C–½Mo	Wld. pipe	SA-691	CM-70	K12020	...
6	C–½Mo	Plate	SA-204	C	K12320	...
7	C–½Mo	Wld. pipe	SA-672	L75	K12320	...
8	C–½Mo	Wld. pipe	SA-691	CM-75	K12320	...
9	C–½Mo	Plate	SA-517	J	K11625	...
10	½Cr–⅕Mo–V	Plate	SA-517	B	K11630	...
11	½Cr–¼Mo–Si	Plate	SA-517	A	K11856	...
12	½Cr–¼Mo–Si	Forgings	SA-592	A	K11856	...
13	½Cr–½Mo	Smls. pipe	SA-335	P2	K11547	...
14	½Cr–½Mo	Forged pipe	SA-369	FP2	K11547	...
15	½Cr–½Mo	Plate	SA-387	2	K12143	1
16	½Cr–½Mo	Wld. pipe	SA-691	½CR	K12143	...
17	½Cr–½Mo	Smls. tube	SA-213	T2	K11547	...
18	½Cr–½Mo	Cast pipe	SA-426	CP2	J11547	...
19	½Cr–½Mo	Forgings	SA-182	F2	K12122	...
20	½Cr–½Mo	Plate	SA-387	2	K12143	2
21	½Cr–½Mo	Wld. pipe	SA-691	½CR	K12143	...
22	½Cr–1¼Mn–Si	Plate	SA-202	A	K11742	...
23	½Cr–1¼Mn–Si	Plate	SA-202	B	K12542	...
24	¾Cr–½Ni–Cu	Wld. tube	SA-423	1	K11535	...
25	¾Cr–¾Ni–Cu–Al	Pipe	SA-333	4	K11267	...
26	1Cr–⅕Mo	Forgings	SA-372	E	K13047	70
27	1Cr–⅕Mo	Forgings	SA-372	F	G41350	70
28	1Cr–⅕Mo	Forgings	SA-372	G	K13049	70
29	1Cr–⅕Mo	Forgings	SA-372	H	K13547	70
30	1Cr–⅕Mo	Forgings	SA-372	J	K13548	70
31	1Cr–⅕Mo	Forgings	SA-372	J	G41370	110
32	1Cr–½Mo	Plate	SA-387	12	K11757	1
33	1Cr–½Mo	Wld. pipe	SA-691	1CR	K11757	...
34	1Cr–½Mo	Cast pipe	SA-426	CP12	J11562	...
35	1Cr–½Mo	Forgings	SA-182	F12	K11562	1
36	1Cr–½Mo	Smls. tube	SA-213	T12	K11562	...
37	1Cr–½Mo	Smls. & wld. fittings	SA-234	WP12	K12062	1
38	1Cr–½Mo	Smls. pipe	SA-335	P12	K11562	...
39	1Cr–½Mo	Forged pipe	SA-369	FP12	K11562	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Ferrous Materials (Cont'd)
1	...	70	40	...
2	...	70	40	...
3	...	70	40	...
4	...	70	40	...
5	...	70	40	...
6	...	75	43	...
7	...	75	43	...
8	...	75	43	...
9	$\leq 1\frac{1}{4}$	115	100	...
10	$\leq 1\frac{1}{4}$	115	100	...
11	$\leq 1\frac{1}{4}$	115	100	...
12	$\leq 2\frac{1}{2}$	115	100	...
13	...	55	30	...
14	...	55	30	...
15	...	55	33	...
16	...	55	33	...
17	...	60	30	...
18	...	60	30	...
19	...	70	40	...
20	...	70	45	...
21	...	70	45	...
22	...	75	45	...
23	...	85	47	...
24	...	60	37	...
25	...	60	35	...
26	...	120	70	...
27	...	120	70	...
28	...	120	70	...
29	...	120	70	...
30	...	120	70	...
31	...	135	110	...
32	...	55	33	...
33	...	55	33	...
34	...	60	30	...
35	...	60	32	...
36	...	60	32	...
37	...	60	32	...
38	...	60	32	...
39	...	60	32	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	–20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	40.0	38.5	37.6	36.8	36.1	...	34.8	...	33.8
2	40.0	38.5	37.6	36.8	36.1	...	34.8	...	33.8
3	40.0	38.5	37.6	36.8	36.1	...	34.8	...	33.8
4	40.0	38.5	37.6	36.8	36.1	...	34.8	...	33.8
5	40.0	38.5	37.6	36.8	36.1	...	34.8	...	33.8
6	43.0	41.4	40.4	39.6	38.8	...	37.4	...	36.3
7	43.0	41.4	40.4	39.6	38.8	...	37.4	...	36.3
8	43.0	41.4	40.4	39.6	38.8	...	37.4	...	36.3
9	100.0	96.2	94.0	92.0	90.2	...	87.1	...	84.4
10	100.0	97.2	95.5	93.9	92.4	...	89.9	...	87.6
11	100.0	97.2	95.5	93.9	92.4	...	89.9	...	87.6
12	100.0	97.2	95.5	93.9	92.4	...	89.9	...	87.6
13	30.0	28.9	28.2	27.6	27.1	...	26.1	...	25.3
14	30.0	28.9	28.2	27.6	27.1	...	26.1	...	25.3
15	33.0	31.8	31.0	30.4	29.8	...	28.7	...	27.9
16	33.0	31.8	31.0	30.4	29.8	...	28.7	...	27.9
17	30.0	28.9	28.2	27.6	27.1	...	26.1	...	25.3
18	30.0	28.9	28.2	27.6	27.1	...	26.1	...	25.3
19	40.0	38.5	37.6	36.8	36.1	...	34.8	...	33.8
20	45.0	43.3	42.3	41.4	40.6	...	39.2	...	38.0
21	45.0	43.3	42.3	41.4	40.6	...	39.2	...	38.0
22	45.0	42.3	41.2	40.4	39.8	...	38.4	...	36.5
23	47.0	44.2	43.0	42.2	41.6	...	40.1	...	38.1
24	37.0	35.0	34.1	33.5	33.0	...	32.3	...	31.6
25	35.0	33.1	32.3	31.7	31.3	...	30.6	...	29.9
26	70.0	66.9	65.2	63.9	62.8	...	60.9	...	59.1
27	70.0	66.9	65.2	63.9	62.8	...	60.9	...	59.1
28	70.0	66.9	65.2	63.9	62.8	...	60.9	...	59.1
29	70.0	66.9	65.2	63.9	62.8	...	60.9	...	59.1
30	70.0	66.9	65.2	63.9	62.8	...	60.9	...	59.1
31	110.0	105.1	102.5	100.4	98.6	...	95.6	...	92.8
32	33.0	31.0	29.8	28.9	28.1	...	26.8	...	25.9
33	33.0	31.0	29.8	28.9	28.1	...	26.8	...	25.9
34	30.0	28.1	27.1	26.2	25.5	...	24.4	...	23.5
35	32.0	30.0	28.9	28.0	27.2	...	26.0	...	25.1
36	32.0	30.0	28.9	28.0	27.2	...	26.0	...	25.1
37	32.0	30.0	28.9	28.0	27.2	...	26.0	...	25.1
38	32.0	30.0	28.9	28.0	27.2	...	26.0	...	25.1
39	32.0	30.0	28.9	28.0	27.2	...	26.0	...	25.1

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Ferrous Materials (Cont'd)
1	...	32.7	32.1	31.5	30.7	29.9	28.9	27.9	26.7	25.3
2	...	32.7	32.1	31.5	30.7	29.9	28.9	27.9	26.7	25.3
3	...	32.7	32.1	31.5	30.7	29.9	28.9	27.9	26.7	25.3
4	...	32.7	32.1	31.5	30.7	29.9	28.9	27.9	26.7	25.3
5	...	32.7	32.1	31.5	30.7	29.9	28.9	27.9	26.7	25.3
6	...	35.2	34.5	33.8	33.0	32.1	31.1	30.0	28.7	27.2
7	...	35.2	34.5	33.8	33.0	32.1	31.1	30.0	28.7	27.2
8	...	35.2	34.5	33.8	33.0	32.1	31.1	30.0	28.7	27.2
9	...	81.8	80.3	78.7	76.8	74.7	72.4	69.7	66.7	63.3
10	...	85.5	84.3	83.0	81.4	79.5	77.1	74.2	70.5	66.1
11	...	85.5	84.3	83.0	81.4	79.5	77.1	74.2	70.5	66.1
12	...	85.5	84.3	83.0	81.4	79.5	77.1	74.2	70.5	66.1
13	...	24.5	24.1	23.6	23.1	22.4	21.7	20.9	20.0	19.0
14	...	24.5	24.1	23.6	23.1	22.4	21.7	20.9	20.0	19.0
15	...	27.0	26.5	26.0	25.4	24.7	23.9	23.0	22.0	20.9
16	...	27.0	26.5	26.0	25.4	24.7	23.9	23.0	22.0	20.9
17	...	24.5	24.1	23.6	23.1	22.4	21.7	20.9	20.0	19.0
18	...	24.5	24.1	23.6	23.1	22.4	21.7	20.9	20.0	19.0
19	...	32.7	32.1	31.5	30.7	29.9	28.9	27.9	26.7	25.3
20	...	36.8	36.1	35.4	34.6	33.6	32.6	31.4	30.0	28.5
21	...	36.8	36.1	35.4	34.6	33.6	32.6	31.4	30.0	28.5
22	...	33.8	32.1	30.3	28.4	26.4	24.4	22.4	20.5	18.8
23	...	35.3	33.6	31.7	29.7	27.6	25.5	23.4	21.5	19.6
24	...	30.9	30.5	30.0	29.5	28.8	28.0	27.0	25.6	23.7
25	...	29.2	28.8	28.4	27.9	27.3	26.5	25.5	24.2	22.4
26	...	56.8	55.4	53.7	51.7	49.2	46.3	42.8	38.7	33.9
27	...	56.8	55.4	53.7	51.7	49.2	46.3	42.8	38.7	33.9
28	...	56.8	55.4	53.7	51.7	49.2	46.3	42.8	38.7	33.9
29	...	56.8	55.4	53.7	51.7	49.2	46.3	42.8	38.7	33.9
30	...	56.8	55.4	53.7	51.7	49.2	46.3	42.8	38.7	33.9
31	...	89.3	87.1	84.4	81.2	77.4	72.7	67.3	60.8	53.3
32	...	25.1	24.8	24.4	24.0	23.6	23.1	22.5	21.7	20.9
33	...	25.1	24.8	24.4	24.0	23.6	23.1	22.5	21.7	20.9
34	...	22.9	22.5	22.2	21.9	21.4	21.0	20.4	19.8	19.0
35	...	24.4	24.0	23.7	23.3	22.9	22.4	21.8	21.1	20.2
36	...	24.4	24.0	23.7	23.3	22.9	22.4	21.8	21.1	20.2
37	...	24.4	24.0	23.7	23.3	22.9	22.4	21.8	21.1	20.2
38	...	24.4	24.0	23.7	23.3	22.9	22.4	21.8	21.1	20.2
39	...	24.4	24.0	23.7	23.3	22.9	22.4	21.8	21.1	20.2

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	1Cr–½Mo	Plate	SA-387	12	K11757	2
2	1Cr–½Mo	Wld. pipe	SA-691	1CR	K11757	...
3	1Cr–½Mo	Forgings	SA-182	F12	K11564	2
4	1Cr–½Mo	Forgings	SA-336	F12	K11564	...
5	1Cr–V	Smls. tube	SA-213	T17	K12047	...
6	1¼Cr–½Mo	Castings	SA-217	WC6	J12072	...
7	1¼Cr–½Mo	Cast pipe	SA-426	CP11	J12072	...
8	1¼Cr–½Mo	Bar	SA-739	B11	K11797	...
9	1¼Cr–½Mo–Si	Smls. tube	SA-199	T11	K11597	...
10	1¼Cr–½Mo–Si	Forgings	SA-182	F11	K11597	1
11	1¼Cr–½Mo–Si	Smls. tube	SA-213	T11	K11597	...
12	1¼Cr–½Mo–Si	Smls. & wld. fittings	SA-234	WP11	...	1
13	1¼Cr–½Mo–Si	Smls. pipe	SA-335	P11	K11597	...
14	1¼Cr–½Mo–Si	Forgings	SA-336	F11	K11597	1
15	1¼Cr–½Mo–Si	Forged pipe	SA-369	FP11	K11597	...
16	1¼Cr–½Mo–Si	Plate	SA-387	11	K11789	1
17	1¼Cr–½Mo–Si	Wld. pipe	SA-691	1¼CR	K11789	...
18	1¼Cr–½Mo–Si	Forgings	SA-182	F11	K11572	2
19	1¼Cr–½Mo–Si	Forgings	SA-336	F11	K11572	2
20	1¼Cr–½Mo–Si	Forgings	SA-336	F11	K11572	3
21	1¼Cr–½Mo–Si	Plate	SA-387	11	K11789	2
22	1¼Cr–½Mo–Si	Wld. pipe	SA-691	1¼CR	K11789	...
23	1¾Cr–½Mo–Cu	Forgings	SA-592	E	K11695	...
24	1¾Cr–½Mo–Cu	Forgings	SA-592	E	K11695	...
25	1¾Cr–½Mo–Ti	Plate	SA-517	E	K21604	...
26	1¾Cr–½Mo–Ti	Plate	SA-517	E	K21604	...
27	2¼Cr–1Mo	Tube	SA-199	T22	K21590	...
28	2¼Cr–1Mo	Forgings	SA-182	F22	K21590	1
29	2¼Cr–1Mo	Smls. tube	SA-213	T22	K21590	...
30	2¼Cr–1Mo	Smls. & wld. fittings	SA-234	WP22	K21590	1
31	2¼Cr–1Mo	Smls. pipe	SA-335	P22	K21590	...
32	2¼Cr–1Mo	Forgings	SA-336	F22	K21590	1
33	2¼Cr–1Mo	Forged pipe	SA-369	FP22	K21590	...
34	2¼Cr–1Mo	Plate	SA-387	22	K21590	1
35	2¼Cr–1Mo	Wld. pipe	SA-691	2¼CR	K21590	...
36	2¼Cr–1Mo	Castings	SA-217	WC9	J21890	...
37	2¼Cr–1Mo	Cast pipe	SA-426	CP22	J21890	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Ferrous Materials (Cont'd)
1	...	65	40	...
2	...	65	40	...
3	...	70	40	...
4	...	70	40	...
5	...	60	30	...
6	...	70	40	...
7	...	70	40	...
8	...	70	45	...
9	...	60	25	...
10	...	60	30	...
11	...	60	30	...
12	...	60	30	...
13	...	60	30	...
14	...	60	30	...
15	...	60	30	...
16	...	60	35	...
17	...	60	35	...
18	...	70	40	...
19	...	70	40	...
20	...	75	45	...
21	...	75	45	...
22	...	75	45	...
23	$2\frac{1}{2} < t \le 4$	105	90	...
24	$\le 2\frac{1}{2}$	115	100	...
25	$2\frac{1}{2} < t \le 6$	105	90	...
26	$\le 2\frac{1}{2}$	115	100	...
27	...	60	25	...
28	...	60	30	...
29	...	60	30	...
30	...	60	30	...
31	...	60	30	...
32	...	60	30	...
33	...	60	30	...
34	...	60	30	...
35	...	60	30	...
36	...	70	40	...
37	...	70	40	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	–20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	40.0	37.5	36.2	35.0	34.0	...	32.5	...	31.4
2	40.0	37.5	36.2	35.0	34.0	...	32.5	...	31.4
3	40.0	37.5	36.2	35.0	34.0	...	32.5	...	31.4
4	40.0	37.5	36.2	35.0	34.0	...	32.5	...	31.4
5	30.0	28.5	27.7	27.0	26.3	...	25.3	...	24.4
6	40.0	38.0	36.9	36.0	35.1	...	33.7	...	32.5
7	40.0	38.0	36.9	36.0	35.1	...	33.7	...	32.5
8	45.0	42.8	41.5	40.5	39.5	...	37.9	...	36.5
9	25.0	23.8	23.1	22.5	21.9	...	21.1	...	20.3
10	30.0	28.5	27.7	27.0	26.3	...	25.3	...	24.4
11	30.0	28.5	27.7	27.0	26.3	...	25.3	...	24.4
12	30.0	28.5	27.7	27.0	26.3	...	25.3	...	24.4
13	30.0	28.5	27.7	27.0	26.3	...	25.3	...	24.4
14	30.0	28.5	27.7	27.0	26.3	...	25.3	...	24.4
15	30.0	28.5	27.7	27.0	26.3	...	25.3	...	24.4
16	35.0	33.3	32.3	31.5	30.7	...	29.5	...	28.4
17	35.0	33.3	32.3	31.5	30.7	...	29.5	...	28.4
18	40.0	38.0	36.9	36.0	35.1	...	33.7	...	32.5
19	40.0	38.0	36.9	36.0	35.1	...	33.7	...	32.5
20	45.0	42.8	41.5	40.5	39.5	...	37.9	...	36.5
21	45.0	42.8	41.5	40.5	39.5	...	37.9	...	36.5
22	45.0	42.8	41.5	40.5	39.5	...	37.9	...	36.5
23	90.0	87.5	86.0	84.5	83.2	...	81.0	...	79.2
24	100.0	97.2	95.5	93.9	92.5	...	90.0	...	88.0
25	90.0	87.5	86.0	84.5	83.2	...	81.0	...	79.2
26	100.0	97.2	95.5	93.9	92.5	...	90.0	...	88.0
27	25.0	23.9	23.4	23.0	22.7	...	22.4	...	22.4
28	30.0	28.6	28.0	27.6	27.2	...	26.9	...	26.9
29	30.0	28.6	28.0	27.6	27.2	...	26.9	...	26.9
30	30.0	28.6	28.0	27.6	27.2	...	26.9	...	26.9
31	30.0	28.6	28.0	27.6	27.2	...	26.9	...	26.9
32	30.0	28.6	28.0	27.6	27.2	...	26.9	...	26.9
33	30.0	28.6	28.0	27.6	27.2	...	26.9	...	26.9
34	30.0	28.6	28.0	27.6	27.2	...	26.9	...	26.9
35	30.0	28.6	28.0	27.6	27.2	...	26.9	...	26.9
36	40.0	37.9	37.0	36.3	35.8	...	35.1	...	34.4
37	40.0	37.9	37.0	36.3	35.8	...	35.1	...	34.4

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Ferrous Materials (Cont'd)
1	...	30.5	30.1	29.6	29.1	28.6	28.0	27.2	26.3	25.3
2	...	30.5	30.1	29.6	29.1	28.6	28.0	27.2	26.3	25.3
3	...	30.5	30.1	29.6	29.1	28.6	28.0	27.2	26.3	25.3
4	...	30.5	30.1	29.6	29.1	28.6	28.0	27.2	26.3	25.3
5	...	23.5	23.1	22.6	22.2	21.6	21.0	20.4	19.6	18.8
6	...	31.4	30.8	30.2	29.6	28.8	28.1	27.2	26.2	25.0
7	...	31.4	30.8	30.2	29.6	28.8	28.1	27.2	26.2	25.0
8	...	35.3	34.6	34.0	33.2	32.5	31.6	30.6	29.4	28.2
9	...	19.6	19.2	18.9	18.5	18.0	17.5	17.0	16.4	15.7
10	...	23.5	23.1	22.6	22.2	21.6	21.0	20.4	19.6	18.8
11	...	23.5	23.1	22.6	22.2	21.6	21.0	20.4	19.6	18.8
12	...	23.5	23.1	22.6	22.2	21.6	21.0	20.4	19.6	18.8
13	...	23.5	23.1	22.6	22.2	21.6	21.0	20.4	19.6	18.8
14	...	23.5	23.1	22.6	22.2	21.6	21.0	20.4	19.6	18.8
15	...	23.5	23.1	22.6	22.2	21.6	21.0	20.4	19.6	18.8
16	...	27.4	26.9	26.4	25.9	25.2	24.5	23.8	22.9	21.9
17	...	27.4	26.9	26.4	25.9	25.2	24.5	23.8	22.9	21.9
18	...	31.4	30.8	30.2	29.6	28.8	28.1	27.2	26.2	25.0
19	...	31.4	30.8	30.2	29.6	28.8	28.1	27.2	26.2	25.0
20	...	35.3	34.6	34.0	33.2	32.5	31.6	30.6	29.4	28.2
21	...	35.3	34.6	34.0	33.2	32.5	31.6	30.6	29.4	28.2
22	...	35.3	34.6	34.0	33.2	32.5	31.6	30.6	29.4	28.2
23	...	77.7	77.0	76.3	75.6	74.7	73.7	72.5	71.0	69.2
24	...	86.3	85.6	84.8	84.0	83.0	81.9	80.5	78.9	76.8
25	...	77.7	77.0	76.3	75.6	74.7	73.7	72.5	71.0	69.2
26	...	86.3	85.6	84.8	84.0	83.0	81.9	80.5	78.9	76.8
27	...	22.4	22.4	22.4	22.4	22.2	21.8	21.3	20.7	19.8
28	...	26.9	26.9	26.9	26.8	26.6	26.2	25.6	24.8	23.7
29	...	26.9	26.9	26.9	26.8	26.6	26.2	25.6	24.8	23.7
30	...	26.9	26.9	26.9	26.8	26.6	26.2	25.6	24.8	23.7
31	...	26.9	26.9	26.9	26.8	26.6	26.2	25.6	24.8	23.7
32	...	26.9	26.9	26.9	26.8	26.6	26.2	25.6	24.8	23.7
33	...	26.9	26.9	26.9	26.8	26.6	26.2	25.6	24.8	23.7
34	...	26.9	26.9	26.9	26.8	26.6	26.2	25.6	24.8	23.7
35	...	26.9	26.9	26.9	26.8	26.6	26.2	25.6	24.8	23.7
36	...	33.7	33.3	32.9	32.4	31.8	31.1	30.2	29.1	27.6
37	...	33.7	33.3	32.9	32.4	31.8	31.1	30.2	29.1	27.6

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	2¼Cr–1Mo	Forgings	SA-182	F22	K21590	3
2	2¼Cr–1Mo	Forgings	SA-336	F22	K21590	3
3	2¼Cr–1Mo	Plate	SA-387	22	K21590	2
4	2¼Cr–1Mo	Wld. pipe	SA-691	2¼CR	K21590	...
5	2¼Cr–1Mo	Bar	SA-739	B22	K21390	...
6	2¼Cr–1Mo	Castings	SA-487	8	J22091	A
7	2¼Cr–1Mo	Forgings	SA-508	22	K21590	3
8	2¼Cr–1Mo	Forgings	SA-541	22	K21390	3
9	2¼Cr–1Mo	Plate	SA-542	B	K21590	4
10	2¼Cr–1Mo	Forgings	SA-541	22	K21390	4
11	2¼Cr–1Mo–V	Forgings	SA-182	F22V	K31835	...
12	2¼Cr–1Mo–V	Forgings	SA-336	F22V	K31835	...
13	2¼Cr–1Mo–V	Forgings	SA-541	22V	K31835	...
14	2¼Cr–1Mo–V	Plate	SA-542	D	K31835	4a
15	2¼Cr–1Mo–V	Plate	SA-832	22V	K31835	...
16	3Cr–1Mo	Smls. tube	SA-199	T21	K31545	...
17	3Cr–1Mo	Smls. tube	SA-213	T21	K31545	...
18	3Cr–1Mo	Smls. pipe	SA-335	P21	K31545	...
19	3Cr–1Mo	Forgings	SA-336	F21	K31545	1
20	3Cr–1Mo	Forged pipe	SA-369	FP21	K31545	...
21	3Cr–1Mo	Plate	SA-387	21	K31545	1
22	3Cr–1Mo	Cast pipe	SA-426	CP21	J31545	...
23	3Cr–1Mo	Forgings	SA-182	F21	K31545	...
24	3Cr–1Mo	Forgings	SA-336	F21	K31545	3
25	3Cr–1Mo	Plate	SA-387	21	K31545	2
26	3Cr–1Mo–¼V–Ti–B	Forgings	SA-182	F3V	K31830	...
27	3Cr–1Mo–¼V–Ti–B	Forgings	SA-336	F3V	K31830	...
28	3Cr–1Mo–¼V–Ti–B	Forgings	SA-508	3V	K31830	...
29	3Cr–1Mo–¼V–Ti–B	Forgings	SA-541	3V	K31830	...
30	3Cr–1Mo–¼V–Ti–B	Plate	SA-542	C	K31830	4a
31	3Cr–1Mo–¼V–Ti–B	Plate	SA-832	21V	K31830	...
32	5Cr–½Mo	Smls. tube	SA-199	T5	K41545	...
33	5Cr–½Mo	Smls. tube	SA-213	T5	K41545	...
34	5Cr–½Mo	Smls. & wld. fittings	SA-234	WP5	K41545	...
35	5Cr–½Mo	Smls. pipe	SA-335	P5	K41545	...
36	5Cr–½Mo	Forged pipe	SA-369	FP5	K41545	...
37	5Cr–½Mo	Plate	SA-387	5	K41545	1
38	5Cr–½Mo	Wld. pipe	SA-691	5CR	K41545	...
39	5Cr–½Mo	Forgings	SA-336	F5	K41545	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Ferrous Materials (Cont'd)
1	...	75	45	...
2	...	75	45	...
3	...	75	45	...
4	...	75	45	...
5	...	75	45	...
6	...	85	55	...
7	...	85	55	...
8	...	85	55	...
9	...	85	55	...
10	...	105	85	...
11	...	85	60	...
12	...	85	60	...
13	...	85	60	...
14	...	85	60	...
15	...	85	60	...
16	...	60	25	...
17	...	60	30	...
18	...	60	30	...
19	...	60	30	...
20	...	60	30	...
21	...	60	30	...
22	...	60	30	...
23	...	75	45	...
24	...	75	45	...
25	...	75	45	...
26	...	85	60	...
27	...	85	60	...
28	...	85	60	...
29	...	85	60	...
30	...	85	60	...
31	...	85	60	...
32	...	60	25	...
33	...	60	30	...
34	...	60	30	...
35	...	60	30	...
36	...	60	30	...
37	...	60	30	...
38	...	60	30	...
39	...	60	36	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	−20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	45.0	42.5	41.2	40.2	39.4	...	38.1	...	37.3
2	45.0	42.5	41.2	40.2	39.4	...	38.1	...	37.3
3	45.0	42.5	41.2	40.2	39.4	...	38.1	...	37.3
4	45.0	42.5	41.2	40.2	39.4	...	38.1	...	37.3
5	45.0	42.5	41.2	40.2	39.4	...	38.1	...	37.3
6	55.0	52.1	50.8	49.9	49.2	...	48.2	...	47.4
7	55.0	...	53.1	...	51.8	...	50.6	...	49.5
8	55.0	...	53.1	...	51.8	...	50.6	...	49.5
9	55.0	...	53.1	...	51.8	...	50.6	...	49.5
10	85.0	...	81.6	...	79.6	...	78.0	...	76.7
11	60.0	...	59.5	...	58.6	...	57.4	...	56.0
12	60.0	...	59.5	...	58.6	...	57.4	...	56.0
13	60.0	...	59.5	...	58.6	...	57.4	...	56.0
14	60.0	...	59.5	...	58.6	...	57.4	...	56.0
15	60.0	...	59.5	...	58.6	...	57.4	...	56.0
16	25.0	23.9	23.4	23.0	22.7	...	22.4	...	22.4
17	30.0	28.6	28.0	27.6	27.2	...	26.9	...	26.9
18	30.0	28.6	28.0	27.6	27.2	...	26.9	...	26.9
19	30.0	28.6	28.0	27.6	27.2	...	26.9	...	26.9
20	30.0	28.6	28.0	27.6	27.2	...	26.9	...	26.9
21	30.0	28.6	28.0	27.6	27.2	...	26.9	...	26.9
22	30.0	28.6	28.0	27.6	27.2	...	26.9	...	26.9
23	45.0	42.5	41.2	40.2	39.4	...	38.1	...	37.3
24	45.0	42.5	41.2	40.2	39.4	...	38.1	...	37.3
25	45.0	42.5	41.2	40.2	39.4	...	38.1	...	37.3
26	60.0	57.4	56.0	54.8	53.8	...	52.6	...	52.0
27	60.0	57.4	56.0	54.8	53.8	...	52.6	...	52.0
28	60.0	57.4	56.0	54.8	53.8	...	52.6	...	52.0
29	60.0	57.4	56.0	54.8	53.8	...	52.6	...	52.0
30	60.0	57.4	56.0	54.8	53.8	...	52.6	...	52.0
31	60.0	57.4	56.0	54.8	53.8	...	52.6	...	52.0
32	25.0	23.3	22.6	22.1	21.8	...	21.5	...	21.3
33	30.0	28.0	27.1	26.5	26.1	...	25.8	...	25.6
34	30.0	28.0	27.1	26.5	26.1	...	25.8	...	25.6
35	30.0	28.0	27.1	26.5	26.1	...	25.8	...	25.6
36	30.0	28.0	27.1	26.5	26.1	...	25.8	...	25.6
37	30.0	28.0	27.1	26.5	26.1	...	25.8	...	25.6
38	30.0	28.0	27.1	26.5	26.1	...	25.8	...	25.6
39	36.0	33.6	32.5	31.8	31.4	...	30.9	...	30.7

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Ferrous Materials (Cont'd)
1	...	36.5	36.1	35.6	35.0	34.3	33.5	32.4	31.2	29.7
2	...	36.5	36.1	35.6	35.0	34.3	33.5	32.4	31.2	29.7
3	...	36.5	36.1	35.6	35.0	34.3	33.5	32.4	31.2	29.7
4	...	36.5	36.1	35.6	35.0	34.3	33.5	32.4	31.2	29.7
5	...	36.5	36.1	35.6	35.0	34.3	33.5	32.4	31.2	29.7
6	...	46.4	45.9	45.3	44.6	43.8	42.8	41.6	40.0	38.0
7	...	48.2	47.5	46.8	46.0	45.2	44.2	...	...	...
8	...	48.2	47.5	46.8	46.0	45.2	44.2	...	...	...
9	...	48.2	47.5	46.8	46.0	45.2	44.2	...	...	...
10	...	75.2	74.4	73.4	72.3	71.0	69.4	67.6	65.4	63.0
11	...	54.2	53.3	52.3	51.2	50.1	49.0	47.8	...	...
12	...	54.2	53.3	52.3	51.2	50.1	49.0	47.8	...	...
13	...	54.2	53.3	52.3	51.2	50.1	49.0	47.8	...	...
14	...	54.2	53.3	52.3	51.2	50.1	49.0	47.8	...	...
15	...	54.2	53.3	52.3	51.2	50.1	49.0	47.8	...	...
16	...	22.4	22.4	22.4	22.4	22.2	21.8	21.3	20.7	19.8
17	...	26.9	26.9	26.9	26.8	26.6	26.2	25.6	24.8	23.7
18	...	26.9	26.9	26.9	26.8	26.6	26.2	25.6	24.8	23.7
19	...	26.9	26.9	26.9	26.8	26.6	26.2	25.6	24.8	23.7
20	...	26.9	26.9	26.9	26.8	26.6	26.2	25.6	24.8	23.7
21	...	26.9	26.9	26.9	26.8	26.6	26.2	25.6	24.8	23.7
22	...	26.9	26.9	26.9	26.8	26.6	26.2	25.6	24.8	23.7
23	...	36.5	36.1	35.6	35.0	34.3	33.5	32.4	31.2	29.7
24	...	36.5	36.1	35.6	35.0	34.3	33.5	32.4	31.2	29.7
25	...	36.5	36.1	35.6	35.0	34.3	33.5	32.4	31.2	29.7
26	...	51.7	51.4	51.2	50.8	50.3	49.5	48.5	...	...
27	...	51.7	51.4	51.2	50.8	50.3	49.5	48.5	...	...
28	...	51.7	51.4	51.2	50.8	50.3	49.5	48.5	...	...
29	...	51.7	51.4	51.2	50.8	50.3	49.5	48.5	...	...
30	...	51.7	51.4	51.2	50.8	50.3	49.5	48.5	...	...
31	...	51.7	51.4	51.2	50.8	50.3	49.5	48.5	...	...
32	...	21.0	20.8	20.4	19.9	19.2	18.5	17.6	16.5	15.4
33	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5
34	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5
35	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5
36	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5
37	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5
38	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5
39	...	30.3	29.9	29.3	28.6	27.7	26.6	25.3	23.8	22.2

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	5Cr–½Mo	Forgings	SA-182	F5	K41545	...
2	5Cr–½Mo	Plate	SA-387	5	K41545	2
3	5Cr–½Mo	Forgings	SA-336	F5A	K42544	...
4	5Cr–½Mo	Castings	SA-217	C5	J42045	...
5	5Cr–½Mo	Cast pipe	SA-426	CP5	J42045	...
6	5Cr–½Mo	Forgings	SA-182	F5a	K42544	...
7	5Cr–½Mo–Si	Smls. tube	SA-213	T5b	K51545	...
8	5Cr–½Mo–Si	Smls. pipe	SA-335	P5b	K51545	...
9	5Cr–½Mo–Ti	Smls. tube	SA-213	T5c	K41245	...
10	5Cr–½Mo–Ti	Smls. pipe	SA-335	P5c	K41245	...
11	9Cr–1Mo	Smls. tube	SA-199	T9	K81590	...
12	9Cr–1Mo	Smls. tube	SA-213	T9	K81590	...
13	9Cr–1Mo	Fittings	SA-234	WP9	K90941	...
14	9Cr–1Mo	Smls. pipe	SA-335	P9	K81590	...
15	9Cr–1Mo	Forged pipe	SA-369	FP9	K90941	...
16	9Cr–1Mo	Forgings	SA-182	F9	K90941	...
17	9Cr–1Mo	Forgings	SA-336	F9	K81590	...
18	9Cr–1Mo	Castings	SA-217	C12	J82090	...
19	9Cr–1Mo	Cast pipe	SA-426	CP9	J82090	...
20	9Cr–1Mo–V	Forgings	SA-182	F91	K90901	...
21	9Cr–1Mo–V	Smls. tube	SA-213	T91	K90901	...
22	9Cr–1Mo–V	Fittings	SA-234	WP91	K90901	...
23	9Cr–1Mo–V	Smls. pipe	SA-335	P91	K90901	...
24	9Cr–1Mo–V	Forgings	SA-336	F91	K90901	...
25	9Cr–1Mo–V	Forged pipe	SA-369	FP91	K90901	...
26	9Cr–1Mo–V	Plate	SA-387	91	K90901	2
27	11Cr–Ti	Plate	SA-240	TP409	S40900	...
28	11Cr–Ti	Smls. & wld. tube	SA-268	TP409	S40900	...
29	12Cr	Bar	SA-479	403	S40300	A
30	12Cr	Bar	SA-479	403	S40300	1
31	12Cr–Al	Plate	SA-240	405	S40500	...
32	12Cr–Al	Bar	SA-479	405	S40500	...
33	12Cr–Al	Smls. & wld. tube	SA-268	TP405	S40500	...
34	12Cr–Ti	Smls. & wld. tube	SA-268	...	S40800	...
35	13Cr	Plate	SA-240	410S	S41008	...
36	13Cr	Smls. & wld. tube	SA-268	TP410	S41000	...
37	13Cr	Plate	SA-240	410	S41000	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Ferrous Materials (Cont'd)
1	...	70	40	...
2	...	75	45	...
3	...	80	50	...
4	...	90	60	...
5	...	90	60	...
6	...	90	65	...
7	...	60	30	...
8	...	60	30	...
9	...	60	30	...
10	...	60	30	...
11	...	60	25	...
12	...	60	30	...
13	...	60	30	...
14	...	60	30	...
15	...	60	30	...
16	...	85	55	...
17	...	85	55	...
18	...	90	60	...
19	...	90	60	...
20	≤ 3	85	60	...
21	≤ 3	85	60	...
22	≤ 3	85	60	...
23	≤ 3	85	60	...
24	≤ 3	85	60	...
25	≤ 3	85	60	...
26	≤ 3	85	60	...
27	...	55	30	...
28	...	55	30	...
29	...	70	40	...
30	...	70	40	...
31	...	60	25	...
32	...	60	25	...
33	...	60	30	...
34	...	55	30	...
35	...	60	30	...
36	...	60	30	...
37	...	65	30	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	–20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	40.0	37.3	36.2	35.4	34.8	...	34.4	...	34.1
2	45.0	42.0	40.7	39.8	39.2	...	38.7	...	38.4
3	50.0	46.7	45.2	44.2	43.6	...	42.9	...	42.6
4	60.0	56.0	54.2	53.0	52.3	...	51.5	...	51.2
5	60.0	56.0	54.2	53.0	52.3	...	51.5	...	51.2
6	65.0	60.7	58.8	57.5	56.6	...	55.8	...	55.4
7	30.0	28.0	27.1	26.5	26.1	...	25.8	...	25.6
8	30.0	28.0	27.1	26.5	26.1	...	25.8	...	25.6
9	30.0	28.0	27.1	26.5	26.1	...	25.8	...	25.6
10	30.0	28.0	27.1	26.5	26.1	...	25.8	...	25.6
11	25.0	23.3	22.6	22.1	21.8	...	21.5	...	21.3
12	30.0	28.0	27.1	26.5	26.1	...	25.8	...	25.6
13	30.0	28.0	27.1	26.5	26.1	...	25.8	...	25.6
14	30.0	28.0	27.1	26.5	26.1	...	25.8	...	25.6
15	30.0	28.0	27.1	26.5	26.1	...	25.8	...	25.6
16	55.0	51.3	49.7	48.6	47.9	...	47.2	...	46.9
17	55.0	51.3	49.7	48.6	47.9	...	47.2	...	46.9
18	60.0	56.0	54.2	53.0	52.3	...	51.5	...	51.2
19	60.0	56.0	54.2	53.0	52.3	...	51.5	...	51.2
20	60.0	57.1	55.9	55.2	54.8	...	54.7	...	54.7
21	60.0	57.1	55.9	55.2	54.8	...	54.7	...	54.7
22	60.0	57.1	55.9	55.2	54.8	...	54.7	...	54.7
23	60.0	57.1	55.9	55.2	54.8	...	54.7	...	54.7
24	60.0	57.1	55.9	55.2	54.8	...	54.7	...	54.7
25	60.0	57.1	55.9	55.2	54.8	...	54.7	...	54.7
26	60.0	57.1	55.9	55.2	54.8	...	54.7	...	54.7
27	30.0	27.6	26.0	24.7	23.5	...	21.8	...	20.8
28	30.0	27.6	26.0	24.7	23.5	...	21.8	...	20.8
29	40.0	37.8	36.8	36.0	35.5	...	34.9	...	34.4
30	40.0	37.8	36.8	36.0	35.5	...	34.9	...	34.4
31	25.0	23.6	23.0	22.5	22.2	...	21.8	...	21.5
32	25.0	23.6	23.0	22.5	22.2	...	21.8	...	21.5
33	30.0	28.4	27.6	27.0	26.6	...	26.2	...	25.8
34	30.0	28.4	27.6	27.0	26.6	...	26.2	...	25.8
35	30.0	28.4	27.6	27.0	26.6	...	26.2	...	25.8
36	30.0	28.4	27.6	27.0	26.6	...	26.2	...	25.8
37	30.0	28.4	27.6	27.0	26.6	...	26.2	...	25.8

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Ferrous Materials (Cont'd)
1	...	33.6	33.2	32.6	31.8	30.8	29.6	28.1	26.5	24.6
2	...	37.8	37.4	36.7	35.8	34.6	33.3	31.6	29.8	27.7
3	...	42.0	41.5	40.8	39.8	38.5	36.9	35.1	33.1	30.8
4	...	50.5	49.8	48.9	47.7	46.2	44.3	42.2	39.7	36.9
5	...	50.5	49.8	48.9	47.7	46.2	44.3	42.2	39.7	36.9
6	...	54.7	54.0	53.0	51.7	50.0	48.0	45.7	43.0	40.0
7	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5
8	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5
9	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5
10	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5
11	...	21.0	20.8	20.4	19.9	19.2	18.5	17.6	16.5	15.4
12	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5
13	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5
14	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5
15	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5
16	...	46.2	45.7	44.8	43.7	42.3	40.6	38.6	36.4	33.9
17	...	46.2	45.7	44.8	43.7	42.3	40.6	38.6	36.4	33.9
18	...	50.5	49.8	48.9	47.7	46.2	44.3	42.2	39.7	36.9
19	...	50.5	49.8	48.9	47.7	46.2	44.3	42.2	39.7	36.9
20	...	54.5	54.0	53.2	52.0	50.4	48.5	46.1	43.4	40.2
21	...	54.5	54.0	53.2	52.0	50.4	48.5	46.1	43.4	40.2
22	...	54.5	54.0	53.2	52.0	50.4	48.5	46.1	43.4	40.2
23	...	54.5	54.0	53.2	52.0	50.4	48.5	46.1	43.4	40.2
24	...	54.5	54.0	53.2	52.0	50.4	48.5	46.1	43.4	40.2
25	...	54.5	54.0	53.2	52.0	50.4	48.5	46.1	43.4	40.2
26	...	54.5	54.0	53.2	52.0	50.4	48.5	46.1	43.4	40.2
27	...	20.4	20.3	20.3	20.1	19.9	19.6	19.0	18.3	17.3
28	...	20.4	20.3	20.3	20.1	19.9	19.6	19.0	18.3	17.3
29	...	33.7	33.1	32.4	31.4	30.2	28.8	27.1	25.2	23.0
30	...	33.7	33.1	32.4	31.4	30.2	28.8	27.1	25.2	23.0
31	...	21.0	20.7	20.2	19.6	18.9	18.0	16.9	15.7	14.4
32	...	21.0	20.7	20.2	19.6	18.9	18.0	16.9	15.7	14.4
33	...	25.3	24.8	24.3	23.6	22.7	21.6	20.3	18.9	17.2
34	...	25.3	24.8	24.3	23.6	22.7	21.6	20.3	18.9	17.2
35	...	25.3	24.8	24.3	23.6	22.7	21.6	20.3	18.9	17.2
36	...	25.3	24.8	24.3	23.6	22.7	21.6	20.3	18.9	17.2
37	...	25.3	24.8	24.3	23.6	22.7	21.6	20.3	18.9	17.2

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	13Cr	Forgings	SA-182	F6a	S41000	1
2	13Cr	Bar	SA-479	410	S41000	...
3	13Cr	Bar	SA-479	410	S41000	A
4	13Cr	Bar	SA-479	410	S41000	1
5	13Cr	Forgings	SA-182	F6a	S41000	2
6	13Cr	Castings	SA-217	CA15	J91150	...
7	13Cr	Cast pipe	SA-426	CPCA15	J91150	...
8	13Cr–4Ni	Castings	SA-487	CA6NM	J91540	A
9	13Cr–4Ni	Forgings	SA-182	F6NM	S41500	...
10	15Cr	Smls. & wld. tube	SA-268	TP429	S42900	...
11	15Cr	Plate	SA-240	429	S42900	...
12	17Cr	Smls. & wld. tube	SA-268	TP430	S43000	...
13	17Cr	Plate	SA-240	430	S43000	...
14	17Cr	Bar	SA-479	430	S43000	...
15	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1150
16	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1150
17	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1150
18	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1100
19	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1100
20	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1100
21	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1075
22	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1075
23	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1075
24	17Cr–4Ni–6Mn	Plate	SA-240	201-1	S20100	...
25	17Cr–4Ni–6Mn	Plate	SA-666	201-1	S20100	...
26	17Cr–4Ni–6Mn	Plate	SA-240	201-2	S20100	...
27	17Cr–4Ni–6Mn	Plate	SA-666	201-2	S20100	...
28	18Cr–2Mo	Plate	SA-240	...	S44400	...
29	18Cr–2Mo	Smls. & wld. tube	SA-268	...	S44400	...
30	18Cr–Ti	Smls. & wld. tube	SA-268	TP439	S43035	...
31	18Cr–Ti	Wld. tube	SA-803	TP439	S43035	...
32	18Cr–Ti	Smls. & wld. pipe	SA-731	TP439	S43035	...
33	18Cr–Ti	Bar	SA-479	439	S43035	...
34	26Cr–3Ni–3Mo	Plate	SA-240	26-3-3	S44660	...
35	26Cr–3Ni–3Mo	Smls. & wld. tube	SA-268	26-3-3	S44660	...
36	26Cr–3Ni–3Mo	Wld. tube	SA-803	26-3-3	S44660	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Ferrous Materials (Cont'd)
1	...	70	40	...
2	...	70	40	...
3	...	70	40	...
4	...	70	40	...
5	...	85	55	...
6	...	90	65	...
7	...	90	65	...
8	...	110	80	...
9	...	115	90	...
10	...	60	35	...
11	...	65	30	...
12	...	60	35	...
13	...	65	30	...
14	...	70	40	...
15	...	135	105	...
16	...	135	105	...
17	...	135	105	...
18	...	140	115	...
19	...	140	115	...
20	...	140	115	...
21	...	145	125	...
22	...	145	125	...
23	...	145	125	...
24	...	95	38	...
25	...	95	38	...
26	...	95	45	...
27	...	95	45	...
28	...	60	40	...
29	...	60	40	...
30	...	60	30	...
31	...	60	30	...
32	...	60	30	...
33	...	70	40	...
34	$\leq 2/10$	85	65	...
35	$\leq 2/10$	85	65	...
36	$\leq 2/10$	85	65	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	–20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	40.0	37.8	36.8	36.0	35.5	...	34.9	...	34.4
2	40.0	37.8	36.8	36.0	35.5	...	34.9	...	34.4
3	40.0	37.8	36.8	36.0	35.5	...	34.9	...	34.4
4	40.0	37.8	36.8	36.0	35.5	...	34.9	...	34.4
5	55.0	52.0	50.6	49.6	48.8	...	48.0	...	47.3
6	65.0	61.4	59.8	58.6	57.7	...	56.7	...	55.9
7	65.0	61.4	59.8	58.6	57.7	...	56.7	...	55.9
8	80.0	76.9	75.3	73.9	72.9	...	71.3	...	70.3
9	90.0	87.7	86.5	85.5	84.6	...	82.8	...	80.8
10	35.0	33.1	32.2	31.5	31.1	...	30.5	...	30.1
11	30.0	28.4	27.6	27.0	26.6	...	26.2	...	25.8
12	35.0	33.1	32.2	31.5	31.1	...	30.5	...	30.1
13	30.0	28.4	27.6	27.0	26.6	...	26.2	...	25.8
14	40.0	37.8	36.8	36.0	35.5	...	34.9	...	34.4
15	105.0	99.7	97.1	94.9	93.0	...	89.7	...	87.0
16	105.0	99.7	97.1	94.9	93.0	...	89.7	...	87.0
17	105.0	99.7	97.1	94.9	93.0	...	89.7	...	87.0
18	115.0	109.2	106.3	103.9	101.8	...	98.3	...	95.2
19	115.0	109.2	106.3	103.9	101.8	...	98.3	...	95.2
20	115.0	109.2	106.3	103.9	101.8	...	98.3	...	95.2
21	125.0	118.7	115.6	113.0	110.7	...	106.8	...	103.5
22	125.0	118.7	115.6	113.0	110.7	...	106.8	...	103.5
23	125.0	118.7	115.6	113.0	110.7	...	106.8	...	103.5
24	38.0	31.8	28.9	26.6	25.0	...	22.7	...	...
25	38.0	31.8	28.9	26.6	25.0	...	22.7	...	...
26	45.0	37.7	34.2	31.5	29.6	...	26.9	...	...
27	45.0	37.7	34.2	31.5	29.6	...	26.9	...	...
28	40.0	36.5	34.8	33.5	32.4	...	30.8	...	29.4
29	40.0	36.5	34.8	33.5	32.4	...	30.8	...	29.4
30	30.0	27.4	25.9	24.6	23.5	...	21.9	...	20.9
31	30.0	27.4	25.9	24.6	23.5	...	21.9	...	20.9
32	30.0	27.4	25.9	24.6	23.5	...	21.9	...	20.9
33	40.0	36.5	34.6	32.8	31.3	...	29.1	...	27.9
34	65.0	60.6	58.3	56.4	54.7	...	52.3	...	50.6
35	65.0	60.6	58.3	56.4	54.7	...	52.3	...	50.6
36	65.0	60.6	58.3	56.4	54.7	...	52.3	...	50.6

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Ferrous Materials (Cont'd)
1	...	33.7	33.1	32.4	31.4	30.2	28.8	27.1	25.2	23.0
2	...	33.7	33.1	32.4	31.4	30.2	28.8	27.1	25.2	23.0
3	...	33.7	33.1	32.4	...	...	...	...	...	...
4	...	33.7	33.1	32.4	...	...	...	...	...	...
5	...	46.3	45.5	44.5	43.2	41.6	39.6	37.3	34.6	31.6
6	...	54.7	53.8	52.6	51.0	49.1	46.8	44.0	40.9	37.3
7	...	54.7	53.8	52.6	...	...	...	...	...	...
8	...	69.1	68.2	67.0	65.4	63.4	...	...	...	...
9	...	78.5	77.2	75.7	...	...	...	...	...	...
10	...	29.5	29.0	28.3	27.5	26.4	25.2	23.7	22.0	20.1
11	...	25.3	24.8	24.3	23.6	22.7	21.6	20.3	18.9	17.2
12	...	29.5	29.0	28.3	27.5	26.4	25.2	23.7	22.0	20.1
13	...	25.3	24.8	24.3	23.6	22.7	21.6	20.3	18.9	17.2
14	...	33.7	33.1	32.4	31.4	30.2	28.8	27.1	25.2	23.0
15	...	84.7	83.6	82.5	81.1	79.4	76.9	73.2	67.9	60.2
16	...	84.7	83.6	82.5	81.1	79.4	76.9	73.2	67.9	60.2
17	...	84.7	83.6	82.5	81.1	79.4	76.9	73.2	67.9	60.2
18	...	92.7	91.5	90.3	88.9	86.9	84.2	80.2	74.4	66.0
19	...	92.7	91.5	90.3	88.9	86.9	84.2	80.2	74.4	66.0
20	...	92.7	91.5	90.3	88.9	86.9	84.2	80.2	74.4	66.0
21	...	100.8	99.5	98.2	96.6	94.5	91.5	87.2	80.8	71.7
22	...	100.8	99.5	98.2	96.6	94.5	91.5	87.2	80.8	71.7
23	...	100.8	99.5	98.2	96.6	94.5	91.5	87.2	80.8	71.7
24	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...
28	...	28.0	27.3	26.6	25.9	25.1	24.2	23.2	22.1	20.7
29	...	28.0	27.3	26.6	25.9	25.1	24.2	23.2	22.1	20.7
30	...	20.5	20.3	20.2	20.1	19.8	19.4	18.8	17.9	16.6
31	...	20.5	20.3	20.2	20.1	19.8	19.4	18.8	17.9	16.6
32	...	20.5	20.3	20.2	20.1	19.8	19.4	18.8	17.9	16.6
33	...	27.3	27.1	26.9	26.7	26.4	25.9	25.0	23.8	22.2
34	...	49.7	49.5	49.3	...	...	...	...	...	...
35	...	49.7	49.5	49.3	...	...	...	...	...	...
36	...	49.7	49.5	49.3	...	...	...	...	...	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	26Cr–4Ni–Mo	Plate	SA-240	329	S32900	...
2	26Cr–4Ni–Mo	Smls. & wld. tube	SA-789	...	S32900	...
3	26Cr–4Ni–Mo	Smls. & wld. pipe	SA-790	...	S32900	...
4	26Cr–4Ni–Mo–N	Plate	SA-240	...	S32950	...
5	26Cr–4Ni–Mo–N	Smls. & wld. tube	SA-789	...	S32950	...
6	26Cr–4Ni–Mo–N	Smls. & wld. pipe	SA-790	...	S32950	...
7	27Cr	Smls. tube	SA-268	TP446-1	S44600	...
8	27Cr–1Mo	Forgings	SA-182	FXM-27Cb	S44627	...
9	27Cr–1Mo	Plate	SA-240	XM-27	S44627	...
10	27Cr–1Mo	Smls. & wld. tube	SA-268	TPXM-27	S44627	...
11	27Cr–1Mo	Bar	SA-479	XM-27	S44627	...
12	27Cr–1Mo	Smls. & wld. pipe	SA-731	TPXM-27	S44627	...
13	27Cr–1Mo–Ti	Smls. & wld. pipe	SA-731	TPXM-33	S44626	...
14	27Cr–1Mo–Ti	Plate	SA-240	XM-33	S44626	...
15	27Cr–1Mo–Ti	Smls. & wld. tube	SA-268	TPXM-33	S44626	...
16	29Cr–4Mo	Bar	SA-479	...	S44700	...
17	29Cr–4Mo	Plate	SA-240	...	S44700	...
18	29Cr–4Mo	Smls. & wld. tube	SA-268	29-4	S44700	...
19	29Cr–4Mo–2Ni	Bar	SA-479	...	S44800	...
20	29Cr–4Mo–2Ni	Plate	SA-240	...	S44800	...
21	29Cr–4Mo–2Ni	Smls. & wld. tube	SA-268	29-4-2	S44800	...
22	29Cr–4Mo–Ti	Smls. & wld. tube	SA-268	...	S44735	...
23	Mn–¼Mo	Forgings	SA-372	D	K14508	...
24	Mn–¼Mo–V	Castings	SA-487	2	J13005	A
25	Mn–¼Mo–V	Castings	SA-487	2	J13005	B
26	Mn–½Mo	Plate	SA-302	A	K12021	...
27	Mn–½Mo	Wld. pipe	SA-672	H75	K12021	...
28	Mn–½Mo	Plate	SA-302	B	K12022	...
29	Mn–½Mo	Plate	SA-533	A	K12521	1
30	Mn–½Mo	Plate	SA-533	A	K12521	2
31	Mn–½Mo	Plate	SA-533	A	K12521	3
32	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	1
33	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	2
34	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	3
35	Mn–½Mo–½Ni	Plate	SA-302	C	K12039	...
36	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	1
37	Mn–½Mo–½Ni	Wld. pipe	SA-672	H80	K12039	...
38	Mn–½Mo–½Ni	Wld. pipe	SA-672	J80	K12539	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes	
				Ferrous Materials (Cont'd)	
1	...	90	70	...	
2	...	90	70	...	
3	...	90	70	...	
4	...	100	70	...	
5	...	100	70	...	
6	...	100	70	...	
7	...	70	40	...	
8	...	60	35	...	
9	...	65	40	...	
10	...	65	40	...	
11	...	65	40	...	
12	...	65	40	...	
13	...	65	40	...	
14	...	68	45	...	
15	...	68	45	...	
16	...	70	55	...	
17	...	80	60	...	
18	...	80	60	...	
19	...	70	55	...	
20	...	80	60	...	
21	...	80	60	...	
22	...	75	60	...	
23	...	105	65	...	01
24	...	85	53	...	
25	...	90	65	...	
26	...	75	45	...	
27	...	75	45	...	
28	...	80	50	...	
29	...	80	50	...	
30	...	90	70	...	
31	...	100	83	...	
32	...	80	50	...	
33	...	90	70	...	
34	...	100	83	...	
35	...	80	50	...	
36	...	80	50	...	
37	...	80	50	...	
38	...	80	50	...	

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	−20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	70.0	65.3	62.4	59.8	57.6	...	53.9	...	51.3
2	70.0	65.3	62.4	59.8	57.6	...	53.9	...	51.3
3	70.0	65.3	62.4	59.8	57.6	...	53.9	...	51.3
4	70.0	64.9	62.0	59.5	57.3	...	53.8	...	51.3
5	70.0	64.9	62.0	59.5	57.3	...	53.8	...	51.3
6	70.0	64.9	62.0	59.5	57.3	...	53.8	...	51.3
7	40.0	36.5	34.6	32.8	31.3	...	29.1	...	27.9
8	35.0	32.1	30.3	28.8	27.6	...	25.7	...	24.8
9	40.0	36.6	34.5	32.8	31.3	...	29.3	...	28.3
10	40.0	36.6	34.5	32.8	31.3	...	29.3	...	28.3
11	40.0	36.6	34.5	32.8	31.3	...	29.3	...	28.3
12	40.0	36.6	34.5	32.8	31.3	...	29.3	...	28.3
13	40.0	36.9	35.1	33.4	31.9	...	29.4	...	27.7
14	45.0	41.5	39.5	37.6	35.9	...	33.1	...	31.1
15	45.0	41.5	39.5	37.6	35.9	...	33.1	...	31.1
16	55.0	50.8	48.4	46.4	44.7	...	42.6	...	41.6
17	60.0	55.4	52.8	50.6	48.8	...	46.4	...	45.4
18	60.0	55.4	52.8	50.6	48.8	...	46.4	...	45.4
19	55.0	49.0	45.8	43.0	40.7	...	36.9	...	34.3
20	60.0	53.4	49.9	47.0	44.4	...	40.2	...	37.4
21	60.0	53.4	49.9	47.0	44.4	...	40.2	...	37.4
22	60.0	53.4	49.9	47.0	44.4	...	40.2	...	37.4
01 23	65.0	62.8	61.5	60.4	59.6	...	58.6	...	58.2
24	53.0	51.2	50.4	49.4	48.2	...	45.2	...	42.4
25	65.0	62.8	61.8	60.6	59.1	...	55.4	...	52.0
26	45.0	43.3	42.3	41.6	40.9	...	39.8	...	38.8
27	45.0	43.3	42.3	41.6	40.9	...	39.8	...	38.8
28	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
29	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
30	70.0	67.3	65.9	64.7	63.7	...	61.9	...	60.4
31	83.0	79.8	78.1	76.7	75.5	...	73.4	...	71.6
32	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
33	70.0	67.3	65.9	64.7	63.7	...	61.9	...	60.4
34	83.0	79.8	78.1	76.7	75.5	...	73.4	...	71.6
35	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
36	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
37	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
38	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding										
	550	600	650	700	750	800	850	900	950	1000	
										Ferrous Materials (Cont'd)	
1	...	49.6	49.1	48.8	...	...	...	...	...	...	
2	...	49.6	49.1	48.8	...	...	...	...	...	...	
3	...	49.6	49.1	48.8	...	...	...	...	...	...	
4	...	49.6	49.1	48.6	...	...	...	...	...	...	
5	...	49.6	49.1	48.6	...	...	...	...	...	...	
6	...	49.6	49.1	48.6	...	...	...	...	...	...	
7	...	27.3	27.1	26.9	26.7	26.4	25.9	25.0	23.8	22.2	
8	...	24.6	24.6	...	...	...	...	...	...	...	
9	...	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	
10	...	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	
11	...	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	
12	...	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	
13	...	26.7	26.4	26.4	...	...	...	...	...	...	
14	...	30.0	29.7	29.6	...	...	...	...	...	...	
15	...	30.0	29.7	29.6	...	...	...	...	...	...	
16	...	41.3	41.1	40.6	39.7	...	...	...	...	...	
17	...	45.0	44.8	44.3	43.3	...	...	...	...	...	
18	...	45.0	44.8	44.3	43.3	...	...	...	...	...	
19	...	32.9	32.6	32.4	32.1	...	...	...	...	...	
20	...	35.9	35.6	35.3	35.0	...	...	...	...	...	
21	...	35.9	35.6	35.3	35.0	...	...	...	...	...	
22	...	35.9	35.6	35.3	35.0	...	...	...	...	...	
23	...	57.6	57.0	56.0	54.7	53.0	50.9	48.5	45.8	43.1	**01**
24	...	40.9	40.5	39.8	...	...	...	...	...	...	
25	...	50.2	49.7	48.8	...	...	...	...	...	...	
26	...	37.9	37.3	36.7	35.8	34.8	33.3	31.4	28.9	25.5	
27	...	37.9	37.3	36.7	35.8	34.8	33.3	31.4	28.9	25.5	
28	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4	
29	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4	
30	...	58.9	58.0	57.0	55.7	54.1	51.9	48.9	45.0	39.7	
31	...	69.8	68.8	67.6	66.1	64.1	61.5	58.0	53.3	47.1	
32	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4	
33	...	58.9	58.0	57.0	55.7	54.1	51.9	48.9	45.0	39.7	
34	...	69.8	68.8	67.6	66.1	64.1	61.5	58.0	53.3	47.1	
35	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4	
36	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4	
37	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4	
38	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4	

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	2
2	Mn–½Mo–½Ni	Wld. pipe	SA-672	J90	K12539	...
3	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	3
4	Mn–½Mo–½Ni	Wld. pipe	SA-672	J100	K12539	...
5	Mn–½Mo–¾Ni	Plate	SA-302	D	K12054	...
6	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	1
7	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	2
8	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	3
9	Mn–½Ni–V	Plate	SA-225	C	K12524	...
10	Mn–V	Castings	SA-487	1	J13002	A
11	Mn–V	Castings	SA-487	1	J13002	B
12	1½Si–½Mo	Smls. pipe	SA-335	P15	K11578	...
13	½Ni–½Cr–¼Mo–V	Castings	SA-487	4	J13047	A
14	½Ni–½Cr–¼Mo–V	Castings	SA-487	4	J13047	B
15	½Ni–½Cr–¼Mo–V	Castings	SA-487	4	J13047	E
16	½Ni–½Mo–V	Forgings	SA-541	3	K12045	1
17	½Ni–½Mo–V	Forgings	SA-541	3	K12045	2
18	¾Ni–½Cr–½Mo–V	Forgings	SA-592	F	K11576	...
19	¾Ni–½Cr–½Mo–V	Plate	SA-517	F	K11576	...
20	¾Ni–½Cr–½Mo–V	Forgings	SA-592	F	K11576	...
21	¾Ni–½Cu–Mo	Smls. & wld. tube	SA-423	2	K11540	...
22	¾Ni–½Mo–⅓Cr–V	Forgings	SA-508	2	K12766	1
23	¾Ni–½Mo–⅓Cr–V	Forgings	SA-541	2	K12765	1
24	¾Ni–½Mo–⅓Cr–V	Forgings	SA-508	2	K12766	2
25	¾Ni–½Mo–⅓Cr–V	Forgings	SA-541	2	K12765	2
26	¾Ni–½Mo–Cr–V	Forgings	SA-508	3	K12042	1
27	¾Ni–½Mo–Cr–V	Forgings	SA-508	3	K12042	2
28	¾Ni–1Mo–¾Cr	Castings	SA-217	WC5	J22000	...
29	1Ni–½Cr–½Mo	Castings	SA-217	WC4	J12082	...
30	1¼Ni–1Cr–½Mo	Plate	SA-517	P	K21650	...
31	1¼Ni–1Cr–½Mo	Plate	SA-517	P	K21650	...
32	1½Ni	Forgings	SA-350	LF5	K13050	1
33	1½Ni	Forgings	SA-350	LF5	K13050	2
34	2Ni–1Cu	Forgings	SA-182	FR	K22035	...
35	2Ni–1Cu	Fittings	SA-234	WPR	K22035	...
36	2Ni–1Cu	Smls. & wld. pipe	SA-333	9	K22035	...
37	2Ni–1Cu	Tube	SA-334	9	K22035	...
38	2Ni–1Cu	Forgings	SA-350	LF9	K22036	...
39	2Ni–1Cu	Smls. & wld. fittings	SA-420	WPL9	K22035	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Ferrous Materials (Cont'd)
1	...	90	70	...
2	...	90	70	...
3	...	100	83	...
4	...	100	83	...
5	...	80	50	...
6	...	80	50	...
7	...	90	70	...
8	...	100	83	...
9	...	105	70	...
10	...	85	55	...
11	...	90	65	...
12	...	60	30	...
13	...	90	60	...
14	...	105	85	...
15	...	115	95	...
16	...	80	50	...
17	...	90	65	...
18	$2\frac{1}{2} < t \leq 4$	105	90	...
19	$\leq 2\frac{1}{2}$	115	100	...
20	$\leq 2\frac{1}{2}$	115	100	...
21	...	60	37	...
22	...	80	50	...
23	...	80	50	...
24	...	90	65	...
25	...	90	65	...
26	...	80	50	...
27	...	90	65	...
28	...	70	40	...
29	...	70	40	...
30	$2\frac{1}{2} < t \leq 4$	105	90	...
31	$\leq 2\frac{1}{2}$	115	100	...
32	...	60	30	...
33	...	70	37.5	...
34	...	63	46	...
35	...	63	46	...
36	...	63	46	...
37	...	63	46	...
38	...	63	46	...
39	...	63	46	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	−20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	70.0	67.3	65.9	64.7	63.7	...	61.9	...	60.4
2	70.0	67.3	65.9	64.7	63.7	...	61.9	...	60.4
3	83.0	79.8	78.1	76.7	75.5	...	73.4	...	71.6
4	83.0	79.8	78.1	76.7	75.5	...	73.4	...	71.6
5	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
6	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
7	70.0	67.3	65.9	64.7	63.7	...	61.9	...	60.4
8	83.0	79.8	78.1	76.7	75.5	...	73.4	...	71.6
9	70.0	64.9	63.7	63.1	62.4	...	59.8	...	56.0
10	55.0	...	...	...	...	...	...	...	...
11	65.0	...	...	...	...	...	...	...	...
12	30.0	28.8	28.2	27.7	27.3	...	26.5	...	25.9
13	60.0	58.7	57.0	55.5	54.4	...	53.3	...	51.9
14	85.0	83.1	80.7	78.6	77.1	...	75.5	...	73.6
15	95.0	92.9	90.2	87.9	86.2	...	84.4	...	82.2
16	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
17	65.0	63.0	61.9	60.9	60.2	...	58.9	...	58.0
18	90.0	87.5	86.0	84.5	83.2	...	80.9	...	78.9
19	100.0	97.2	95.5	93.9	92.4	...	89.9	...	87.6
20	100.0	97.2	95.5	93.9	92.4	...	89.9	...	87.6
21	37.0	...	...	...	...	...	...	...	...
22	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
23	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
24	65.0	62.5	61.2	60.1	59.1	...	57.5	...	56.1
25	65.0	62.5	61.2	60.1	59.1	...	57.5	...	56.1
26	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
27	65.0	62.5	61.2	60.1	59.1	...	57.5	...	56.1
28	40.0	38.4	37.6	37.0	36.4	...	35.4	...	34.5
29	40.0	38.4	37.6	37.0	36.4	...	35.4	...	34.5
30	90.0	87.5	86.0	84.5	83.2	...	80.9	...	78.9
31	100.0	97.2	95.5	93.9	92.4	...	89.9	...	87.6
32	30.0	...	...	...	...	...	...	...	...
33	37.5	...	...	...	...	...	...	...	...
34	46.0	...	...	...	...	...	...	...	...
35	46.0	...	...	...	...	...	...	...	...
36	46.0	...	...	...	...	...	...	...	...
37	46.0	...	...	...	...	...	...	...	...
38	46.0	...	...	...	...	...	...	...	...
39	46.0	...	...	...	...	...	...	...	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Ferrous Materials (Cont'd)
1	...	58.9	58.0	57.0	55.7	54.1	51.9	48.9	45.0	39.7
2	...	58.9	58.0	57.0	55.7	54.1	51.9	48.9	45.0	39.7
3	...	69.8	68.8	67.6	66.1	64.1	61.5	58.0	53.3	47.1
4	...	69.8	68.8	67.6	66.1	64.1	61.5	58.0	53.3	47.1
5	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4
6	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4
7	...	58.9	58.0	57.0	55.7	54.1	51.9	48.9	45.0	39.7
8	...	69.8	68.8	67.6	66.1	64.1	61.5	58.0	53.3	47.1
9	...	52.4	51.0	49.9	48.7	46.7	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...
12	...	25.2	24.9	24.4	23.9	23.2	22.2	21.0	19.3	17.0
13	...	48.6	46.5	44.8	...	...	...	...	...	...
14	...	68.9	65.8	63.4	...	...	...	...	...	...
15	...	77.0	73.6	70.9	...	...	...	...	...	...
16	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4
17	...	57.1	56.6	56.0	55.3	54.4	53.4	52.1	50.5	48.6
18	...	76.9	75.9	74.7	73.3	71.5	69.4	66.8	63.5	59.5
19	...	85.5	84.3	83.0	81.4	79.5	77.1	74.2	70.5	66.1
20	...	85.5	84.3	83.0	81.4	79.5	77.1	74.2	70.5	66.1
21	...	...	...	...	...	...	...	...	...	...
22	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4
23	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4
24	...	54.7	53.9	52.9	51.8	50.2	48.2	45.4	41.7	36.9
25	...	54.7	53.9	52.9	51.8	50.2	48.2	45.4	41.7	36.9
26	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4
27	...	54.7	53.9	52.9	51.8	50.2	48.2	45.4	41.7	36.9
28	...	33.7	33.2	32.6	31.8	30.9	29.6	27.9	25.7	22.7
29	...	33.7	33.2	32.6	31.8	30.9	29.6	27.9	25.7	22.7
30	...	76.9	75.9	74.7	73.3	71.5	69.4	66.8	63.5	59.5
31	...	85.5	84.3	83.0	81.4	79.5	77.1	74.2	70.5	66.1
32	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...
39	...	...	...	...	...	...	...	...	...	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
		Ferrous Materials (Cont'd)					
01	1	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	1
01	2	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	2
01	3	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	3
01	4	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	4
01	5	2Ni–1½Cr–¼Mo–V	Forgings	SA-723	1	K23550	5
	6	2½Ni	Pipe	SA-333	7	K21903	...
	7	2½Ni	Tube	SA-334	7	K21903	...
	8	2½Ni	Plate	SA-203	A	K21703	...
	9	2½Ni	Plate	SA-203	B	K22103	...
	10	2½Ni	Castings	SA-352	LC2	J22500	...
	11	2¾Ni–1½Cr–½Mo	Plate	SA-543	C	...	3
	12	2¾Ni–1½Cr–½Mo	Plate	SA-543	C	...	1
	13	2¾Ni–1½Cr–½Mo	Plate	SA-543	C	...	2
01	14	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	1
01	15	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	2
01	16	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	3
01	17	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	4
01	18	2¾Ni–1½Cr–½Mo–V	Forgings	SA-723	2	K34035	5
	19	3Ni–1¾Cr–½Mo	Plate	SA-543	B	K42339	3
	20	3Ni–1¾Cr–½Mo	Plate	SA-543	B	K42339	1
	21	3Ni–1¾Cr–½Mo	Plate	SA-543	B	K42339	2
	22	3½Ni	Pipe	SA-333	3	K31918	...
	23	3½Ni	Tube	SA-334	3	K31918	...
	24	3½Ni	Fittings	SA-420	WPL3	...	...
	25	3½Ni	Plate	SA-203	D	K31718	...
	26	3½Ni	Forgings	SA-350	LF3	K32025	...
	27	3½Ni	Forgings	SA-765	III	K32026	...
	28	3½Ni	Plate	SA-203	E	K32018	...
	29	3½Ni	Castings	SA-352	LC3	J31550	...
	30	3½Ni	Plate	SA-203	F	...	...
	31	3½Ni	Plate	SA-203	F	...	...
	32	3½Ni–1¾Cr–½Mo–V	Forgings	SA-508	4N	K22375	3
	33	3½Ni–1¾Cr–½Mo–V	Forgings	SA-508	4N	K22375	1
	34	3½Ni–1¾Cr–½Mo–V	Forgings	SA-508	4N	K22375	2
01	35	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	1
01	36	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	2
01	37	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	3
01	38	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	4
01	39	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	5

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes	
				Ferrous Materials (Cont'd)	
1	...	115	100	...	**01**
2	...	135	120	...	**01**
3	...	155	140	...	**01**
4	...	175	160	...	**01**
5	...	190	180	...	**01**
6	...	65	35	...	
7	...	65	35	...	
8	...	65	37	...	
9	...	70	40	...	
10	...	70	40	...	
11	...	90	70	...	
12	...	105	85	...	
13	...	115	100	...	
14	...	115	100	...	**01**
15	...	135	120	...	**01**
16	...	155	140	...	**01**
17	...	175	160	...	**01**
18	...	190	180	...	**01**
19	...	90	70	...	
20	...	105	85	...	
21	...	115	100	...	
22	...	65	35	...	
23	...	65	35	...	
24	...	65	35	...	
25	...	65	37	...	
26	...	70	37.5	...	
27	...	70	37.5	...	
28	...	70	40	...	
29	...	70	40	...	
30	> 2	75	50	...	
31	≤ 2	80	55	...	
32	...	90	70	...	
33	...	105	85	...	
34	...	115	100	...	
35	...	115	100	...	**01**
36	...	135	120	...	**01**
37	...	155	140	...	**01**
38	...	175	160	...	**01**
39	...	190	180	...	**01**

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
		−20 to 100	150	200	250	300	350	400	450	500
		Ferrous Materials (Cont'd)								
01	1	100.0	97.5	96.0	94.6	93.5	...	91.9	...	90.6
01	2	120.0	117.0	115.2	113.6	112.2	...	110.3	...	108.8
01	3	140.0	136.5	134.4	132.5	131.0	...	128.7	...	126.9
01	4	160.0	156.0	153.6	151.4	149.7	...	147.1	...	145.0
01	5	180.0	175.5	172.8	170.4	168.4	...	165.5	...	163.2
	6	35.0	32.9	32.1	31.4	30.9	...	29.9	...	28.4
	7	35.0	32.9	32.1	31.4	30.9	...	29.9	...	28.4
	8	37.0	34.8	33.9	33.2	32.7	...	31.6	...	30.0
	9	40.0	37.6	36.6	35.9	35.4	...	34.2	...	32.5
	10	40.0	37.6	36.6	35.9	35.4	...	34.2	...	32.5
	11	70.0	67.3	65.9	64.8	63.9	...	62.5	...	61.4
	12	85.0	81.8	80.1	78.7	77.5	...	75.8	...	74.5
	13	100.0	96.2	94.2	92.5	91.2	...	89.2	...	87.7
01	14	100.0	97.5	96.0	94.6	93.5	...	91.9	...	90.6
01	15	120.0	117.0	115.2	113.6	112.2	...	110.3	...	108.8
01	16	140.0	136.5	134.4	132.5	131.0	...	128.7	...	126.9
01	17	160.0	156.0	153.6	151.4	149.7	...	147.1	...	145.0
01	18	180.0	175.5	172.8	170.4	168.4	...	165.5	...	163.2
	19	70.0	67.3	65.9	64.8	63.9	...	62.5	...	61.4
	20	85.0	81.8	80.1	78.7	77.5	...	75.8	...	74.5
	21	100.0	96.2	94.2	92.5	91.2	...	89.2	...	87.7
	22	35.0	32.9	32.1	31.4	30.9	...	29.9	...	28.4
	23	35.0	32.9	32.1	31.4	30.9	...	29.9	...	28.4
	24	35.0	32.9	32.1	31.4	30.9	...	29.9	...	28.4
	25	37.0	34.8	33.9	33.2	32.7	...	31.6	...	30.0
	26	37.5	35.3	34.3	33.7	33.2	...	32.0	...	30.4
	27	37.5	35.3	34.3	33.7	33.2	...	32.0	...	30.4
	28	40.0	37.6	36.6	35.9	35.4	...	34.2	...	32.5
	29	40.0	37.6	36.6	35.9	35.4	...	34.2	...	32.5
	30	50.0	47.0	45.8	44.9	44.2	...	42.7	...	40.6
	31	55.0	51.7	50.4	49.4	48.6	...	47.0	...	44.6
	32	70.0	67.3	65.9	64.8	63.9	...	62.5	...	61.4
	33	85.0	81.8	80.1	78.7	77.5	...	75.8	...	74.5
	34	100.0	96.2	94.2	92.5	91.2	...	89.2	...	87.7
01	35	100.0	97.5	96.0	94.6	93.5	...	91.9	...	90.6
01	36	120.0	117.0	115.2	113.6	112.2	...	110.3	...	108.8
01	37	140.0	136.5	134.4	132.5	131.0	...	128.7	...	126.9
01	38	160.0	156.0	153.6	151.4	149.7	...	147.1	...	145.0
01	39	180.0	175.5	172.8	170.4	168.4	...	165.5	...	163.2

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding										
	550	600	650	700	750	800	850	900	950	1000	
										Ferrous Materials (Cont'd)	
1	...	88.9	87.6	86.0	84.0	81.6	80.9	79.4	77.8	...	**01**
2	...	106.7	105.2	103.2	100.8	97.9	97.1	95.2	93.4	...	**01**
3	...	124.5	122.7	120.4	117.6	114.2	113.3	111.1	108.9	...	**01**
4	...	142.2	140.2	137.6	134.3	130.5	129.5	127.0	124.5	...	**01**
5	...	160.0	157.7	154.8	151.1	146.8	145.6	142.8	140.0	...	**01**
6	...	26.3	25.0	23.6	22.1	20.5	19.0	17.5	16.0	14.6	
7	...	26.3	25.0	23.6	22.1	20.5	19.0	17.5	16.0	14.6	
8	...	27.8	26.4	24.9	23.4	21.7	20.1	18.4	16.9	15.4	
9	...	30.0	28.6	27.0	25.3	23.5	21.7	19.9	18.3	16.7	
10	...	30.0	28.6	27.0	25.3	23.5	21.7	19.9	18.3	16.7	
11	...	60.2	59.5	58.7	57.6	56.2	54.6	52.6	50.2	47.3	
12	...	73.1	72.3	71.2	69.9	68.3	66.3	63.9	60.9	57.5	
13	...	86.0	85.0	83.8	82.2	80.3	78.0	75.1	71.7	67.6	
14	...	88.9	87.6	86.0	84.0	81.6	80.9	79.4	77.8	...	**01**
15	...	106.7	105.2	103.2	100.8	97.9	97.1	95.2	93.4	...	**01**
16	...	124.5	122.7	120.4	117.6	114.2	113.3	111.1	108.9	...	**01**
17	...	142.2	140.2	137.6	134.3	130.5	129.5	127.0	124.5	...	**01**
18	...	160.0	157.7	154.8	151.1	146.8	145.6	142.8	140.0	...	**01**
19	...	60.2	59.5	58.7	57.6	56.2	54.6	52.6	50.2	47.3	
20	...	73.1	72.3	71.2	69.9	68.3	66.3	63.9	60.9	57.5	
21	...	86.0	85.0	83.8	82.2	80.3	78.0	75.1	71.7	67.6	
22	...	26.3	25.0	23.6	22.1	20.5	19.0	17.5	16.0	14.6	
23	...	26.3	25.0	23.6	22.1	20.5	19.0	17.5	16.0	14.6	
24	...	26.3	25.0	23.6	22.1	20.5	19.0	17.5	16.0	14.6	
25	...	27.8	26.4	24.9	23.4	21.7	20.1	18.4	16.9	15.4	
26	...	28.2	26.8	25.3	23.7	22.0	20.3	18.7	17.1	15.6	
27	...	28.2	26.8	25.3	23.7	22.0	20.3	18.7	17.1	15.6	
28	...	30.0	28.6	27.0	25.3	23.5	21.7	19.9	18.3	16.7	
29	...	30.0	28.6	27.0	25.3	23.5	21.7	19.9	18.3	16.7	
30	...	37.5	35.7	33.7	31.6	29.4	27.1	24.9	22.8	20.8	
31	...	41.3	39.3	37.1	34.7	32.3	29.8	27.4	25.1	22.9	
32	...	60.2	59.5	58.7	57.6	56.2	54.6	52.6	50.2	47.3	
33	...	73.1	72.3	71.2	69.9	68.3	66.3	63.9	60.9	57.5	
34	...	86.0	85.0	83.8	82.2	80.3	78.0	75.1	71.7	67.6	
35	...	88.9	87.6	86.0	84.0	81.6	80.9	79.4	77.8	...	**01**
36	...	106.7	105.2	103.2	100.8	97.9	97.1	95.2	93.4	...	**01**
37	...	124.5	122.7	120.4	117.6	114.2	113.3	111.1	108.9	...	**01**
38	...	142.2	140.2	137.6	134.3	130.5	129.5	127.0	124.5	...	**01**
39	...	160.0	157.7	154.8	151.1	146.8	145.6	142.8	140.0	...	**01**

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	5Ni–¼Mo	Plate	SA-645	...	K41583	...
2	8Ni	Forgings	SA-522	II	K71340	...
3	8Ni	Plate	SA-553	II	K71340	...
4	9Ni	Smls. & wld. pipe	SA-333	8	K81340	...
5	9Ni	Smls. & wld. tube	SA-334	8	K81340	...
6	9Ni	Plate	SA-353	...	K81340	...
7	9Ni	Smls. & wld. fittings	SA-420	WPL8	K81340	...
8	9Ni	Forgings	SA-522	I	K81340	...
9	9Ni	Plate	SA-553	I	K81340	...
10	25Ni–15Cr–2Ti	Bar	SA-638	660	S66286	...
01 11	29Ni–20Cr–3Cu–2Mo	Castings	SA-351	CN7M	J95150	...
12	16Cr–9Mn–2Ni–N	Plate	SA-240	204	S20400	...
13	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...
14	16Cr–12Ni–2Mo	Forgings	SA-336	F316L	S31603	...
15	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...
16	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316L	S31603	...
17	16Cr–12Ni–2Mo	Plate	SA-240	316L	S31603	...
18	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316L	S31603	...
19	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316L	S31603	...
20	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316L	S31603	1
21	16Cr–12Ni–2Mo	Smls. & wld. fittings	SA-403	316L	S31603	...
22	16Cr–12Ni–2Mo	Wld. pipe	SA-409	TP316L	S31603	...
23	16Cr–12Ni–2Mo	Bar	SA-479	316L	S31603	...
24	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316L	S31603	...
25	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316L	S31603	...
26	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316L	S31603	...
27	16Cr–12Ni–2Mo	Castings	SA-351	CF3M	J92800	...
28	16Cr–12Ni–2Mo	Cast pipe	SA-451	CPF3M	J92800	...
29	16Cr–12Ni–2Mo	Castings	SA-351	CF8M	J92900	...
30	16Cr–12Ni–2Mo	Cast pipe	SA-451	CPF8M	J92900	...
31	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...
32	16Cr–12Ni–2Mo	Forgings	SA-336	F316	S31600	...
33	16Cr–12Ni–2Mo	Forged pipe	SA-430	FP316	S31600	...
34	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...
35	16Cr–12Ni–2Mo	Forgings	SA-336	F316H	S31609	...
36	16Cr–12Ni–2Mo	Forged pipe	SA-430	FP316H	S31609	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Ferrous Materials (Cont'd)
1	...	95	65	...
2	...	100	75	...
3	...	100	85	...
4	...	100	75	...
5	...	100	75	...
6	...	100	75	...
7	...	100	75	...
8	...	100	75	...
9	...	100	85	...
10	...	130	85	...
11	...	62	25	... 01
12	...	95	48	...
13	> 5	65	25	...
14	...	65	25	...
15	≤ 5	70	25	...
16	...	70	25	...
17	...	70	25	...
18	...	70	25	...
19	...	70	25	...
20	...	70	25	...
21	...	70	25	...
22	...	70	25	...
23	...	70	25	...
24	...	70	25	...
25	...	70	25	...
26	...	70	25	...
27	...	70	30	...
28	...	70	30	...
29	...	70	30	...
30	...	70	30	...
31	> 5	70	30	...
32	...	70	30	...
33	...	70	30	...
34	> 5	70	30	...
35	...	70	30	...
36	...	70	30	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	−20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	65.0	...	...	...	...	...	...	...	...
2	75.0	...	...	...	...	...	...	...	...
3	85.0	...	...	...	...	...	...	...	...
4	75.0	...	...	...	...	...	...	...	...
5	75.0	...	...	...	...	...	...	...	...
6	75.0	...	...	...	...	...	...	...	...
7	75.0	...	...	...	...	...	...	...	...
8	75.0	...	...	...	...	...	...	...	...
9	85.0	...	...	...	...	...	...	...	...
10	85.0	...	83.3	...	82.0	...	80.7	...	79.4
01 11	25.0	...	21.6	...	19.4	...	17.6	...	16.2
12	48.0	40.3	36.4	33.1	30.5	...	26.8	...	24.8
13	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
14	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
15	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
16	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
17	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
18	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
19	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
20	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
21	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
22	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
23	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
24	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
25	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
26	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
27	30.0	27.3	25.8	24.5	23.3	...	21.4	...	19.9
28	30.0	27.3	25.8	24.5	23.3	...	21.4	...	19.9
29	30.0	27.3	25.8	24.5	23.3	...	21.4	...	19.9
30	30.0	27.3	25.8	24.5	23.3	...	21.4	...	19.9
31	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
32	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
33	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
34	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
35	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
36	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding										
	550	600	650	700	750	800	850	900	950	1000	
										Ferrous Materials (Cont'd)	
1	...	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	
10	...	77.9	77.2	76.4	...	...	...	...	...	...	
11	...	15.0	14.5	14.0	...	...	...	...	...	...	01
12	...	23.8	23.5	23.2	23.0	22.7	22.2	21.5	20.5	19.1	
13	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
14	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
15	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
16	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
17	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
18	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
19	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
20	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
21	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
22	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
23	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
24	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
25	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
26	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
27	...	18.8	18.4	18.1	17.8	17.6	17.4	17.3	17.1	17.0	
28	...	18.8	18.4	18.1	17.8	17.6	17.4	17.3	17.1	17.0	
29	...	18.8	18.4	18.1	17.8	17.6	17.4	17.3	17.1	17.0	
30	...	18.8	18.4	18.1	17.8	17.6	17.4	17.3	17.1	17.0	
31	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0	
32	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0	
33	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0	
34	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0	
35	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0	
36	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0	

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...
2	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316	S31600	...
3	16Cr–12Ni–2Mo	Plate	SA-240	316	S31600	...
4	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316	S31600	...
5	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316	S31600	...
6	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316	S31600	1
7	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316	S31600	...
8	16Cr–12Ni–2Mo	Smls. & wld. fittings	SA-403	316	S31600	...
9	16Cr–12Ni–2Mo	Wld. pipe	SA-409	TP316	S31600	...
10	16Cr–12Ni–2Mo	Bar	SA-479	316	S31600	...
11	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316	S31600	...
12	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316	S31600	...
13	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316	S31600	...
14	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...
15	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316H	S31609	...
16	16Cr–12Ni–2Mo	Plate	SA-240	316H	S31609	...
17	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316H	S31609	...
18	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316H	S31609	...
19	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316H	S31609	1
20	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316H	S31609	...
21	16Cr–12Ni–2Mo	Smls. & wld. fittings	SA-403	316H	S31609	...
22	16Cr–12Ni–2Mo	Cast pipe	SA-452	TP316H	S31609	...
23	16Cr–12Ni–2Mo	Bar	SA-479	316H	S31609	...
24	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316H	S31609	...
25	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316H	S31609	...
26	16Cr–12Ni–2Mo–Cb	Plate	SA-240	316Cb	S31640	...
27	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316LN	S31653	...
28	16Cr–12Ni–2Mo–N	Forgings	SA-336	F316LN	S31653	...
29	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316LN	S31653	...
30	16Cr–12Ni–2Mo–N	Smls. tube	SA-213	TP316LN	S31653	...
31	16Cr–12Ni–2Mo–N	Plate	SA-240	316LN	S31653	...
32	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316LN	S31653	...
33	16Cr–12Ni–2Mo–N	Smls. & wld. pipe	SA-312	TP316LN	S31653	...
34	16Cr–12Ni–2Mo–N	Wld. pipe	SA-358	316LN	S31653	1
35	16Cr–12Ni–2Mo–N	Smls. pipe	SA-376	TP316LN	S31653	...
36	16Cr–12Ni–2Mo–N	Fittings	SA-403	316LN	S31653	...
37	16Cr–12Ni–2Mo–N	Bar	SA-479	316LN	S31653	...
38	16Cr–12Ni–2Mo–N	Wld. tube	SA-688	TP316LN	S31653	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Ferrous Materials (Cont'd)
1	≤ 5	75	30	...
2	...	75	30	...
3	...	75	30	...
4	...	75	30	...
5	...	75	30	...
6	...	75	30	...
7	...	75	30	...
8	...	75	30	...
9	...	75	30	...
10	...	75	30	...
11	...	75	30	...
12	...	75	30	...
13	...	75	30	...
14	≤ 5	75	30	...
15	...	75	30	...
16	...	75	30	...
17	...	75	30	...
18	...	75	30	...
19	...	75	30	...
20	...	75	30	...
21	...	75	30	...
22	...	75	30	...
23	...	75	30	...
24	...	75	30	...
25	...	75	30	...
26	...	75	30	...
27	> 5	70	30	...
28	...	70	30	...
29	≤ 5	75	30	...
30	...	75	30	...
31	...	75	30	...
32	...	75	30	...
33	...	75	30	...
34	...	75	30	...
35	...	75	30	...
36	...	75	30	...
37	...	75	30	...
38	...	75	30	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	−20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
2	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
3	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
4	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
5	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
6	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
7	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
8	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
9	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
10	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
11	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
12	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
13	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
14	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
15	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
16	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
17	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
18	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
19	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
20	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
21	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
22	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
23	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
24	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
25	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
26	30.0	28.0	26.5	25.1	23.8	...	21.5	...	19.8
27	30.0	27.1	25.5	24.1	22.9	...	21.0	...	19.5
28	30.0	27.1	25.5	24.1	22.9	...	21.0	...	19.5
29	30.0	27.1	25.5	24.1	22.9	...	21.0	...	19.5
30	30.0	27.1	25.5	24.1	22.9	...	21.0	...	19.5
31	30.0	27.1	25.5	24.1	22.9	...	21.0	...	19.5
32	30.0	27.1	25.5	24.1	22.9	...	21.0	...	19.5
33	30.0	27.1	25.5	24.1	22.9	...	21.0	...	19.5
34	30.0	27.1	25.5	24.1	22.9	...	21.0	...	19.5
35	30.0	27.1	25.5	24.1	22.9	...	21.0	...	19.5
36	30.0	27.1	25.5	24.1	22.9	...	21.0	...	19.5
37	30.0	27.1	25.5	24.1	22.9	...	21.0	...	19.5
38	30.0	27.1	25.5	24.1	22.9	...	21.0	...	19.5

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Ferrous Materials (Cont'd)
1	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
2	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
3	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
4	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
5	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
6	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
7	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
8	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
9	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
10	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
11	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
12	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
13	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
14	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
15	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
16	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
17	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
18	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
19	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
20	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
21	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
22	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
23	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
24	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
25	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0
26	...	18.7	18.3	18.0	17.8	17.6	17.5	17.4	17.3	17.1
27	...	18.3	17.8	17.3	16.9	16.5	16.1	15.8	15.5	15.3
28	...	18.3	17.8	17.3	16.9	16.5	16.1	15.8	15.5	15.3
29	...	18.3	17.8	17.3	16.9	16.5	16.1	15.8	15.5	15.3
30	...	18.3	17.8	17.3	16.9	16.5	16.1	15.8	15.5	15.3
31	...	18.3	17.8	17.3	16.9	16.5	16.1	15.8	15.5	15.3
32	...	18.3	17.8	17.3	16.9	16.5	16.1	15.8	15.5	15.3
33	...	18.3	17.8	17.3	16.9	16.5	16.1	15.8	15.5	15.3
34	...	18.3	17.8	17.3	16.9	16.5	16.1	15.8	15.5	15.3
35	...	18.3	17.8	17.3	16.9	16.5	16.1	15.8	15.5	15.3
36	...	18.3	17.8	17.3	16.9	16.5	16.1	15.8	15.5	15.3
37	...	18.3	17.8	17.3	16.9	16.5	16.1	15.8	15.5	15.3
38	...	18.3	17.8	17.3	16.9	16.5	16.1	15.8	15.5	15.3

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	16Cr–12Ni–2Mo–N	Forged pipe	SA-430	FP316N	S31651	...
2	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316N	S31651	...
3	16Cr–12Ni–2Mo–N	Smls. tube	SA-213	TP316N	S31651	...
4	16Cr–12Ni–2Mo–N	Plate	SA-240	316N	S31651	...
5	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316N	S31651	...
6	16Cr–12Ni–2Mo–N	Smls. & wld. pipe	SA-312	TP316N	S31651	...
7	16Cr–12Ni–2Mo–N	Forgings	SA-336	F316N	S31651	...
8	16Cr–12Ni–2Mo–N	Wld. pipe	SA-358	316N	S31651	1
9	16Cr–12Ni–2Mo–N	Smls. pipe	SA-376	TP316N	S31651	...
10	16Cr–12Ni–2Mo–N	Smls. & wld. fittings	SA-403	316N	S31651	...
11	16Cr–12Ni–2Mo–N	Bar	SA-479	316N	S31651	...
12	16Cr–12Ni–2Mo–N	Wld. tube	SA-688	TP316N	S31651	...
13	16Cr–12Ni–2Mo–N	Wld. pipe	SA-813	TP316N	S31651	...
14	16Cr–12Ni–2Mo–N	Wld. pipe	SA-814	TP316N	S31651	...
15	16Cr–12Ni–2Mo–Ti	Plate	SA-240	316Ti	S31635	...
16	18Cr–3Ni–12Mn	Plate	SA-240	XM-29	S24000	...
17	18Cr–3Ni–12Mn	Wld. tube	SA-249	XM-29	S24000	...
18	18Cr–3Ni–12Mn	Wld. pipe	SA-312	XM-29	S24000	...
19	18Cr–3Ni–12Mn	Bar	SA-479	XM-29	S24000	...
20	18Cr–3Ni–12Mn	Wld. tube	SA-688	TPXM-29	S24000	...
21	18Cr–5Ni–3Mo	Smls. & wld. tube	SA-789	...	S31500	...
22	18Cr–5Ni–3Mo	Smls. & wld. pipe	SA-790	...	S31500	...
23	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...
24	18Cr–8Ni	Forgings	SA-336	F304L	S30403	...
25	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...
26	18Cr–8Ni	Smls. tube	SA-213	TP304L	S30403	...
27	18Cr–8Ni	Plate	SA-240	304L	S30403	...
28	18Cr–8Ni	Wld. tube	SA-249	TP304L	S30403	...
29	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304L	S30403	...
30	18Cr–8Ni	Wld. pipe	SA-358	304L	S30403	1
31	18Cr–8Ni	Smls. & wld. fittings	SA-403	304L	S30403	...
32	18Cr–8Ni	Wld. pipe	SA-409	TP304L	S30403	...
33	18Cr–8Ni	Bar	SA-479	304L	S30403	...
34	18Cr–8Ni	Wld. tube	SA-688	TP304L	S30403	...
35	18Cr–8Ni	Wld. pipe	SA-813	TP304L	S30403	...
36	18Cr–8Ni	Wld. pipe	SA-814	TP304L	S30403	...
37	18Cr–8Ni	Forgings	SA-182	F304	S30400	...
38	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...
39	18Cr–8Ni	Forgings	SA-336	F304	S30400	...
40	18Cr–8Ni	Forgings	SA-336	F304H	S30409	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Ferrous Materials (Cont'd)
1	...	75	35	...
2	...	80	35	...
3	...	80	35	...
4	...	80	35	...
5	...	80	35	...
6	...	80	35	...
7	...	80	35	...
8	...	80	35	...
9	...	80	35	...
10	...	80	35	...
11	...	80	35	...
12	...	80	35	...
13	...	80	35	...
14	...	80	35	...
15	...	75	30	...
16	...	100	55	...
17	...	100	55	...
18	...	100	55	...
19	...	100	55	...
20	...	100	55	...
21	...	92	64	...
22	...	92	64	...
23	> 5	65	25	...
24	...	65	25	...
25	≤ 5	70	25	...
26	...	70	25	...
27	...	70	25	...
28	...	70	25	...
29	...	70	25	...
30	...	70	25	...
31	...	70	25	...
32	...	70	25	...
33	...	70	25	...
34	...	70	25	...
35	...	70	25	...
36	...	70	25	...
37	> 5	70	30	...
38	> 5	70	30	...
39	...	70	30	...
40	...	70	30	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	–20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	35.0	32.5	31.0	29.7	28.5	...	26.4	...	24.7
2	35.0	32.5	31.0	29.7	28.5	...	26.4	...	24.7
3	35.0	32.5	31.0	29.7	28.5	...	26.4	...	24.7
4	35.0	32.5	31.0	29.7	28.5	...	26.4	...	24.7
5	35.0	32.5	31.0	29.7	28.5	...	26.4	...	24.7
6	35.0	32.5	31.0	29.7	28.5	...	26.4	...	24.7
7	35.0	32.5	31.0	29.7	28.5	...	26.4	...	24.7
8	35.0	32.5	31.0	29.7	28.5	...	26.4	...	24.7
9	35.0	32.5	31.0	29.7	28.5	...	26.4	...	24.7
10	35.0	32.5	31.0	29.7	28.5	...	26.4	...	24.7
11	35.0	32.5	31.0	29.7	28.5	...	26.4	...	24.7
12	35.0	32.5	31.0	29.7	28.5	...	26.4	...	24.7
13	35.0	32.5	31.0	29.7	28.5	...	26.4	...	24.7
14	35.0	32.5	31.0	29.7	28.5	...	26.4	...	24.7
15	30.0	28.0	26.5	25.1	23.8	...	21.5	...	19.8
16	55.0	48.3	44.2	40.6	37.5	...	32.9	...	30.2
17	55.0	48.3	44.2	40.6	37.5	...	32.9	...	30.2
18	55.0	48.3	44.2	40.6	37.5	...	32.9	...	30.2
19	55.0	48.3	44.2	40.6	37.5	...	32.9	...	30.2
20	55.0	48.3	44.2	40.6	37.5	...	32.9	...	30.2
21	64.0	55.6	52.3	50.2	49.0	...	47.7	...	46.6
22	64.0	55.6	52.3	50.2	49.0	...	47.7	...	46.6
23	25.0	22.7	21.4	20.2	19.2	...	17.5	...	16.4
24	25.0	22.7	21.4	20.2	19.2	...	17.5	...	16.4
25	25.0	22.7	21.4	20.2	19.2	...	17.5	...	16.4
26	25.0	22.7	21.4	20.2	19.2	...	17.5	...	16.4
27	25.0	22.7	21.4	20.2	19.2	...	17.5	...	16.4
28	25.0	22.7	21.4	20.2	19.2	...	17.5	...	16.4
29	25.0	22.7	21.4	20.2	19.2	...	17.5	...	16.4
30	25.0	22.7	21.4	20.2	19.2	...	17.5	...	16.4
31	25.0	22.7	21.4	20.2	19.2	...	17.5	...	16.4
32	25.0	22.7	21.4	20.2	19.2	...	17.5	...	16.4
33	25.0	22.7	21.4	20.2	19.2	...	17.5	...	16.4
34	25.0	22.7	21.4	20.2	19.2	...	17.5	...	16.4
35	25.0	22.7	21.4	20.2	19.2	...	17.5	...	16.4
36	25.0	22.7	21.4	20.2	19.2	...	17.5	...	16.4
37	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
38	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
39	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
40	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Ferrous Materials (Cont'd)
1	...	23.4	22.8	22.3	21.8	21.3	20.9	20.5	20.1	19.8
2	...	23.4	22.8	22.3	21.8	21.3	20.9	20.5	20.1	19.8
3	...	23.4	22.8	22.3	21.8	21.3	20.9	20.5	20.1	19.8
4	...	23.4	22.8	22.3	21.8	21.3	20.9	20.5	20.1	19.8
5	...	23.4	22.8	22.3	21.8	21.3	20.9	20.5	20.1	19.8
6	...	23.4	22.8	22.3	21.8	21.3	20.9	20.5	20.1	19.8
7	...	23.4	22.8	22.3	21.8	21.3	20.9	20.5	20.1	19.8
8	...	23.4	22.8	22.3	21.8	21.3	20.9	20.5	20.1	19.8
9	...	23.4	22.8	22.3	21.8	21.3	20.9	20.5	20.1	19.8
10	...	23.4	22.8	22.3	21.8	21.3	20.9	20.5	20.1	19.8
11	...	23.4	22.8	22.3	21.8	21.3	20.9	20.5	20.1	19.8
12	...	23.4	22.8	22.3	21.8	21.3	20.9	20.5	20.1	19.8
13	...	23.4	22.8	22.3	21.8	21.3	20.9	20.5	20.1	19.8
14	...	23.4	22.8	22.3	21.8	21.3	20.9	20.5	20.1	19.8
15	...	18.7	18.3	18.0	17.8	17.6	17.5	17.4	17.3	17.1
16	...	28.7	28.2	27.8	27.3	26.6	25.9	25.1	24.2	23.4
17	...	28.7	28.2	27.8	27.3	26.6	25.9	25.1	24.2	23.4
18	...	28.7	28.2	27.8	27.3	26.6	25.9	25.1	24.2	23.4
19	...	28.7	28.2	27.8	27.3	26.6	25.9	25.1	24.2	23.4
20	...	28.7	28.2	27.8	27.3	26.6	25.9	25.1	24.2	23.4
21	...	45.2	44.4	43.6	42.8	42.3	...	...	...	...
22	...	45.2	44.4	43.6	42.8	42.3	...	...	...	...
23	...	15.5	15.2	15.0	14.7	14.5	14.3	14.0	13.7	13.3
24	...	15.5	15.2	15.0	14.7	14.5	14.3	14.0	13.7	13.3
25	...	15.5	15.2	15.0	14.7	14.5	14.3	14.0	13.7	13.3
26	...	15.5	15.2	15.0	14.7	14.5	14.3	14.0	13.7	13.3
27	...	15.5	15.2	15.0	14.7	14.5	14.3	14.0	13.7	13.3
28	...	15.5	15.2	15.0	14.7	14.5	14.3	14.0	13.7	13.3
29	...	15.5	15.2	15.0	14.7	14.5	14.3	14.0	13.7	13.3
30	...	15.5	15.2	15.0	14.7	14.5	14.3	14.0	13.7	13.3
31	...	15.5	15.2	15.0	14.7	14.5	14.3	14.0	13.7	13.3
32	...	15.5	15.2	15.0	14.7	14.5	14.3	14.0	13.7	13.3
33	...	15.5	15.2	15.0	14.7	14.5	14.3	14.0	13.7	13.3
34	...	15.5	15.2	15.0	14.7	14.5	14.3	14.0	13.7	13.3
35	...	15.5	15.2	15.0	14.7	14.5	14.3	14.0	13.7	13.3
36	...	15.5	15.2	15.0	14.7	14.5	14.3	14.0	13.7	13.3
37	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
38	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
39	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
40	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	18Cr–8Ni	Castings	SA-351	CF3	J92500	...
2	18Cr–8Ni	Castings	SA-351	CF8	J92600	...
3	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...
4	18Cr–8Ni	Forged pipe	SA-430	FP304	S30400	...
5	18Cr–8Ni	Forged pipe	SA-430	FP304H	S30409	...
6	18Cr–8Ni	Cast pipe	SA-451	CPF3	J92500	...
7	18Cr–8Ni	Cast pipe	SA-451	CPF8	J92600	...
8	18Cr–8Ni	Forgings	SA-182	F304	S30400	...
9	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...
10	18Cr–8Ni	Smls. tube	SA-213	TP304	S30400	...
11	18Cr–8Ni	Smls. tube	SA-213	TP304H	S30409	...
12	18Cr–8Ni	Plate	SA-240	302	S30200	...
13	18Cr–8Ni	Plate	SA-240	304	S30400	...
14	18Cr–8Ni	Plate	SA-240	304H	S30409	...
15	18Cr–8Ni	Wld. tube	SA-249	TP304	S30400	...
16	18Cr–8Ni	Wld. tube	SA-249	TP304H	S30409	...
17	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304	S30400	...
18	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304H	S30409	...
19	18Cr–8Ni	Wld. pipe	SA-358	304	S30400	1
20	18Cr–8Ni	Wld. pipe	SA-358	304H	S30409	1
21	18Cr–8Ni	Wld. pipe	SA-358	304LN	S30453	1
22	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...
23	18Cr–8Ni	Smls. pipe	SA-376	TP304H	S30409	...
24	18Cr–8Ni	Smls. & wld. fittings	SA-403	304	S30400	...
25	18Cr–8Ni	Smls. & wld. fittings	SA-403	304H	S30409	...
26	18Cr–8Ni	Wld. pipe	SA-409	TP304	S30400	...
27	18Cr–8Ni	Cast pipe	SA-452	TP304H	S30409	...
28	18Cr–8Ni	Bar	SA-479	302	S30200	...
29	18Cr–8Ni	Bar	SA-479	304	S30400	...
30	18Cr–8Ni	Bar	SA-479	304H	S30409	...
31	18Cr–8Ni	Wld. tube	SA-688	TP304	S30400	...
32	18Cr–8Ni	Wld. pipe	SA-813	TP304	S30400	...
33	18Cr–8Ni	Wld. pipe	SA-813	TP304H	S30409	...
34	18Cr–8Ni	Wld. pipe	SA-814	TP304	S30400	...
35	18Cr–8Ni	Wld. pipe	SA-814	TP304H	S30409	...
36	18Cr–8Ni	Castings	SA-351	CF3A	J92500	...
37	18Cr–8Ni	Castings	SA-351	CF8A	J92600	...
38	18Cr–8Ni	Cast pipe	SA-451	CPF3A	J92500	...
39	18Cr–8Ni	Cast pipe	SA-451	CPF8A	J92600	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Ferrous Materials (Cont'd)
1	...	70	30	...
2	...	70	30	...
3	...	70	30	...
4	...	70	30	...
5	...	70	30	...
6	...	70	30	...
7	...	70	30	...
8	≤ 5	75	30	...
9	≤ 5	75	30	...
10	...	75	30	...
11	...	75	30	...
12	...	75	30	...
13	...	75	30	...
14	...	75	30	...
15	...	75	30	...
16	...	75	30	...
17	...	75	30	...
18	...	75	30	...
19	...	75	30	...
20	...	75	30	...
21	...	75	30	...
22	...	75	30	...
23	...	75	30	...
24	...	75	30	...
25	...	75	30	...
26	...	75	30	...
27	...	75	30	...
28	...	75	30	...
29	...	75	30	...
30	...	75	30	...
31	...	75	30	...
32	...	75	30	...
33	...	75	30	...
34	...	75	30	...
35	...	75	30	...
36	...	77	35	...
37	...	77	35	...
38	...	77	35	...
39	...	77	35	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	–20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
2	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
3	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
4	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
5	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
6	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
7	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
8	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
9	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
10	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
11	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
12	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
13	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
14	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
15	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
16	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
17	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
18	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
19	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
20	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
21	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
22	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
23	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
24	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
25	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
26	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
27	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
28	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
29	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
30	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
31	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
32	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
33	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
34	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
35	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
36	35.0	31.2	29.2	27.5	26.2	...	24.1	...	22.6
37	35.0	31.2	29.2	27.5	26.2	...	24.1	...	22.6
38	35.0	31.2	29.2	27.5	26.2	...	24.1	...	22.6
39	35.0	31.2	29.2	27.5	26.2	...	24.1	...	22.6

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Ferrous Materials (Cont'd)
1	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
2	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
3	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
4	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
5	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
6	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
7	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
8	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
9	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
10	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
11	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
12	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
13	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
14	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
15	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
16	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
17	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
18	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
19	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
20	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
21	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
22	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
23	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
24	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
25	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
26	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
27	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
28	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
29	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
30	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
31	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
32	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
33	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
34	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
35	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
36	...	21.5	21.0	20.5	20.1	19.7	19.3	18.9	18.5	18.1
37	...	21.5	21.0	20.5	20.1	19.7	19.3	18.9	18.5	18.1
38	...	21.5	21.0	20.5	20.1	19.7	19.3	18.9	18.5	18.1
39	...	21.5	21.0	20.5	20.1	19.7	19.3	18.9	18.5	18.1

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	18Cr–8Ni–N	Forgings	SA-182	F304LN	S30453	...
2	18Cr–8Ni–N	Forgings	SA-336	F304LN	S30453	...
3	18Cr–8Ni–N	Forgings	SA-182	F304LN	S30453	...
4	18Cr–8Ni–N	Smls. tube	SA-213	TP304LN	S30453	...
5	18Cr–8Ni–N	Plate	SA-240	304LN	S30453	...
6	18Cr–8Ni–N	Wld. tube	SA-249	TP304LN	S30453	...
7	18Cr–8Ni–N	Smls. & wld. pipe	SA-312	TP304LN	S30453	...
8	18Cr–8Ni–N	Smls. pipe	SA-376	TP304LN	S30453	...
9	18Cr–8Ni–N	Smls. & wld. fittings	SA-403	304LN	S30453	WP
10	18Cr–8Ni–N	Bar	SA-479	304LN	S30453	...
11	18Cr–8Ni–N	Wld. tube	SA-688	TP304LN	S30453	...
12	18Cr–8Ni–N	Wld. pipe	SA-813	TP304LN	S30453	...
13	18Cr–8Ni–N	Wld. pipe	SA-814	TP304LN	S30453	...
14	18Cr–8Ni–N	Forged pipe	SA-430	FP304N	S30451	...
15	18Cr–8Ni–N	Forgings	SA-182	F304N	S30451	...
16	18Cr–8Ni–N	Smls. tube	SA-213	TP304N	S30451	...
17	18Cr–8Ni–N	Plate	SA-240	304N	S30451	...
18	18Cr–8Ni–N	Wld. tube	SA-249	TP304N	S30451	...
19	18Cr–8Ni–N	Smls. & wld. pipe	SA-312	TP304N	S30451	...
20	18Cr–8Ni–N	Forgings	SA-336	F304N	S30451	...
21	18Cr–8Ni–N	Wld. pipe	SA-358	304N	S30451	1
22	18Cr–8Ni–N	Smls. pipe	SA-376	TP304N	S30451	...
23	18Cr–8Ni–N	Smls. & wld. fittings	SA-403	304N	S30451	...
24	18Cr–8Ni–N	Bar	SA-479	304N	S30451	...
25	18Cr–8Ni–N	Wld. tube	SA-688	TP304N	S30451	...
26	18Cr–8Ni–N	Wld. pipe	SA-813	TP304N	S30451	...
27	18Cr–8Ni–N	Wld. pipe	SA-814	TP304N	S30451	...
28	18Cr–8Ni–4Si–N	Bar	SA-479	...	S21800	...
29	18Cr–10Ni–Cb	Forgings	SA-336	F348H	S34809	...
30	18Cr–10Ni–Cb	Castings	SA-351	CF8C	J92710	...
31	18Cr–10Ni–Cb	Cast pipe	SA-451	CPF8C	J92710	...
32	18Cr–10Ni–Cb	Forgings	SA-182	F347	S34700	...
33	18Cr–10Ni–Cb	Forgings	SA-336	F347	S34700	...
34	18Cr–10Ni–Cb	Forged pipe	SA-430	FP347	S34700	...
35	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...
36	18Cr–10Ni–Cb	Forgings	SA-336	F347H	S34709	...
37	18Cr–10Ni–Cb	Forged pipe	SA-430	FP347H	S34709	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Ferrous Materials (Cont'd)
1	> 5	70	30	...
2	...	70	30	...
3	≤ 5	75	30	...
4	...	75	30	...
5	...	75	30	...
6	...	75	30	...
7	...	75	30	...
8	...	75	30	...
9	...	75	30	...
10	...	75	30	...
11	...	75	30	...
12	...	75	30	...
13	...	75	30	...
14	...	75	35	...
15	...	80	35	...
16	...	80	35	...
17	...	80	35	...
18	...	80	35	...
19	...	80	35	...
20	...	80	35	...
21	...	80	35	...
22	...	80	35	...
23	...	80	35	...
24	...	80	35	...
25	...	80	35	...
26	...	80	35	...
27	...	80	35	...
28	...	95	50	...
29	...	65	25	...
30	...	70	30	...
31	...	70	30	...
32	> 5	70	30	...
33	...	70	30	...
34	...	70	30	...
35	> 5	70	30	...
36	...	70	30	...
37	...	70	30	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	–20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
2	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
3	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
4	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
5	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
6	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
7	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
8	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
9	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
10	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
11	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
12	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
13	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
14	35.0	30.9	28.6	26.7	25.0	...	22.6	...	21.0
15	35.0	30.9	28.6	26.7	25.0	...	22.6	...	21.0
16	35.0	30.9	28.6	26.7	25.0	...	22.6	...	21.0
17	35.0	30.9	28.6	26.7	25.0	...	22.6	...	21.0
18	35.0	30.9	28.6	26.7	25.0	...	22.6	...	21.0
19	35.0	30.9	28.6	26.7	25.0	...	22.6	...	21.0
20	35.0	30.9	28.6	26.7	25.0	...	22.6	...	21.0
21	35.0	30.9	28.6	26.7	25.0	...	22.6	...	21.0
22	35.0	30.9	28.6	26.7	25.0	...	22.6	...	21.0
23	35.0	30.9	28.6	26.7	25.0	...	22.6	...	21.0
24	35.0	30.9	28.6	26.7	25.0	...	22.6	...	21.0
25	35.0	30.9	28.6	26.7	25.0	...	22.6	...	21.0
26	35.0	30.9	28.6	26.7	25.0	...	22.6	...	21.0
27	35.0	30.9	28.6	26.7	25.0	...	22.6	...	21.0
28	50.0	42.6	38.8	35.7	33.2	...	29.7	...	27.6
29	25.0	23.8	23.0	22.2	21.4	...	20.0	...	18.8
30	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
31	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
32	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
33	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
34	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
35	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
36	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
37	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Ferrous Materials (Cont'd)
1	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
2	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
3	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
4	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
5	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
6	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
7	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
8	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
9	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
10	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
11	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
12	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
13	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
14	...	19.9	19.5	19.1	18.8	18.5	18.1	17.7	17.3	16.9
15	...	19.9	19.5	19.1	18.8	18.5	18.1	17.7	17.3	16.9
16	...	19.9	19.5	19.1	18.8	18.5	18.1	17.7	17.3	16.9
17	...	19.9	19.5	19.1	18.8	18.5	18.1	17.7	17.3	16.9
18	...	19.9	19.5	19.1	18.8	18.5	18.1	17.7	17.3	16.9
19	...	19.9	19.5	19.1	18.8	18.5	18.1	17.7	17.3	16.9
20	...	19.9	19.5	19.1	18.8	18.5	18.1	17.7	17.3	16.9
21	...	19.9	19.5	19.1	18.8	18.5	18.1	17.7	17.3	16.9
22	...	19.9	19.5	19.1	18.8	18.5	18.1	17.7	17.3	16.9
23	...	19.9	19.5	19.1	18.8	18.5	18.1	17.7	17.3	16.9
24	...	19.9	19.5	19.1	18.8	18.5	18.1	17.7	17.3	16.9
25	...	19.9	19.5	19.1	18.8	18.5	18.1	17.7	17.3	16.9
26	...	19.9	19.5	19.1	18.8	18.5	18.1	17.7	17.3	16.9
27	...	19.9	19.5	19.1	18.8	18.5	18.1	17.7	17.3	16.9
28	...	26.4	25.9	25.6	25.4	25.2	25.0	24.9	24.9	24.9
29	...	17.9	17.6	17.3	17.1	17.0	16.9	16.8	16.8	16.7
30	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
31	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
32	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
33	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
34	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
35	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
36	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
37	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...
2	18Cr–10Ni–Cb	Forgings	SA-336	F348	S34800	...
3	18Cr–10Ni–Cb	Forgings	SA-182	F348H	S34809	...
4	18Cr–10Ni–Cb	Forgings	SA-182	F347	S34700	...
5	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347	S34700	...
6	18Cr–10Ni–Cb	Plate	SA-240	347	S34700	...
7	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347	S34700	...
8	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP347	S34700	...
9	18Cr–10Ni–Cb	Wld. pipe	SA-358	347	S34700	1
10	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347	S34700	...
11	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	347	S34700	...
12	18Cr–10Ni–Cb	Wld. pipe	SA-409	TP347	S34700	...
13	18Cr–10Ni–Cb	Bar	SA-479	347	S34700	...
14	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP347	S34700	...
15	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...
16	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347H	S34709	...
17	18Cr–10Ni–Cb	Plate	SA-240	347H	S34709	...
18	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347H	S34709	...
19	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP347H	S34709	...
20	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347H	S34709	...
21	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	347H	S34709	...
22	18Cr–10Ni–Cb	Cast pipe	SA-452	TP347H	S34709	...
23	18Cr–10Ni–Cb	Bar	SA-479	347H	S34709	...
24	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP347H	S34709	...
25	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP347H	S34709	...
26	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...
27	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348	S34800	...
28	18Cr–10Ni–Cb	Plate	SA-240	348	S34800	...
29	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348	S34800	...
30	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP348	S34800	...
31	18Cr–10Ni–Cb	Wld. pipe	SA-358	348	S34800	1
32	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP348	S34800	...
33	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	348	S34800	...
34	18Cr–10Ni–Cb	Wld. pipe	SA-409	TP348	S34800	...
35	18Cr–10Ni–Cb	Bar	SA-479	348	S34800	...
36	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP348	S34800	...
37	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP348	S34800	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Ferrous Materials (Cont'd)
1	> 5	70	30	...
2	...	70	30	...
3	> 5	70	30	...
4	≤ 5	75	30	...
5	...	75	30	...
6	...	75	30	...
7	...	75	30	...
8	...	75	30	...
9	...	75	30	...
10	...	75	30	...
11	...	75	30	...
12	...	75	30	...
13	...	75	30	...
14	...	75	30	...
15	≤ 5	75	30	...
16	...	75	30	...
17	...	75	30	...
18	...	75	30	...
19	...	75	30	...
20	...	75	30	...
21	...	75	30	...
22	...	75	30	...
23	...	75	30	...
24	...	75	30	...
25	...	75	30	...
26	≤ 5	75	30	...
27	...	75	30	...
28	...	75	30	...
29	...	75	30	...
30	...	75	30	...
31	...	75	30	...
32	...	75	30	...
33	...	75	30	...
34	...	75	30	...
35	...	75	30	...
36	...	75	30	...
37	...	75	30	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	−20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
2	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
3	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
4	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
5	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
6	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
7	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
8	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
9	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
10	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
11	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
12	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
13	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
14	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
15	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
16	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
17	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
18	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
19	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
20	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
21	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
22	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
23	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
24	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
25	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
26	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
27	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
28	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
29	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
30	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
31	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
32	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
33	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
34	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
35	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
36	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
37	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Ferrous Materials (Cont'd)
1	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
2	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
3	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
4	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
5	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
6	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
7	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
8	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
9	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
10	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
11	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
12	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
13	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
14	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
15	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
16	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
17	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
18	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
19	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
20	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
21	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
22	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
23	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
24	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
25	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
26	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
27	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
28	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
29	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
30	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
31	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
32	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
33	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
34	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
35	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
36	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
37	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	18Cr–10Ni–Cb	Forgings	SA-182	F348H	S34809	...
2	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348H	S34809	...
3	18Cr–10Ni–Cb	Plate	SA-240	348H	S34809	...
4	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348H	S34809	...
5	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP348H	S34809	...
6	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	348H	S34809	...
7	18Cr–10Ni–Cb	Bar	SA-479	348H	S34809	...
8	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP348H	S34809	...
9	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP348H	S34809	...
10	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...
11	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321H	S32109	...
12	18Cr–10Ni–Ti	Forgings	SA-182	F321	S32100	...
13	18Cr–10Ni–Ti	Forgings	SA-336	F321	S32100	...
14	18Cr–10Ni–Ti	Forged pipe	SA-430	FP321	S32100	...
15	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...
16	18Cr–10Ni–Ti	Forgings	SA-336	F321H	S32109	...
17	18Cr–10Ni–Ti	Forged pipe	SA-430	FP321H	S32109	...
18	18Cr–10Ni–Ti	Forgings	SA-182	F321	S32100	...
19	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321	S32100	...
20	18Cr–10Ni–Ti	Plate	SA-240	321	S32100	...
21	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321	S32100	...
22	18Cr–10Ni–Ti	Smls. & wld. pipe	SA-312	TP321	S32100	...
23	18Cr–10Ni–Ti	Wld. pipe	SA-358	321	S32100	1
24	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...
25	18Cr–10Ni–Ti	Smls. & wld. fittings	SA-403	321	S32100	...
26	18Cr–10Ni–Ti	Wld. pipe	SA-409	TP321	S32100	...
27	18Cr–10Ni–Ti	Bar	SA-479	321	S32100	...
28	18Cr–10Ni–Ti	Wld. pipe	SA-813	TP321	S32100	...
29	18Cr–10Ni–Ti	Wld. pipe	SA-814	TP321	S32100	...
30	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...
31	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321H	S32109	...
32	18Cr–10Ni–Ti	Plate	SA-240	321H	S32109	...
33	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321H	S32109	...
34	18Cr–10Ni–Ti	Smls. pipe	SA-312	TP321H	S32109	...
35	18Cr–10Ni–Ti	Wld. pipe	SA-312	TP321H	S32109	...
36	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321H	S32109	...
37	18Cr–10Ni–Ti	Smls. & wld. fittings	SA-403	321H	S32109	...
38	18Cr–10Ni–Ti	Bar	SA-479	321H	S32109	...
39	18Cr–10Ni–Ti	Wld. pipe	SA-813	TP321H	S32109	...
40	18Cr–10Ni–Ti	Wld. pipe	SA-814	TP321H	S32109	...
41	18Cr–11Ni	Plate	SA-240	305	S30500	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Ferrous Materials (Cont'd)
1	≤ 5	75	30	…
2	…	75	30	…
3	…	75	30	…
4	…	75	30	…
5	…	75	30	…
6	…	75	30	…
7	…	75	30	…
8	…	75	30	…
9	…	75	30	…
10	> 3/8	70	25	…
11	> 3/8	70	25	…
12	> 5	70	30	…
13	…	70	30	…
14	…	70	30	…
15	> 5	70	30	…
16	…	70	30	…
17	…	70	30	…
18	≤ 5	75	30	…
19	…	75	30	…
20	…	75	30	…
21	…	75	30	…
22	≤ 3/8	75	30	…
23	…	75	30	…
24	≤ 3/8	75	30	…
25	…	75	30	…
26	…	75	30	…
27	…	75	30	…
28	…	75	30	…
29	…	75	30	…
30	≤ 5	75	30	…
31	…	75	30	…
32	…	75	30	…
33	…	75	30	…
34	≤ 3/8	75	30	…
35	…	75	30	…
36	≤ 3/8	75	30	…
37	…	75	30	…
38	…	75	30	…
39	…	75	30	…
40	…	75	30	…
41	…	75	30	…

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	−20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
2	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
3	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
4	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
5	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
6	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
7	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
8	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
9	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
10	25.0	23.4	22.5	21.5	20.7	...	19.2	...	17.9
11	25.0	23.4	22.5	21.5	20.7	...	19.2	...	17.9
12	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
13	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
14	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
15	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
16	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
17	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
18	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
19	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
20	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
21	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
22	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
23	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
24	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
25	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
26	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
27	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
28	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
29	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
30	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
31	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
32	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
33	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
34	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
35	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
36	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
37	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
38	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
39	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
40	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
41	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Ferrous Materials (Cont'd)
1	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
2	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
3	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
4	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
5	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
6	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
7	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
8	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
9	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1
10	...	16.9	16.5	16.2	15.9	15.7	15.5	15.3	15.2	15.0
11	...	16.9	16.5	16.2	15.9	15.7	15.5	15.3	15.2	15.0
12	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
13	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
14	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
15	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
16	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
17	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
18	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
19	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
20	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
21	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
22	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
23	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
24	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
25	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
26	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
27	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
28	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
29	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
30	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
31	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
32	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
33	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
34	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
35	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
36	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
37	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
38	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
39	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
40	...	20.3	19.8	19.4	19.1	18.8	18.6	18.4	18.2	18.0
41	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	18Cr–13Ni–3Mo	Forgings	SA-182	F317L	S31703	...
2	18Cr–13Ni–3Mo	Forgings	SA-182	F317L	S31703	...
3	18Cr–13Ni–3Mo	Forgings	SA-182	F317	S31700	...
4	18Cr–13Ni–3Mo	Plate	SA-240	317	S31700	...
5	18Cr–13Ni–3Mo	Plate	SA-240	317L	S31703	...
6	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317	S31700	...
7	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317L	S31703	...
8	18Cr–13Ni–3Mo	Smls. & wld. pipe	SA-312	TP317	S31700	...
9	18Cr–13Ni–3Mo	Smls. & wld. pipe	SA-312	TP317L	S31703	...
10	18Cr–13Ni–3Mo	Smls. & wld. fittings	SA-403	317	S31700	...
11	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	...
12	18Cr–18Ni–2Si	Smls. tube	SA-213	XM-15	S38100	...
13	18Cr–18Ni–2Si	Plate	SA-240	XM-15	S38100	...
14	18Cr–18Ni–2Si	Wld. tube	SA-249	TPXM-15	S38100	...
15	18Cr–18Ni–2Si	Wld. pipe	SA-312	TPXM-15	S38100	...
16	19Cr–9Ni–½Mo	Castings	SA-351	CF10	J92590	...
17	19Cr–9Ni–2Mo	Castings	SA-351	CF10M	...	...
18	19Cr–10Ni–3Mo	Castings	SA-351	CG8M	J93000	...
19	19Cr–15Ni–4Mo	Smls. tube	SA-213	...	S31725	...
20	19Cr–15Ni–4Mo	Plate	SA-240	...	S31725	...
21	19Cr–15Ni–4Mo	Wld. tube	SA-249	...	S31725	...
22	19Cr–15Ni–4Mo	Smls. & wld. pipe	SA-312	...	S31725	...
23	19Cr–15Ni–4Mo	Wld. pipe	SA-358	...	S31725	...
24	19Cr–15Ni–4Mo	Smls. pipe	SA-376	...	S31725	...
25	19Cr–15Ni–4Mo	Wld. pipe	SA-409	...	S31725	...
26	19Cr–15Ni–4Mo	Bar	SA-479	...	S31725	...
27	20Cr–10Ni	Bar	SA-479	ER308	S30880	...
28	20Cr–18Ni–6Mo	Castings	SA-351	CK3MCuN	J93254	...
29	20Cr–18Ni–6Mo	Forgings	SA-182	F44	S31254	...
30	20Cr–18Ni–6Mo	Wld. tube	SA-249	...	S31254	...
31	20Cr–18Ni–6Mo	Smls. & wld. pipe	SA-312	...	S31254	...
32	20Cr–18Ni–6Mo	Wld. pipe	SA-358	...	S31254	...
01 33	20Cr–18Ni–6Mo	Plate	SA-240	...	S31254	...
34	21Cr–6Ni–9Mn	Forgings	SA-182	FXM-11	S21904	...
35	21Cr–6Ni–9Mn	Smls. & wld. pipe	SA-312	TPXM-11	S21904	...
36	21Cr–6Ni–9Mn	Forgings	SA-336	FXM-11	S21904	...
37	21Cr–6Ni–9Mn	Plate	SA-666	XM-11	S21904	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes	
				Ferrous Materials (Cont'd)	
1	> 5	65	25	...	
2	≤ 5	70	25	...	
3	≤ 5	75	30	...	
4	...	75	30	...	
5	...	75	30	...	
6	...	75	30	...	
7	...	75	30	...	
8	...	75	30	...	
9	...	75	30	...	
10	...	75	30	...	
11	...	75	30	...	
12	...	75	30	...	
13	...	75	30	...	
14	...	75	30	...	
15	...	75	30	...	
16	...	70	30	...	
17	...	70	30	...	
18	...	75	35	...	
19	...	75	30	...	
20	...	75	30	...	
21	...	75	30	...	
22	...	75	30	...	
23	...	75	30	...	
24	...	75	30	...	
25	...	75	30	...	
26	...	75	30	...	
27	...	75	30	...	
28	...	80	38	...	
29	...	94	44	...	
30	...	94	44	...	
31	...	94	44	...	
32	...	94	44	...	
33	...	100	45	...	01
34	...	90	50	...	
35	...	90	50	...	
36	...	90	50	...	
37	...	90	50	...	

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	−20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
2	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
3	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
4	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
5	30.0	27.3	25.5	24.1	22.8	...	21.0	...	19.7
6	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
7	30.0	27.3	25.5	24.1	22.8	...	21.0	...	19.7
8	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
9	30.0	27.3	25.5	24.1	22.8	...	21.0	...	19.7
10	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
11	30.0	27.3	25.5	24.1	22.8	...	21.0	...	19.7
12	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
13	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
14	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
15	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
16	30.0	26.7	25.0	23.6	22.4	...	20.6	...	19.3
17	30.0	27.7	26.2	24.8	23.5	...	21.4	...	19.9
18	35.0	30.5	28.1	26.2	24.5	...	22.1	...	20.5
19	30.0	27.0	25.3	24.0	22.8	...	21.0	...	19.7
20	30.0	27.0	25.3	24.0	22.8	...	21.0	...	19.7
21	30.0	27.0	25.3	24.0	22.8	...	21.0	...	19.7
22	30.0	27.0	25.3	24.0	22.8	...	21.0	...	19.7
23	30.0	27.0	25.3	24.0	22.8	...	21.0	...	19.7
24	30.0	27.0	25.3	24.0	22.8	...	21.0	...	19.7
25	30.0	27.0	25.3	24.0	22.8	...	21.0	...	19.7
26	30.0	27.0	25.3	24.0	22.8	...	21.0	...	19.7
27	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
28	38.0	33.3	31.0	29.2	27.8	...	25.6	...	24.2
29	44.0	38.5	35.9	33.8	32.1	...	29.7	...	28.0
30	44.0	38.5	35.9	33.8	32.1	...	29.7	...	28.0
31	44.0	38.5	35.9	33.8	32.1	...	29.7	...	28.0
32	44.0	38.5	35.9	33.8	32.1	...	29.7	...	28.0
01 33	45.0	39.4	36.7	34.6	32.9	...	30.4	...	28.6
34	50.0	42.5	38.6	35.5	33.0	...	29.4	...	27.1
35	50.0	42.5	38.6	35.5	33.0	...	29.4	...	27.1
36	50.0	42.5	38.6	35.5	33.0	...	29.4	...	27.1
37	50.0	42.5	38.6	35.5	33.0	...	29.4	...	27.1

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding										
	550	600	650	700	750	800	850	900	950	1000	
										Ferrous Materials (Cont'd)	
1	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
2	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
3	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0	
4	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0	
5	...	18.7	18.3	18.0	17.6	17.2	16.9	16.5	16.1	15.8	
6	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0	
7	...	18.7	18.3	18.0	17.6	17.2	16.9	16.5	16.1	15.8	
8	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0	
9	...	18.7	18.3	18.0	17.6	17.2	16.9	16.5	16.1	15.8	
10	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0	
11	...	18.7	18.3	18.0	17.6	17.2	16.9	16.5	16.1	15.8	
12	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5	
13	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5	
14	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5	
15	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5	
16	...	18.4	17.9	17.6	17.2	16.9	16.6	16.3	15.9	15.6	
17	...	18.8	18.5	18.1	17.9	17.6	17.4	17.2	17.0	16.9	
18	...	19.4	19.0	18.7	18.4	18.2	18.0	17.7	17.4	17.0	
19	...	18.7	18.3	18.0	17.6	17.3	16.9	16.6	16.2	15.9	
20	...	18.7	18.3	18.0	17.6	17.3	16.9	16.6	16.2	15.9	
21	...	18.7	18.3	18.0	17.6	17.3	16.9	16.6	16.2	15.9	
22	...	18.7	18.3	18.0	17.6	17.3	16.9	16.6	16.2	15.9	
23	...	18.7	18.3	18.0	17.6	17.3	16.9	16.6	16.2	15.9	
24	...	18.7	18.3	18.0	17.6	17.3	16.9	16.6	16.2	15.9	
25	...	18.7	18.3	18.0	17.6	17.3	16.9	16.6	16.2	15.9	
26	...	18.7	18.3	18.0	17.6	17.3	16.9	16.6	16.2	15.9	
27	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5	
28	...	23.2	22.8	22.6	22.4	22.3	22.1	...	...	...	
29	...	26.8	26.4	26.2	26.0	25.8	25.6	...	...	...	
30	...	26.8	26.4	26.2	26.0	25.8	25.6	...	...	...	
31	...	26.8	26.4	26.2	26.0	25.8	25.6	...	...	...	
32	...	26.8	26.4	26.2	26.0	25.8	25.6	...	...	...	
33	...	27.4	27.0	26.8	26.6	26.4	26.2	...	...	...	01
34	...	25.7	25.3	25.0	24.8	24.6	24.4	24.1	23.5	22.6	
35	...	25.7	25.3	25.0	24.8	24.6	24.4	24.1	23.5	22.6	
36	...	25.7	25.3	25.0	24.8	24.6	24.4	24.1	23.5	22.6	
37	...	25.7	25.3	25.0	24.8	24.6	24.4	24.1	23.5	22.6	

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	21Cr–11Ni–N	Forgings	SA-182	F45	S30815	...
2	21Cr–11Ni–N	Smls. tube	SA-213	...	S30815	...
3	21Cr–11Ni–N	Plate	SA-240	...	S30815	...
4	21Cr–11Ni–N	Wld. tube	SA-249	...	S30815	...
5	21Cr–11Ni–N	Smls. & wld. pipe	SA-312	...	S30815	...
6	21Cr–11Ni–N	Bar	SA-479	...	S30815	...
7	22Cr–5Ni–3Mo–N	Forgings	SA-182	F51	S31803	...
8	22Cr–5Ni–3Mo–N	Plate	SA-240	...	S31803	...
9	22Cr–5Ni–3Mo–N	Smls. & wld. tube	SA-789	...	S31803	...
10	22Cr–5Ni–3Mo–N	Smls. & wld. pipe	SA-790	...	S31803	...
11	22Cr–5Ni–3Mo–N	Smls. & wld. fittings	SA-815	...	S31803	...
12	22Cr–13Ni–5Mn	Castings	SA-351	CG6MMN	J93790	...
13	22Cr–13Ni–5Mn	Forgings	SA-182	FXM-19	S20910	...
14	22Cr–13Ni–5Mn	Smls. tube	SA-213	XM-19	S20910	...
15	22Cr–13Ni–5Mn	Plate	SA-240	XM-19	S20910	...
16	22Cr–13Ni–5Mn	Wld. tube	SA-249	TPXM-19	S20910	...
17	22Cr–13Ni–5Mn	Smls. & wld. pipe	SA-312	TPXM-19	S20910	...
18	22Cr–13Ni–5Mn	Wld. pipe	SA-358	XM-19	S20910	1
19	22Cr–13Ni–5Mn	Smls. & wld. fittings	SA-403	XM-19	S20910	...
20	22Cr–13Ni–5Mn	Bar	SA-479	XM-19	S20910	...
21	22Cr–13Ni–5Mn	Wld. pipe	SA-813	TPXM-19	S20910	...
22	22Cr–13Ni–5Mn	Wld. pipe	SA-814	TPXM-19	S20910	...
23	23Cr–4Ni–Mo–Cu	Plate	SA-240	...	S32304	...
24	23Cr–4Ni–Mo–Cu–N	Smls. & wld. tube	SA-789	...	S32304	...
25	23Cr–4Ni–Mo–Cu–N	Smls. & wld. pipe	SA-790	...	S32304	...
01 26	23Cr–4Ni–Mo–Cu–N	Smls. & wld. tube	SA-789	...	S32304	...
27	23Cr–12Ni	Smls. & wld. fittings	SA-403	309	S30900	...
28	23Cr–12Ni	Smls. tube	SA-213	TP309S	S30908	...
29	23Cr–12Ni	Plate	SA-240	309S	S30908	...
30	23Cr–12Ni	Wld. tube	SA-249	TP309S	S30908	...
31	23Cr–12Ni	Smls. & wld. pipe	SA-312	TP309S	S30908	...
32	23Cr–12Ni	Wld. pipe	SA-358	309S	S30908	1
33	23Cr–12Ni	Bar	SA-479	309S	S30908	...
34	23Cr–12Ni	Wld. pipe	SA-813	TP309S	S30908	...
35	23Cr–12Ni	Wld. pipe	SA-814	TP309S	S30908	...
36	23Cr–12Ni	Smls. tube	SA-213	TP309H	S30909	...
37	23Cr–12Ni	Plate	SA-240	309H	S30909	...
38	23Cr–12Ni	Wld. tube	SA-249	TP309H	S30909	...
39	23Cr–12Ni	Smls. & wld. pipe	SA-312	TP309H	S30909	...
40	23Cr–12Ni	Bar	SA-479	309H	S30909	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes	
				Ferrous Materials (Cont'd)	
1	...	87	45	...	
2	...	87	45	...	
3	...	87	45	...	
4	...	87	45	...	
5	...	87	45	...	
6	...	87	45	...	
7	...	90	65	...	
8	...	90	65	...	
9	...	90	65	...	
10	...	90	65	...	
11	...	90	65	...	
12	...	85	42.5	...	
13	...	100	55	...	
14	...	100	55	...	
15	...	100	55	...	
16	...	100	55	...	
17	...	100	55	...	
18	...	100	55	...	
19	...	100	55	...	
20	...	100	55	...	
21	...	100	55	...	
22	...	100	55	...	
23	...	87	58	...	
24	> 1	87	58	...	
25	...	87	58	...	
26	≤ 1	100	65	...	01
27	...	75	30	...	
28	...	75	30	...	
29	...	75	30	...	
30	...	75	30	...	
31	...	75	30	...	
32	...	75	30	...	
33	...	75	30	...	
34	...	75	30	...	
35	...	75	30	...	
36	...	75	30	...	
37	...	75	30	...	
38	...	75	30	...	
39	...	75	30	...	
40	...	75	30	...	

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	−20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	45.0	40.2	37.5	35.1	33.0	...	29.9	...	27.8
2	45.0	40.2	37.5	35.1	33.0	...	29.9	...	27.8
3	45.0	40.2	37.5	35.1	33.0	...	29.9	...	27.8
4	45.0	40.2	37.5	35.1	33.0	...	29.9	...	27.8
5	45.0	40.2	37.5	35.1	33.0	...	29.9	...	27.8
6	45.0	40.2	37.5	35.1	33.0	...	29.9	...	27.8
7	65.0	60.5	57.8	55.5	53.7	...	51.2	...	49.6
8	65.0	60.5	57.8	55.5	53.7	...	51.2	...	49.6
9	65.0	60.5	57.8	55.5	53.7	...	51.2	...	49.6
10	65.0	60.5	57.8	55.5	53.7	...	51.2	...	49.6
11	65.0	60.5	57.8	55.5	53.7	...	51.2	...	49.6
12	42.5	38.4	36.4	34.8	33.4	...	31.5	...	30.0
13	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
14	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
15	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
16	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
17	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
18	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
19	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
20	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
21	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
22	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
23	58.0	52.6	49.8	47.8	46.3	...	44.5	...	43.4
24	58.0	52.6	49.8	47.8	46.3	...	44.5	...	43.4
25	58.0	52.6	49.8	47.8	46.3	...	44.5	...	43.4
01 26	65.0	58.9	55.9	53.6	51.9	...	49.6	...	48.6
27	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
28	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
29	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
30	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
31	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
32	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
33	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
34	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
35	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
36	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
37	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
38	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
39	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
40	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Ferrous Materials (Cont'd)
1	...	26.5	26.1	25.8	25.5	25.2	25.0	24.7	24.3	23.9
2	...	26.5	26.1	25.8	25.5	25.2	25.0	24.7	24.3	23.9
3	...	26.5	26.1	25.8	25.5	25.2	25.0	24.7	24.3	23.9
4	...	26.5	26.1	25.8	25.5	25.2	25.0	24.7	24.3	23.9
5	...	26.5	26.1	25.8	25.5	25.2	25.0	24.7	24.3	23.9
6	...	26.5	26.1	25.8	25.5	25.2	25.0	24.7	24.3	23.9
7	...	47.9	46.9	...	...	...	...	...	...	...
8	...	47.9	46.9	...	...	...	...	...	...	...
9	...	47.9	46.9	...	...	...	...	...	...	...
10	...	47.9	46.9	...	...	...	...	...	...	...
11	...	47.9	46.9	...	...	...	...	...	...	...
12	...	28.9	28.4	28.0	27.6	27.3	27.0	26.7	26.4	26.0
13	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7
14	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7
15	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7
16	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7
17	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7
18	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7
19	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7
20	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7
21	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7
22	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7
23	...	42.1	41.3	40.4	39.4	38.6	...	...	...	...
24	...	42.1	41.3	40.4	39.4	38.6	...	...	...	...
25	...	42.1	41.3	40.4	39.4	38.6	...	...	...	...
26	...	47.2	46.3	45.3	...	...	...	...	...	... 01
27	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
28	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
29	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
30	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
31	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
32	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
33	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
34	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
35	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
36	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
37	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
38	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
39	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
40	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	23Cr–12Ni–Cb	Smls. tube	SA-213	TP309Cb	S30940	...
2	23Cr–12Ni–Cb	Plate	SA-240	309Cb	S30940	...
3	23Cr–12Ni–Cb	Wld. tube	SA-249	TP309Cb	S30940	...
4	23Cr–12Ni–Cb	Smls. & wld. pipe	SA-312	TP309Cb	S30940	...
5	23Cr–12Ni–Cb	Bar	SA-479	309Cb	S30940	...
6	23Cr–12Ni–Cb	Wld. pipe	SA-813	TP309Cb	S30940	...
7	23Cr–12Ni–Cb	Wld. pipe	SA-814	TP309Cb	S30940	...
8	24Cr–10Ni–4Mo–N	Castings	SA-351	CE8MN	J93345	...
9	25Cr–4Ni–4Mo–Ti	Plate	SA-240	...	S44635	...
10	25Cr–4Ni–4Mo–Ti	Wld. tube	SA-268	...	S44635	...
11	25Cr–5Ni–3Mo–2Cu	Castings	SA-351	CD4MCu	J93370	...
12	25Cr–5Ni–3Mo–2Cu	Plate	SA-240	...	S32550	...
13	25Cr–5Ni–3Mo–2Cu	Bar	SA-479	...	S32550	...
14	25Cr–5Ni–3Mo–2Cu	Smls. & wld. tube	SA-789	...	S32550	...
15	25Cr–5Ni–3Mo–2Cu	Smls. & wld. pipe	SA-790	...	S32550	...
16	25Cr–6Ni–Mo–N	Plate	SA-240	...	S31200	...
17	25Cr–6.5Ni–3Mo–N	Smls. & wld. tube	SA-789	...	S31260	...
18	25Cr–6.5Ni–3Mo–N	Smls. & wld. pipe	SA-790	...	S31260	...
19	25Cr–6.5Ni–3Mo–N	Plate	SA-240	...	S31260	...
20	25Cr–7Ni–4Mo–N	Smls. & wld. tube	SA-789	...	S32750	...
21	25Cr–7Ni–4Mo–N	Smls. & wld. pipe	SA-790	...	S32750	...
22	25Cr–12Ni	Castings	SA-351	CH8	J93400	...
23	25Cr–12Ni	Cast pipe	SA-451	CPH8	J93400	...
24	25Cr–12Ni	Castings	SA-351	CH20	J93402	...
25	25Cr–12Ni	Cast pipe	SA-451	CPH20	J93402	...
26	25Cr–20Ni	Castings	SA-351	CK20	J94202	...
27	25Cr–20Ni	Cast pipe	SA-451	CPK20	J94202	...
28	25Cr–20Ni	Forgings	SA-182	F310	S31000	...
29	25Cr–20Ni	Forgings	SA-336	F310	S31000	...
30	25Cr–20Ni	Smls. & wld. fittings	SA-403	310	S31000	...
31	25Cr–20Ni	Smls. tube	SA-213	TP310S	S31008	...
32	25Cr–20Ni	Plate	SA-240	310S	S31008	...
33	25Cr–20Ni	Wld. tube	SA-249	TP310S	S31008	...
34	25Cr–20Ni	Smls. & wld. pipe	SA-312	TP310S	S31008	...
35	25Cr–20Ni	Wld. pipe	SA-358	310S	S31008	1
36	25Cr–20Ni	Bar	SA-479	310S	S31008	...
37	25Cr–20Ni	Wld. pipe	SA-813	TP310S	S31008	...
38	25Cr–20Ni	Wld. pipe	SA-814	TP310S	S31008	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Ferrous Materials (Cont'd)
1	...	75	30	...
2	...	75	30	...
3	...	75	30	...
4	...	75	30	...
5	...	75	30	...
6	...	75	30	...
7	...	75	30	...
8	...	95	65	...
9	...	90	75	...
10	...	90	75	...
11	...	100	70	...
12	...	110	80	...
13	...	110	80	...
14	...	110	80	...
15	...	110	80	...
16	...	100	65	...
17	...	100	65	...
18	...	100	65	...
19	...	100	70	...
20	≤ 1	116	80	...
21	≤ 1	116	80	...
22	...	65	28	...
23	...	65	28	...
24	...	70	30	...
25	...	70	30	...
26	...	65	28	...
27	...	65	28	...
28	≤ 5	75	30	...
29	...	75	30	...
30	...	75	30	...
31	...	75	30	...
32	...	75	30	...
33	...	75	30	...
34	...	75	30	...
35	...	75	30	...
36	...	75	30	...
37	...	75	30	...
38	...	75	30	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	−20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
2	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
3	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
4	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
5	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
6	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
7	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
8	65.0	56.6	52.4	49.2	46.8	...	43.9	...	42.5
9	75.0	66.1	62.0	58.7	55.8	...	51.0	...	47.5
10	75.0	66.1	62.0	58.7	55.8	...	51.0	...	47.5
11	70.0	...	...	...	...	...	...	...	...
12	80.0	73.8	70.2	67.0	64.3	...	60.5	...	58.7
13	80.0	73.8	70.2	67.0	64.3	...	60.5	...	58.7
14	80.0	73.8	70.2	67.0	64.3	...	60.5	...	58.7
15	80.0	73.8	70.2	67.0	64.3	...	60.5	...	58.7
16	65.0	58.6	55.3	52.6	50.4	...	47.5	...	45.5
17	65.0	59.5	56.6	54.2	52.3	...	49.5	...	47.9
18	65.0	59.5	56.6	54.2	52.3	...	49.5	...	47.9
19	70.0	64.1	61.0	58.4	56.3	...	53.3	...	51.5
20	80.0	74.0	70.5	67.4	64.7	...	60.7	...	58.3
21	80.0	74.0	70.5	67.4	64.7	...	60.7	...	58.3
22	28.0	24.4	22.9	21.8	21.1	...	20.2	...	19.6
23	28.0	24.4	22.9	21.8	21.1	...	20.2	...	19.6
24	30.0	26.1	24.5	23.4	22.6	...	21.7	...	21.0
25	30.0	26.1	24.5	23.4	22.6	...	21.7	...	21.0
26	28.0	24.4	22.9	21.8	21.1	...	20.2	...	19.6
27	28.0	24.4	22.9	21.8	21.1	...	20.2	...	19.6
28	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
29	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
30	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
31	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
32	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
33	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
34	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
35	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
36	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
37	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
38	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Ferrous Materials (Cont'd)
1	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
2	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
3	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
4	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
5	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
6	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
7	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4
8	...	41.4	40.6	39.3	...	...	...	...	...	...
9	...	45.0	43.5	...	...	...	...	...	...	...
10	...	45.0	43.5	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...
12	...	58.4	58.2	57.4	55.4	51.5	...	...	...	...
13	...	58.4	58.2	57.4	55.4	51.5	...	...	...	...
14	...	58.4	58.2	57.4	55.4	51.5	...	...	...	...
15	...	58.4	58.2	57.4	55.4	51.5	...	...	...	...
16	...	43.6	42.2	...	...	...	...	...	...	...
17	...	46.8	46.3	45.8	45.2	...	...	...	...	...
18	...	46.8	46.3	45.8	45.2	...	...	...	...	...
19	...	50.4	49.9	49.4	48.7	...	...	...	...	...
20	...	57.2	57.0	57.0	57.0	...	...	...	...	...
21	...	57.2	57.0	57.0	57.0	...	...	...	...	...
22	...	19.0	18.6	18.1	17.6	17.1	16.6	16.0	15.4	14.8
23	...	19.0	18.6	18.1	17.6	17.1	16.6	16.0	15.4	14.8
24	...	20.3	19.9	19.4	18.9	18.3	17.7	17.1	16.5	15.9
25	...	20.3	19.9	19.4	18.9	18.3	17.7	17.1	16.5	15.9
26	...	19.0	18.6	18.1	17.6	17.1	16.6	16.0	15.4	14.8
27	...	19.0	18.6	18.1	17.6	17.1	16.6	16.0	15.4	14.8
28	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
29	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
30	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
31	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
32	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
33	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
34	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
35	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
36	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
37	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
38	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Ferrous Materials (Cont'd)					
1	25Cr–20Ni	Smls. tube	SA-213	TP310H	S31009	...
2	25Cr–20Ni	Plate	SA-240	310H	S31009	...
3	25Cr–20Ni	Wld. tube	SA-249	TP310H	S31009	...
4	25Cr–20Ni	Smls. & wld. pipe	SA-312	TP310H	S31009	...
5	25Cr–20Ni	Bar	SA-479	310H	S31009	...
6	25Cr–20Ni–Cb	Smls. tube	SA-213	TP310Cb	S31040	...
7	25Cr–20Ni–Cb	Plate	SA-240	310Cb	S31040	...
8	25Cr–20Ni–Cb	Wld. tube	SA-249	TP310Cb	S31040	...
9	25Cr–20Ni–Cb	Smls. & wld. pipe	SA-312	TP310Cb	S31040	...
10	25Cr–20Ni–Cb	Bar	SA-479	310Cb	S31040	...
11	25Cr–20Ni–Cb	Wld. pipe	SA-813	TP310Cb	S31040	...
12	25Cr–20Ni–Cb	Wld. pipe	SA-814	TP310Cb	S31040	...
13	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...
14	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...
15	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...
16	25Cr–22Ni–2Mo–N	Plate	SA-240	310MoLN	S31050	...
17	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...
18	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...
19	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...
	Nonferrous Materials					
20	...	Drawn smls. tube	SB-210	...	Alclad 3003	O
21	...	Smls. extr. tube	SB-241	...	Alclad 3003	O
22	...	Plate, sheet	SB-209	...	A93003	O
23	...	Plate, sheet	SB-209	...	A93003	H112
24	...	Plate, sheet	SB-209	...	A93003	H112
25	...	Drawn smls. tube	SB-210	...	A93003	O
26	...	Drawn smls. tube	SB-210	...	A93003	H113
27	...	Bar, rod, shapes	SB-221	...	A93003	O
28	...	Bar, rod, shapes	SB-221	...	A93003	H112
29	...	Smls. extr. tube	SB-241	...	A93003	O
30	...	Smls. extr. tube	SB-241	...	A93003	H112
31	...	Smls. extr. tube	SB-241	...	A93003	H112
32	...	Smls. pipe	SB-241	...	A93003	H112
33	...	Plate, sheet	SB-209	...	A93004	O
34	...	Plate, sheet	SB-209	...	A93004	H112
35	...	Plate, sheet	SB-209	...	A95052	O
36	...	Plate, sheet	SB-209	...	A95052	H112
37	...	Plate, sheet	SB-209	...	A95052	H112

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Ferrous Materials (Cont'd)
1	...	75	30	...
2	...	75	30	...
3	...	75	30	...
4	...	75	30	...
5	...	75	30	...
6	...	75	30	...
7	...	75	30	...
8	...	75	30	...
9	...	75	30	...
10	...	75	30	...
11	...	75	30	...
12	...	75	30	...
13	$0.250 < t \leq 1.250$	78	37	...
14	$0.250 < t \leq 1.250$	78	37	...
15	$0.250 < t \leq 1.250$	78	37	...
16	...	80	35	...
17	≤ 0.250, wall	84	39	...
18	≤ 0.250, wall	84	39	...
19	≤ 0.250, wall	84	39	...
				Nonferrous Materials
20	0.010–0.500	...	4.5	...
21	...	13	4.5	...
22	0.051–3.000	...	5	...
23	0.250–0.499	...	10	...
24	0.500–3.000	...	6	...
25	0.010–0.500	...	5	...
26	0.050–0.500	14	4.5	...
27	...	...	5	...
28	...	...	5	...
29	...	14	5	...
30	...	14	5	...
31	...	14	5	...
32	...	14	5	...
33	0.051–3.000	...	8.5	...
34	0.250–3.000	...	9	...
35	0.051–3.000	...	9.5	...
36	0.250–0.499	...	16	...
37	0.500–3.000	...	9.5	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	–20 to 100	150	200	250	300	350	400	450	500
	Ferrous Materials (Cont'd)								
1	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
2	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
3	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
4	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
5	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
6	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
7	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
8	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
9	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
10	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
11	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
12	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
13	37.0	33.4	31.5	29.9	28.6	...	26.7	...	25.2
14	37.0	33.4	31.5	29.9	28.6	...	26.7	...	25.2
15	37.0	33.4	31.5	29.9	28.6	...	26.7	...	25.2
16	35.0	31.6	29.8	28.3	27.1	...	25.2	...	23.8
17	39.0	35.2	33.2	31.5	30.2	...	28.1	...	26.5
18	39.0	35.2	33.2	31.5	30.2	...	28.1	...	26.5
19	39.0	35.2	33.2	31.5	30.2	...	28.1	...	26.5
	Nonferrous Materials								
20	4.5	4.5	4.5	4.4	4.1	3.9	3.3	...	...
21	4.5	4.5	4.5	4.4	4.1	3.9	3.3	...	...
22	5.0	5.0	5.0	4.9	4.6	4.3	3.7	...	...
23	10.0	9.9	9.5	8.8	7.9	6.9	5.8	...	...
24	6.0	6.0	5.9	5.7	5.3	4.8	4.1	...	...
25	5.0	5.0	5.0	4.9	4.6	4.3	3.7	...	...
26	4.5	4.5	4.5	4.4	4.1	3.9	3.3	...	...
27	5.0	5.0	5.0	4.9	4.6	4.3	3.7	...	...
28	5.0	5.0	5.0	4.9	4.6	4.3	3.7	...	...
29	5.0	5.0	5.0	4.9	4.6	4.3	3.7	...	...
30	4.5	4.5	4.5	4.4	4.1	3.9	3.3	...	...
31	5.0	5.0	5.0	4.9	4.6	4.3	3.7	...	...
32	6.0	6.0	5.9	5.7	5.3	4.8	4.1	...	...
33	8.5	8.5	8.5	8.5	8.5	8.0	7.4	...	...
34	9.0	9.0	9.0	9.0	9.0	8.4	7.7	...	...
35	9.5	9.5	9.5	9.5	9.5	9.5	8.4	...	...
36	16.0	16.0	16.0	15.2	14.1	12.5	10.7	...	...
37	9.5	9.5	9.5	9.5	9.5	9.5	9.2	...	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Ferrous Materials (Cont'd)
1	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
2	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
3	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
4	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
5	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
6	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
7	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
8	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
9	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
10	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
11	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
12	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2
13	...	23.9	23.3	22.7	22.1	21.6	21.0	20.6	20.2	19.9
14	...	23.9	23.3	22.7	22.1	21.6	21.0	20.6	20.2	19.9
15	...	23.9	23.3	22.7	22.1	21.6	21.0	20.6	20.2	19.9
16	...	22.6	22.0	21.5	20.9	20.4	19.9	19.5	19.1	18.8
17	...	25.2	24.6	23.9	23.3	22.7	22.2	21.7	21.3	21.0
18	...	25.2	24.6	23.9	23.3	22.7	22.2	21.7	21.3	21.0
19	...	25.2	24.6	23.9	23.3	22.7	22.2	21.7	21.3	21.0
										Nonferrous Materials
20	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Nonferrous Materials (Cont'd)					
1	...	Plate, sheet	SB-209	...	A95083	0
2	...	Plate, sheet	SB-209	...	A95083	0
3	...	Plate, sheet	SB-209	...	A95083	0
4	...	Plate, sheet	SB-209	...	A95083	0
5	...	Plate, sheet	SB-209	...	A95083	0
6	...	Plate, sheet	SB-209	...	A95083	H112
7	...	Plate, sheet	SB-209	...	A95083	H112
8	...	Bar, rod, shapes	SB-221	...	A95083	H111
9	...	Smls. extr. tube	SB-241	...	A95083	H111
10	...	Plate, sheet	SB-209	...	A95086	0
11	...	Plate, sheet	SB-209	...	A95086	H112
12	...	Plate, sheet	SB-209	...	A95086	H112
13	...	Plate, sheet	SB-209	...	A95086	H112
14	...	Plate, sheet	SB-209	...	A95454	0
15	...	Plate, sheet	SB-209	...	A95454	H112
16	...	Plate, sheet	SB-209	...	A95454	H112
17	...	Bar, rod, shapes	SB-221	...	A95454	0
18	...	Bar, rod, shapes	SB-221	...	A95454	H112
19	...	Smls. extr. tube	SB-241	...	A95454	0
20	...	Smls. extr. tube	SB-241	...	A95454	H112
21	...	Plate, sheet	SB-209	...	A96061	T4
22	...	Plate, sheet	SB-209	...	A96061	T451
23	...	Plate, sheet	SB-209	...	A96061	T6
24	...	Plate, sheet	SB-209	...	A96061	T651
25	...	Drawn smls. tube	SB-210	...	A96061	T4
26	...	Drawn smls. tube	SB-210	...	A96061	T6
27	...	Bar, rod, shapes	SB-221	...	A96061	T4
28	...	Bar, rod, shapes	SB-221	...	A96061	T6
29	...	Smls. extr. tube	SB-241	...	A96061	T4
30	...	Smls. pipe & extr. tube	SB-241	...	A96061	T6
31	...	Bar, rod, shapes	SB-308	...	A96061	T6
32	...	Drawn smls. tube	SB-210	...	A96063	T6
33	...	Bar, rod, shapes	SB-221	...	A96063	T5
34	...	Bar, rod, shapes	SB-221	...	A96063	T5
35	...	Bar, rod, shapes	SB-221	...	A96063	T6
36	...	Smls. extr. tube	SB-241	...	A96063	T5
37	...	Smls. extr. tube	SB-241	...	A96063	T5
38	...	Smls. extr. tube	SB-241	...	A96063	T6

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Nonferrous Materials (Cont'd)
1	0.051–1.500	40	18	…
2	1.501–3.000	39	17	…
3	3.001–5.000	38	16	…
4	5.001–7.000	37	15	…
5	7.001–8.000	36	14	…
6	0.250–1.500	…	18	…
7	1.501–3.000	39	17	…
8	≤ 5.000	…	24	…
9	≤ 5.000	40	24	…
10	0.051–2.000	…	14	…
11	0.250–0.499	…	18	…
12	0.500–1.000	…	16	…
13	1.001–3.000	…	14	…
14	0.051–3.000	30	12	…
15	0.250–0.499	…	18	…
16	0.500–3.000	31	12	…
17	≤ 5.000	31	12	…
18	≤ 5.000	31	12	…
19	≤ 5.000	31	12	…
20	≤ 5.000	31	12	…
21	0.051–0.249	…	16	…
22	0.250–3.000	…	16	…
23	0.051–0.249	…	35	…
24	0.250–6.000	…	35	…
25	0.025–0.500	…	16	…
26	0.025–0.500	…	35	…
27	…	…	16	…
28	…	…	35	…
29	…	26	16	…
30	…	38	35	…
31	…	…	35	…
32	0.025–0.500	…	28	…
33	≤ 0.500	…	16	…
34	0.501–1.000	…	15	…
35	≤ 1.000	…	25	…
36	≤ 0.500	22	16	…
37	0.501–1.000	21	15	…
38	≤ 1.000	30	25	…

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	−20 to 100	150	200	250	300	350	400	450	500
	Nonferrous Materials (Cont'd)								
1	18.0	18.0	...	...	...	...	...	...	...
2	17.0	17.0	...	...	...	...	...	...	...
3	16.0	16.0	...	...	...	...	...	...	...
4	15.0	15.0	...	...	...	...	...	...	...
5	14.0	14.0	...	...	...	...	...	...	...
6	18.0	18.0	...	...	...	...	...	...	...
7	17.0	17.0	...	...	...	...	...	...	...
8	24.0	24.0	...	...	...	...	...	...	...
9	24.0	24.0	...	...	...	...	...	...	...
10	14.0	13.7	...	...	...	...	...	...	...
11	18.0	17.8	...	...	...	...	...	...	...
12	16.0	15.7	...	...	...	...	...	...	...
13	14.0	13.7	...	...	...	...	...	...	...
14	12.0	12.0	12.0	12.0	11.9	11.6	11.1	...	...
15	18.0	18.0	18.0	17.9	17.5	16.6	14.8	...	...
16	12.0	12.0	12.0	12.0	11.9	11.6	11.1	...	...
17	12.0	12.0	12.0	12.0	11.9	11.6	11.1	...	...
18	12.0	12.0	12.0	12.0	11.9	11.6	11.1	...	...
19	12.0	12.0	12.0	12.0	11.9	11.6	11.1	...	...
20	12.0	12.0	12.0	12.0	11.9	11.6	11.1	...	...
21	16.0	15.7	15.5	15.3	15.3	15.3	11.6	...	...
22	16.0	15.7	15.5	15.3	15.3	15.3	11.6	...	...
23	35.0	34.6	33.7	32.4	27.4	20.0	13.3	...	...
24	35.0	34.6	33.7	32.4	27.4	20.0	13.3	...	...
25	16.0	15.7	15.5	15.3	15.3	15.3	11.6	...	...
26	35.0	34.6	33.7	32.4	27.4	20.0	13.3	...	...
27	16.0	15.7	15.5	15.3	15.3	15.3	11.6	...	...
28	35.0	34.6	33.7	32.4	27.4	20.0	13.3	...	...
29	16.0	15.7	15.5	15.3	15.3	15.3	11.6	...	...
30	35.0	34.6	33.7	32.4	27.4	20.0	13.3	...	...
31	35.0	34.6	33.7	32.4	27.4	20.0	13.3	...	...
32	28.0	26.8	25.9	24.8	17.9	10.0	5.7	...	...
33	16.0	15.4	15.0	14.6	13.3	8.9	5.1	...	...
34	15.0	14.4	14.0	13.7	12.5	8.9	5.1	...	...
35	25.0	24.0	23.2	22.1	16.0	8.9	5.1	...	...
36	16.0	15.4	15.0	14.6	13.3	8.9	5.1	...	...
37	15.0	14.4	14.0	13.7	12.5	8.9	5.1	...	...
38	25.0	24.0	23.2	22.1	16.0	8.9	5.1	...	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Nonferrous Materials (Cont'd)
1	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Nonferrous Materials (Cont'd)					
1	...	Smls. pipe	SB-42	...	C10200	O61
2	...	Smls. tube	SB-75	...	C10200	O60
3	...	Plate, sheet, strip	SB-152	...	C10200	O25
4	...	Rod	SB-187	...	C10200	O60
5	...	Smls. pipe	SB-42	...	C10200	H55
6	...	Smls. tube	SB-75	...	C10200	H55
7	...	Smls. cond. tube	SB-111	...	C10200	H55
8	...	Smls. U-bend tube	SB-395	...	C10200	H55
9	...	Smls. pipe	SB-42	...	C10200	H80
10	...	Smls. tube	SB-75	...	C10200	H80
11	...	Smls. cond. tube	SB-111	...	C10200	H80
12	...	Plate, sheet, strip	SB-152	...	C10400	O25
13	...	Plate, sheet, strip	SB-152	...	C10500	O25
14	...	Plate, sheet, strip	SB-152	...	C10700	O25
15	...	Plate, sheet, strip, bar	SB-152	...	C11000	O25
16	...	Bar, rod	SB-187	...	C11000	O60
17	...	Smls. tube	SB-75	...	C12000	O50
18	...	Smls. tube	SB-75	...	C12000	O60
19	...	Smls. pipe	SB-42	...	C12000	O61
20	...	Smls. pipe	SB-42	...	C12000	H55
21	...	Smls. tube	SB-75	...	C12000	H55
22	...	Smls. cond. tube	SB-111	...	C12000	H55
23	...	Smls. U-bend tube	SB-395	...	C12000	H55
24	...	Smls. pipe	SB-42	...	C12000	H80
25	...	Smls. tube	SB-75	...	C12000	H80
26	...	Smls. cond. tube	SB-111	...	C12000	H80
27	...	Smls. tube	SB-75	...	C12200	O50
28	...	Smls. tube	SB-75	...	C12200	O60
29	...	Smls. pipe	SB-42	...	C12200	O61
30	...	Finned tube	SB-359	...	C12200	O61
31	...	Plate, sheet, strip	SB-152	...	C12200	O25
32	...	Wld. cond. tube	SB-543	...	C12200	Light cold worked
33	...	Smls. pipe	SB-42	...	C12200	H55
34	...	Smls. tube	SB-75	...	C12200	H55
35	...	Smls. cond. tube	SB-111	...	C12200	H55
36	...	Smls. U-bend tube	SB-395	...	C12200	H55

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Nonferrous Materials (Cont'd)
1	$\frac{1}{8}$ < NPS ≤ 2	30	9	…
2	…	30	9	…
3	…	30	10	…
4	…	30	10	…
5	2 < NPS ≤ 12	36	30	…
6	…	36	30	…
7	< 3	36	30	…
8	…	36	30	…
9	$\frac{1}{8}$ < NPS ≤ 2	45	40	…
10	< 4	45	40	…
11	< 3	45	40	…
12	…	30	10	…
13	…	30	10	…
14	…	30	10	…
15	≤ 2	30	10	…
16	…	30	10	…
17	…	30	9	…
18	…	30	9	…
19	$\frac{1}{8}$ < NPS ≤ 2	30	9	…
20	2 < NPS ≤ 12	36	30	…
21	…	36	30	…
22	< 3	36	30	…
23	< 2	36	30	…
24	$\frac{1}{8}$ < NPS ≤ 2	45	40	…
25	…	45	40	…
26	< 3	45	40	…
27	…	30	9	…
28	…	30	9	…
29	$\frac{1}{8} < t \leq 2$	30	9	…
30	…	30	9	…
31	…	30	10	…
32	…	32	15	…
33	$2 < t \leq 12$	36	30	…
34	…	36	30	…
35	< 3	36	30	…
36	< 2	36	30	…

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	−20 to 100	150	200	250	300	350	400	450	500
	Nonferrous Materials (Cont'd)								
1	9.0	7.6	7.3	7.2	7.0	6.8	6.6	6.3	...
2	9.0	7.6	7.3	7.2	7.0	6.8	6.6	6.3	...
3	10.0	8.5	8.1	8.0	7.8	7.6	7.3	7.0	...
4	10.0	8.5	8.1	8.0	7.8	7.6	7.3	7.0	...
5	30.0	29.7	29.0	28.1	27.0	25.7	24.4	23.0	...
6	30.0	29.7	29.0	28.1	27.0	25.7	24.4	23.0	...
7	30.0	29.7	29.0	28.1	27.0	25.7	24.4	23.0	...
8	30.0	29.7	29.0	28.1	27.0	25.7	24.4	23.0	...
9	40.0	38.3	37.6	36.9	35.7	33.7	30.5	25.5	...
10	40.0	38.3	37.6	36.9	35.7	33.7	30.5	25.5	...
11	40.0	38.3	37.6	36.9	35.7	33.7	30.5	25.5	...
12	10.0	8.5	8.1	8.0	7.8	7.6	7.3	7.0	...
13	10.0	8.5	8.1	8.0	7.8	7.6	7.3	7.0	...
14	10.0	8.5	8.1	8.0	7.8	7.6	7.3	7.0	...
15	10.0	8.5	8.1	8.0	7.8	7.6	7.3	7.0	...
16	10.0	8.5	8.1	8.0	7.8	7.6	7.3	7.0	...
17	9.0	7.6	7.3	7.2	7.0	6.8	6.6	6.3	...
18	9.0	7.6	7.3	7.2	7.0	6.8	6.6	6.3	...
19	9.0	7.6	7.3	7.2	7.0	6.8	6.6	6.3	...
20	30.0	29.7	29.0	28.1	27.0	25.7	24.4	23.0	...
21	30.0	29.7	29.0	28.1	27.0	25.7	24.4	23.0	...
22	30.0	29.7	29.0	28.1	27.0	25.7	24.4	23.0	...
23	30.0	29.7	29.0	28.1	27.0	25.7	24.4	23.0	...
24	40.0	38.3	37.6	36.9	35.7	33.7	30.5	25.5	...
25	40.0	38.3	37.6	36.9	35.7	33.7	30.5	25.5	...
26	40.0	38.3	37.6	36.9	35.7	33.7	30.5	25.5	...
27	9.0	7.6	7.3	7.2	7.0	6.8	6.6	6.3	...
28	9.0	7.6	7.3	7.2	7.0	6.8	6.6	6.3	...
29	9.0	7.6	7.3	7.2	7.0	6.8	6.6	6.3	...
30	9.0	7.6	7.3	7.2	7.0	6.8	6.6	6.3	...
31	10.0	8.5	8.1	8.0	7.8	7.6	7.3	7.0	...
32	15.0	14.8	14.5	14.1	13.5	12.9	12.2	11.5	...
33	30.0	29.7	29.0	28.1	27.0	25.7	24.4	23.0	...
34	30.0	29.7	29.0	28.1	27.0	25.7	24.4	23.0	...
35	30.0	29.7	29.0	28.1	27.0	25.7	24.4	23.0	...
36	30.0	29.7	29.0	28.1	27.0	25.7	24.4	23.0	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Nonferrous Materials (Cont'd)
1	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Nonferrous Materials (Cont'd)					
1	...	Smls. pipe	SB-42	...	C12200	H80
2	...	Smls. cond. tube	SB-75	...	C12200	H80
3	...	Smls. tube	SB-111	...	C12200	H80
4	...	Plate, sheet, strip, bar	SB-152	...	C12300	O25
5	...	Plate, sheet	SB-152	...	C12500	O25
6	...	Plate, sheet, strip	SB-152	...	C14200	O25
7	...	Smls. cond. tube	SB-111	...	C14200	H55
8	...	Smls. U-bend tube	SB-395	...	C14200	H55
9	...	Smls. cond. tube	SB-111	...	C14200	H80
10	...	Smls. cond. tube	SB-111	...	C19200	O61
11	...	Smls. U-bend tube	SB-395	...	C19200	O61
12	...	Wld. cond. tube	SB-543	...	C19400	Annealed
13	...	Wld. cond. tube	SB-543	...	C19400	Light cold worked
14	...	Smls. cond. tube	SB-111	...	C60800	O61
15	...	Smls. U-bend tube	SB-395	...	C60800	O61
16	...	Plate, sheet	SB-169	...	C61400	O25 or O60
17	...	Plate	SB-171	...	C61400	O25
18	...	Plate, sheet	SB-169	...	C61400	O25 or O60
19	...	Plate	SB-171	...	C61400	O25
20	...	Plate, sheet	SB-169	...	C61400	O25 or O60
21	...	Plate	SB-171	...	C63000	O25
22	...	Plate	SB-171	...	C63000	O25
23	...	Plate	SB-171	...	C63000	O25
24	...	Forgings	SB-283	...	C64200	M10
25	...	Forgings	SB-283	...	C64200	M10
26	...	Plate, sheet	SB-96	...	C65500	O61
27	...	Smls. pipe & tube	SB-466	...	C70600	O60
28	...	Wld. pipe	SB-467	...	C70600	WO61
29	...	Bar, rod	SB-151	...	C70600	O60
30	...	Smls. cond. tube	SB-111	...	C70600	O61
31	...	Plate	SB-171	...	C70600	O25
32	...	Plate, sheet	SB-171	...	C70600	O25
33	...	Finned tube	SB-359	...	C70600	O61
34	...	Smls. U-bend tube	SB-395	...	C70600	O61
35	...	Wld. pipe	SB-467	...	C70600	WO61
36	...	Wld. tube	SB-543	...	C70600	WO61

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Nonferrous Materials (Cont'd)
1	$\frac{1}{8} < t \le 2$	45	40	...
2	< 4	45	40	...
3	< 3	45	40	...
4	...	30	10	...
5	≤ 2	30	10	...
6	...	30	10	...
7	< 3	36	30	...
8	...	36	30	...
9	< 3	45	40	...
10	< 3	38	12	...
11	...	38	12	...
12	...	45	15	...
13	...	45	22	...
14	...	50	19	...
15	...	50	19	...
16	$2 < t \le 5$	65	28	...
17	$2 < t \le 5$	65	28	...
18	$\frac{1}{2} < t \le 2$	70	30	...
19	≤ 2	70	30	...
20	≤ $\frac{1}{2}$	72	32	...
21	$3.5 < t \le 5$	80	30	...
22	$2 < t \le 3.5$	85	33	...
23	≤ 2	90	36	...
24	> $1\frac{1}{2}$	68	23	...
25	≤ $1\frac{1}{2}$	70	25	...
26	≤ 2	50	18	...
27	...	38	13	...
28	> $4\frac{1}{2}$	38	13	...
29	...	38	15	...
30	...	40	15	...
31	...	40	15	...
32	≤ 2.5	40	15	...
33	...	40	15	...
34	...	40	15	...
35	≤ $4\frac{1}{2}$	40	15	...
36	$2\frac{1}{2} < t \le 5$	40	15	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	–20 to 100	150	200	250	300	350	400	450	500
	Nonferrous Materials (Cont'd)								
1	40.0	38.3	37.6	36.9	35.7	33.7	30.5	25.5	...
2	40.0	38.3	37.6	36.9	35.7	33.7	30.5	25.5	...
3	40.0	38.3	37.6	36.9	35.7	33.7	30.5	25.5	...
4	10.0	8.5	8.1	8.0	7.8	7.6	7.3	7.0	...
5	10.0	8.5	8.1	8.0	7.8	7.6	7.3	7.0	...
6	10.0	8.5	8.1	8.0	7.8	7.6	7.3	7.0	...
7	30.0	29.7	29.0	28.1	27.0	25.7	24.4	23.0	...
8	30.0	29.7	29.0	28.1	27.0	25.7	24.4	23.0	...
9	40.0	38.3	37.6	36.9	35.7	33.7	30.5	25.5	...
10	12.0	10.7	10.1	9.6	9.3	9.0	8.8	8.5	...
11	12.0	10.7	10.1	9.6	9.3	9.0	8.8	8.5	...
12	15.0	14.8	14.6	14.3	13.8	13.4	12.8	12.3	...
13	22.0	21.8	21.4	20.9	20.3	19.6	18.8	18.0	...
14	19.0	18.3	18.3	18.3	18.0	17.5	17.0	16.5	16.0
15	19.0	18.3	18.3	18.3	18.0	17.5	17.0	16.5	16.0
16	28.0	27.9	27.7	27.5	27.4	27.2	26.9	26.6	26.3
17	28.0	27.9	27.7	27.5	27.4	27.2	26.9	26.6	26.3
18	30.0	29.9	29.7	29.5	29.3	29.1	28.8	28.5	28.2
19	30.0	29.9	29.7	29.5	29.3	29.1	28.8	28.5	28.2
20	32.0	31.9	31.7	31.4	31.3	31.1	30.8	30.4	30.1
21	30.0	29.8	29.3	29.0	28.7	28.5	28.2	27.6	26.4
22	33.0	32.7	32.3	31.9	31.6	31.3	31.0	30.3	29.0
23	36.0	35.7	35.2	34.7	34.4	34.2	33.8	33.1	31.7
24	23.0	...	...	...	...	...	...	...	...
25	25.0	...	...	...	...	...	...	...	...
26	18.0	17.9	17.8	17.6	17.4	17.2	16.9	16.6	16.3
27	13.0	12.6	12.3	12.0	11.7	11.5	11.3	11.1	10.9
28	13.0	12.6	12.3	12.0	11.7	11.5	11.3	11.1	10.9
29	15.0	14.6	14.2	13.9	13.6	13.3	13.0	12.8	12.6
30	15.0	14.6	14.2	13.9	13.6	13.3	13.0	12.8	12.6
31	15.0	14.6	14.2	13.9	13.6	13.3	13.0	12.8	12.6
32	15.0	14.6	14.2	13.9	13.6	13.3	13.0	12.8	12.6
33	15.0	14.6	14.2	13.9	13.6	13.3	13.0	12.8	12.6
34	15.0	14.6	14.2	13.9	13.6	13.3	13.0	12.8	12.6
35	15.0	14.6	14.2	13.9	13.6	13.3	13.0	12.8	12.6
36	15.0	14.6	14.2	13.9	13.6	13.3	13.0	12.8	12.6

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Nonferrous Materials (Cont'd)
1	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...
21	24.3	21.0	16.1	9.2	...	...	...	...	...	...
22	26.7	23.1	17.7	10.2	...	...	...	...	...	...
23	29.2	25.2	19.3	11.1	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...
27	10.8	10.8	...	...	...	...	...	...	...	...
28	10.8	10.8	...	...	...	...	...	...	...	...
29	12.5	12.4	...	...	...	...	...	...	...	...
30	12.5	12.4	...	...	...	...	...	...	...	...
31	12.5	12.4	...	...	...	...	...	...	...	...
32	12.5	12.4	...	...	...	...	...	...	...	...
33	12.5	12.4	...	...	...	...	...	...	...	...
34	12.5	12.4	...	...	...	...	...	...	...	...
35	12.5	12.4	...	...	...	...	...	...	...	...
36	12.5	12.4	...	...	...	...	...	...	...	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Nonferrous Materials (Cont'd)					
1	...	Wld. pipe	SB-467	...	C70600	W061
2	...	Wld. tube	SB-543	...	C70600	Light cold worked
3	...	Smls. tube	SB-111	...	C70600	H55
4	...	Wld. pipe	SB-467	...	C70600	Wld. fr. cold rld. strip
5	...	Plate, sheet	SB-171	...	C71500	025
6	...	Plate, sheet	SB-171	...	C71500	025
7	...	Smls. cond. tube	SB-111	...	C71500	061
8	...	Castings	SB-148	...	C95200	M01
9	...	Castings	SB-271	...	C95200	M02
10	...	Castings	SB-505	...	C95200	M07
11	...	Castings	SB-148	...	C95400	M01
12	...	Castings	SB-271	...	C95400	M02
13	99Ni	Plate, sheet, strip	SB-162	...	N02200	As rolled
14	99Ni	Smls. pipe & tube	SB-161	...	N02200	Stress rel.
15	99Ni	Smls. tube	SB-163	...	N02200	Stress rel.
16	99Ni–Low C	Smls. pipe & tube	SB-161	...	N02201	Annealed
17	99Ni–Low C	Smls. & wld. fittings	SB-366	...	N02201	Annealed
18	99Ni–Low C	Bar, rod	SB-160	...	N02201	Hot rolled/ann.
19	99Ni–Low C	Smls. pipe & tube	SB-161	...	N02201	Annealed
20	99Ni–Low C	Smls. tube	SB-163	...	N02201	Annealed
21	99Ni–Low C	Plate, sheet, strip	SB-162	...	N02201	Hot rolled/ann.
22	67Ni–30Cu	Bar	SB-164	...	N04400	Annealed
23	67Ni–30Cu	Smls. pipe & tube	SB-165	...	N04400	Annealed
24	67Ni–30Cu	Forgings	SB-564	...	N04400	Annealed
25	67Ni–30Cu	Plate	SB-127	...	N04400	Annealed
26	67Ni–30Cu	Smls. tube	SB-163	...	N04400	Annealed
27	67Ni–30Cu	Smls. pipe & tube	SB-165	...	N04400	Annealed
28	67Ni–30Cu	Smls. & wld. fittings	SB-366	...	N04400	Annealed
29	67Ni–30Cu	Bar	SB-164	...	N04400	Hot worked
30	67Ni–30Cu	Plate	SB-127	...	N04400	As rolled
31	67Ni–30Cu	Bar, rod	SB-164	...	N04400	Hot worked
32	67Ni–30Cu	Smls. tube	SB-163	...	N04400	Stress rel.
33	67Ni–30Cu	Smls. pipe & tube	SB-165	...	N04400	Stress rel.
34	67Ni–30Cu–S	Bar	SB-164	...	N04405	Annealed
35	67Ni–30Cu–S	Bar	SB-164	...	N04405	Hot worked
36	47Ni–22Cr–9Mo–18Fe	Plate	SB-435	...	N06002	Annealed
37	47Ni–22Cr–9Mo–18Fe	Sheet	SB-435	...	N06002	Solution ann.
38	47Ni–22Cr–9Mo–18Fe	Rod	SB-572	...	N06002	Annealed

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Nonferrous Materials (Cont'd)
1	≤ 4½	45	30	…
2	…	45	35	…
3	…	45	35	…
4	≤ 4½	54	45	…
5	2.5 < t ≤ 5	45	18	…
6	≤ 2.5	50	20	…
7	…	52	18	…
8	…	65	25	…
9	…	65	25	…
10	…	68	26	…
11	…	75	30	…
12	…	75	30	…
13	…	55	20	…
14	…	65	40	…
15	…	65	40	…
16	> 5 O.D.	50	10	…
17	…	50	10	…
18	…	50	10	…
19	≤ 5 O.D.	50	12	…
20	…	50	12	…
21	…	50	12	…
22	…	70	25	…
23	> 5 O.D.	70	25	…
24	…	70	25	…
25	…	70	28	…
26	≤ 3	70	28	…
27	≤ 5 O.D.	70	28	…
28	…	70	28	…
29	…	75	30	…
30	…	75	40	…
31	…	75	40	…
32	…	85	55	…
33	…	85	55	…
34	…	70	25	…
35	…	75	35	…
36	> 3/16	95	35	…
37	≤ 3/16	95	35	…
38	…	95	35	…

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	–20 to 100	150	200	250	300	350	400	450	500
	Nonferrous Materials (Cont'd)								
1	30.0	29.1	28.5	27.8	27.1	26.5	26.0	25.6	25.3
2	35.0	34.0	33.2	32.4	31.6	30.9	30.3	29.8	29.5
3	35.0	34.0	33.2	32.4	31.6	30.9	30.3	29.8	29.5
4	45.0	43.7	42.7	41.6	40.7	39.8	39.0	38.4	37.9
5	18.0	17.4	17.0	16.6	16.2	15.8	15.5	15.2	14.9
6	20.0	19.3	18.8	18.4	18.0	17.6	17.2	16.9	16.5
7	18.0	17.4	17.0	16.6	16.2	15.8	15.5	15.2	14.9
8	25.0	23.5	22.8	22.2	21.7	21.4	21.3	21.2	21.2
9	25.0	23.5	22.8	22.2	21.7	21.4	21.3	21.2	21.2
10	26.0	24.5	23.7	23.0	22.6	22.3	22.1	22.1	22.1
11	30.0	28.5	28.0	27.8	27.8	27.8	27.8	27.8	27.8
12	30.0	28.5	28.0	27.8	27.8	27.8	27.8	27.8	27.8
13	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.6	18.9
14	40.0	38.7	38.4	38.3	38.3	38.3	38.2	37.9	37.5
15	40.0	38.7	38.4	38.3	38.3	38.3	38.2	37.9	37.5
16	10.0	9.7	9.6	9.5	9.4	9.4	9.4	9.4	9.4
17	10.0	9.7	9.6	9.5	9.4	9.4	9.4	9.4	9.4
18	10.0	9.7	9.6	9.5	9.4	9.4	9.4	9.4	9.4
19	12.0	11.7	11.5	11.4	11.3	11.2	11.2	11.2	11.2
20	12.0	11.7	11.5	11.4	11.3	11.2	11.2	11.2	11.2
21	12.0	11.7	11.5	11.4	11.3	11.2	11.2	11.2	11.2
22	25.0	23.0	21.9	21.0	20.4	20.0	19.7	19.7	19.7
23	25.0	23.0	21.9	21.0	20.4	20.0	19.7	19.7	19.7
24	25.0	23.0	21.9	21.0	20.4	20.0	19.7	19.7	19.7
25	28.0	25.8	24.5	23.6	22.8	22.4	22.1	22.0	22.0
26	28.0	25.8	24.5	23.6	22.8	22.4	22.1	22.0	22.0
27	28.0	25.8	24.5	23.6	22.8	22.4	22.1	22.0	22.0
28	28.0	25.8	24.5	23.6	22.8	22.4	22.1	22.0	22.0
29	30.0	29.6	29.1	28.5	27.9	27.3	26.9	26.6	26.4
30	40.0	39.5	38.8	37.9	37.1	36.4	35.9	35.5	35.2
31	40.0	39.5	38.8	37.9	37.1	36.4	35.9	35.5	35.2
32	55.0	52.9	51.8	51.0	50.4	50.0	49.7	49.5	49.2
33	55.0	52.9	51.8	51.0	50.4	50.0	49.7	49.5	49.2
34	25.0	23.0	21.9	21.0	20.4	20.0	19.7	19.7	19.7
35	35.0	34.6	33.9	33.2	32.5	31.9	31.4	31.0	30.8
36	35.0	32.9	31.5	30.1	28.8	27.7	26.6	25.7	24.8
37	35.0	32.9	31.5	30.1	28.8	27.7	26.6	25.7	24.8
38	35.0	32.9	31.5	30.1	28.8	27.7	26.6	25.7	24.8

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Nonferrous Materials (Cont'd)
1	25.0	24.9	...	...	...	...	...	...	...	...
2	29.2	29.0	...	...	...	...	...	...	...	...
3	29.2	29.0	...	...	...	...	...	...	...	...
4	37.5	37.3	...	...	...	...	...	...	...	...
5	14.6	14.4	14.2	14.1	...	...	...	...	...	...
6	16.3	16.0	15.8	15.7	...	...	...	...	...	...
7	14.6	14.4	14.2	14.1	...	...	...	...	...	...
8	21.2	21.2	...	...	...	...	...	...	...	...
9	21.2	21.2	...	...	...	...	...	...	...	...
10	22.1	22.1	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...
13	18.1	17.2	...	...	...	...	...	...	...	...
14	37.0	36.4	35.7	...	...	...	...	...	...	...
15	37.0	36.4	35.7	...	...	...	...	...	...	...
16	9.4	9.4	9.3	9.3	9.2	9.0	8.8	8.6	8.2	7.9
17	9.4	9.4	9.3	9.3	9.2	9.0	8.8	8.6	8.2	7.9
18	9.4	9.4	9.3	9.3	9.2	9.0	8.8	8.6	8.2	7.9
19	11.2	11.2	11.2	11.1	11.0	10.8	10.6	10.3	9.9	9.4
20	11.2	11.2	11.2	11.1	11.0	10.8	10.6	10.3	9.9	9.4
21	11.2	11.2	11.2	11.1	11.0	10.8	10.6	10.3	9.9	9.4
22	19.7	19.7	19.7	19.6	19.4	19.1	18.9	18.8	...	...
23	19.7	19.7	19.7	19.6	19.4	19.1	18.9	18.8	...	...
24	19.7	19.7	19.7	19.6	19.4	19.1	18.9	18.8	...	...
25	22.0	22.0	22.0	21.9	21.7	21.4	21.2	21.1	...	...
26	22.0	22.0	22.0	21.9	21.7	21.4	21.2	21.1	...	...
27	22.0	22.0	22.0	21.9	21.7	21.4	21.2	21.1	...	...
28	22.0	22.0	22.0	21.9	21.7	21.4	21.2	21.1	...	...
29	26.2	26.0	25.8	25.5	25.2	24.7	24.2	23.7	...	...
30	34.9	34.7	34.4	34.0	33.5	32.9	32.3	31.6	...	...
31	34.9	34.7	34.4	34.0	33.5	32.9	32.3	31.6	...	...
32	48.7	48.1	47.3	46.3	45.3	44.4	...	...	...	...
33	48.7	48.1	47.3	46.3	45.3	44.4	...	...	...	...
34	19.7	19.7	19.7	19.6	19.4	19.1	18.9	18.8	...	...
35	30.6	30.3	30.1	29.8	29.3	28.8	28.2	27.7	...	...
36	24.1	23.5	23.0	22.6	22.3	22.1	21.9	21.7	21.6	21.5
37	24.1	23.5	23.0	22.6	22.3	22.1	21.9	21.7	21.6	21.5
38	24.1	23.5	23.0	22.6	22.3	22.1	21.9	21.7	21.6	21.5

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Nonferrous Materials (Cont'd)					
1	47Ni–22Cr–9Mo–18Fe	Smls. & wld. fittings	SB-366	...	N06002	Annealed
2	47Ni–22Cr–9Mo–18Fe	Sheet	SB-435	...	N06002	Annealed
3	47Ni–22Cr–9Mo–18Fe	Wld. pipe	SB-619	...	N06002	Solution ann.
4	47Ni–22Cr–9Mo–18Fe	Smls. pipe & tube	SB-622	...	N06002	Solution ann.
5	47Ni–22Cr–9Mo–18Fe	Wld. tube	SB-626	...	N06002	Solution ann.
6	47Ni–22Cr–19Fe–6Mo	Rod	SB-581	...	N06007	Solution ann.
7	47Ni–22Cr–19Fe–6Mo	Plate, sheet, strip	SB-582	...	N06007	Solution ann.
8	47Ni–22Cr–19Fe–6Mo	Smls. & wld. fittings	SB-366	...	N06007	Annealed
9	47Ni–22Cr–19Fe–6Mo	Rod	SB-581	...	N06007	Solution ann.
10	47Ni–22Cr–19Fe–6Mo	Plate, sheet, strip	SB-582	...	N06007	Solution ann.
11	47Ni–22Cr–19Fe–6Mo	Wld. pipe	SB-619	...	N06007	Solution ann.
12	47Ni–22Cr–19Fe–6Mo	Smls. pipe & tube	SB-622	...	N06007	Solution ann.
13	47Ni–22Cr–19Fe–6Mo	Wld. tube	SB-626	...	N06007	Solution ann.
14	55Ni–21Cr–13.5Mo	Smls. & wld. fittings	SB-366	...	N06022	Solution ann.
15	55Ni–21Cr–13.5Mo	Forgings	SB-564	...	N06022	Solution ann.
16	55Ni–21Cr–13.5Mo	Rod	SB-574	...	N06022	Solution ann.
17	55Ni–21Cr–13.5Mo	Plate, sheet, strip	SB-575	...	N06022	Solution ann.
18	55Ni–21Cr–13.5Mo	Wld. pipe	SB-619	...	N06022	Solution ann.
19	55Ni–21Cr–13.5Mo	Smls. pipe & tube	SB-622	...	N06022	Solution ann.
20	55Ni–21Cr–13.5Mo	Wld. tube	SB-626	...	N06022	Solution ann.
21	40Ni–29Cr–15Fe–5Mo	Smls. & wld. fittings	SB-366	...	N06030	Solution ann.
22	40Ni–29Cr–15Fe–5Mo	Rod	SB-581	...	N06030	Solution ann.
23	40Ni–29Cr–15Fe–5Mo	Plate, sheet, strip	SB-582	...	N06030	Solution ann.
24	40Ni–29Cr–15Fe–5Mo	Wld. pipe	SB-619	...	N06030	Solution ann.
25	40Ni–29Cr–15Fe–5Mo	Smls. pipe & tube	SB-622	...	N06030	Solution ann.
26	40Ni–29Cr–15Fe–5Mo	Wld. tube	SB-626	...	N06030	Solution ann.
01 27	46Ni–27Cr–23Fe–2.75Si	Rod	SB-166	...	N06045	Solution ann.
01 28	46Ni–27Cr–23Fe–2.75Si	Smls. pipe & tube	SB-167	...	N06045	Solution ann.
01 29	46Ni–27Cr–23Fe–2.75Si	Plate, sheet, strip	SB-168	...	N06045	Solution ann.
01 30	46Ni–27Cr–23Fe–2.75Si	Smls. & wld. fittings	SB-366	...	N06045	Solution ann.
01 31	46Ni–27Cr–23Fe–2.75Si	Wld. tube	SB-516	...	N06045	Solution ann.
01 32	46Ni–27Cr–23Fe–2.75Si	Wld. pipe	SB-517	...	N06045	Solution ann.
01 33	46Ni–27Cr–23Fe–2.75Si	Forgings	SB-564	...	N06045	Solution ann.
34	59Ni–23Cr–16Mo	Fittings	SB-366	CR5923	N06059	Annealed
35	59Ni–23Cr–16Mo	Fittings	SB-366	WP5923	N06059	Annealed
36	59Ni–23Cr–16Mo	Wld. fittings	SB-366	WP5923W	N06059	Annealed
37	59Ni–23Cr–16Mo	Fittings	SB-366	WP5923WX	N06059	Annealed

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes	
				Nonferrous Materials (Cont'd)	
1	...	100	40	...	
2	$^1/_{16} < t \leq {}^3/_{16}$	100	40	...	
3	...	100	40	...	
4	...	100	40	...	
5	...	100	40	...	
6	$> {}^3/_4$	85	30	...	
7	$> {}^3/_4$	85	30	...	
8	...	90	35	...	
9	$\leq {}^3/_4$	90	35	...	
10	$\leq {}^3/_4$	90	35	...	
11	...	90	35	...	
12	...	90	35	...	
13	...	90	35	...	
14	...	100	45	...	
15	...	100	45	...	
16	...	100	45	...	
17	...	100	45	...	
18	...	100	45	...	
19	...	100	45	...	
20	...	100	45	...	
21	...	85	35	...	
22	...	85	35	...	
23	...	85	35	...	
24	...	85	35	...	
25	...	85	35	...	
26	...	85	35	...	
27	...	90	35	...	**01**
28	...	90	35	...	**01**
29	...	90	35	...	**01**
30	...	90	35	...	**01**
31	...	90	35	...	**01**
32	...	90	35	...	**01**
33	...	90	35	...	**01**
34	...	100	45	...	
35	...	100	45	...	
36	...	100	45	...	
37	...	100	45	...	

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
		–20 to 100	150	200	250	300	350	400	450	500
		Nonferrous Materials (Cont'd)								
	1	40.0	37.5	35.9	34.4	33.0	31.6	30.4	29.3	28.4
	2	40.0	37.5	35.9	34.4	33.0	31.6	30.4	29.3	28.4
	3	40.0	37.5	35.9	34.4	33.0	31.6	30.4	29.3	28.4
	4	40.0	37.5	35.9	34.4	33.0	31.6	30.4	29.3	28.4
	5	40.0	37.5	35.9	34.4	33.0	31.6	30.4	29.3	28.4
	6	30.0	28.1	27.0	25.9	25.0	24.2	23.5	22.9	22.4
	7	30.0	28.1	27.0	25.9	25.0	24.2	23.5	22.9	22.4
	8	35.0	32.8	31.4	30.2	29.2	28.2	27.4	26.7	26.1
	9	35.0	32.8	31.4	30.2	29.2	28.2	27.4	26.7	26.1
	10	35.0	32.8	31.4	30.2	29.2	28.2	27.4	26.7	26.1
	11	35.0	32.8	31.4	30.2	29.2	28.2	27.4	26.7	26.1
	12	35.0	32.8	31.4	30.2	29.2	28.2	27.4	26.7	26.1
	13	35.0	32.8	31.4	30.2	29.2	28.2	27.4	26.7	26.1
	14	45.0	42.0	40.1	38.4	36.9	35.5	34.3	33.2	32.2
	15	45.0	42.0	40.1	38.4	36.9	35.5	34.3	33.2	32.2
	16	45.0	42.0	40.1	38.4	36.9	35.5	34.3	33.2	32.2
	17	45.0	42.0	40.1	38.4	36.9	35.5	34.3	33.2	32.2
	18	45.0	42.0	40.1	38.4	36.9	35.5	34.3	33.2	32.2
	19	45.0	42.0	40.1	38.4	36.9	35.5	34.3	33.2	32.2
	20	45.0	42.0	40.1	38.4	36.9	35.5	34.3	33.2	32.2
	21	35.0	31.7	30.0	28.6	27.5	26.6	25.8	25.1	24.6
	22	35.0	31.7	30.0	28.6	27.5	26.6	25.8	25.1	24.6
	23	35.0	31.7	30.0	28.6	27.5	26.6	25.8	25.1	24.6
	24	35.0	31.7	30.0	28.6	27.5	26.6	25.8	25.1	24.6
	25	35.0	31.7	30.0	28.6	27.5	26.6	25.8	25.1	24.6
	26	35.0	31.7	30.0	28.6	27.5	26.6	25.8	25.1	24.6
01	27	35.0	...	31.4	...	28.9	...	27.1	...	26.0
01	28	35.0	...	31.4	...	28.9	...	27.1	...	26.0
01	29	35.0	...	31.4	...	28.9	...	27.1	...	26.0
01	30	35.0	...	31.4	...	28.9	...	27.1	...	26.0
01	31	35.0	...	31.4	...	28.9	...	27.1	...	26.0
01	32	35.0	...	31.4	...	28.9	...	27.1	...	26.0
01	33	35.0	...	31.4	...	28.9	...	27.1	...	26.0
	34	45.0	41.8	40.0	38.5	37.1	35.9	34.8	33.8	32.9
	35	45.0	41.8	40.0	38.5	37.1	35.9	34.8	33.8	32.9
	36	45.0	41.8	40.0	38.5	37.1	35.9	34.8	33.8	32.9
	37	45.0	41.8	40.0	38.5	37.1	35.9	34.8	33.8	32.9

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding										
	550	600	650	700	750	800	850	900	950	1000	
										Nonferrous Materials (Cont'd)	
1	27.5	26.9	26.3	25.8	25.5	25.2	25.0	24.9	24.7	24.6	
2	27.5	26.9	26.3	25.8	25.5	25.2	25.0	24.9	24.7	24.6	
3	27.5	26.9	26.3	25.8	25.5	25.2	25.0	24.9	24.7	24.6	
4	27.5	26.9	26.3	25.8	25.5	25.2	25.0	24.9	24.7	24.6	
5	27.5	26.9	26.3	25.8	25.5	25.2	25.0	24.9	24.7	24.6	
6	22.0	21.6	21.3	21.1	20.9	20.8	20.7	20.6	20.5	20.4	
7	22.0	21.6	21.3	21.1	20.9	20.8	20.7	20.6	20.5	20.4	
8	25.6	25.2	24.9	24.6	24.4	24.2	24.1	24.0	23.9	23.8	
9	25.6	25.2	24.9	24.6	24.4	24.2	24.1	24.0	23.9	23.8	
10	25.6	25.2	24.9	24.6	24.4	24.2	24.1	24.0	23.9	23.8	
11	25.6	25.2	24.9	24.6	24.4	24.2	24.1	24.0	23.9	23.8	
12	25.6	25.2	24.9	24.6	24.4	24.2	24.1	24.0	23.9	23.8	
13	25.6	25.2	24.9	24.6	24.4	24.2	24.1	24.0	23.9	23.8	
14	31.4	30.6	30.0	29.4	29.0	28.6	28.2	27.9	27.7	27.5	
15	31.4	30.6	30.0	29.4	29.0	28.6	28.2	27.9	27.7	27.5	
16	31.4	30.6	30.0	29.4	29.0	28.6	28.2	27.9	27.7	27.5	
17	31.4	30.6	30.0	29.4	29.0	28.6	28.2	27.9	27.7	27.5	
18	31.4	30.6	30.0	29.4	29.0	28.6	28.2	27.9	27.7	27.5	
19	31.4	30.6	30.0	29.4	29.0	28.6	28.2	27.9	27.7	27.5	
20	31.4	30.6	30.0	29.4	29.0	28.6	28.2	27.9	27.7	27.5	
21	24.1	23.6	23.2	22.8	22.3	21.9	21.5	21.1	20.9	20.7	
22	24.1	23.6	23.2	22.8	22.3	21.9	21.5	21.1	20.9	20.7	
23	24.1	23.6	23.2	22.8	22.3	21.9	21.5	21.1	20.9	20.7	
24	24.1	23.6	23.2	22.8	22.3	21.9	21.5	21.1	20.9	20.7	
25	24.1	23.6	23.2	22.8	22.3	21.9	21.5	21.1	20.9	20.7	
26	24.1	23.6	23.2	22.8	22.3	21.9	21.5	21.1	20.9	20.7	
27	...	25.4	25.3	25.1	25.0	24.9	24.7	24.5	24.3	23.9	**01**
28	...	25.4	25.3	25.1	25.0	24.9	24.7	24.5	24.3	23.9	**01**
29	...	25.4	25.3	25.1	25.0	24.9	24.7	24.5	24.3	23.9	**01**
30	...	25.4	25.3	25.1	25.0	24.9	24.7	24.5	24.3	23.9	**01**
31	...	25.4	25.3	25.1	25.0	24.9	24.7	24.5	24.3	23.9	**01**
32	...	25.4	25.3	25.1	25.0	24.9	24.7	24.5	24.3	23.9	**01**
33	...	25.4	25.3	25.1	25.0	24.9	24.7	24.5	24.3	23.9	**01**
34	32.1	31.3	30.5	29.8	29.0	28.4	27.8	27.2	...	...	
35	32.1	31.3	30.5	29.8	29.0	28.4	27.8	27.2	...	...	
36	32.1	31.3	30.5	29.8	29.0	28.4	27.8	27.2	...	...	
37	32.1	31.3	30.5	29.8	29.0	28.4	27.8	27.2	...	...	

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Nonferrous Materials (Cont'd)					
1	59Ni–23Cr–16Mo	Forgings	SB-564	...	N06059	Solution ann.
2	59Ni–23Cr–16Mo	Rod	SB-574	...	N06059	Solution ann.
3	59Ni–23Cr–16Mo	Plate, sheet, strip	SB-575	...	N06059	Solution ann.
4	59Ni–23Cr–16Mo	Wld. pipe	SB-619	...	N06059	Solution ann.
5	59Ni–23Cr–16Mo	Smls. pipe & tube	SB-622	...	N06059	Solution ann.
6	59Ni–23Cr–16Mo	Wld. tube	SB-626	...	N06059	Solution ann.
7	57Ni–22Cr–14W–2Mo–La	Plate, sheet, strip	SB-435	...	N06230	Solution ann.
8	57Ni–22Cr–14W–2Mo–La	Forgings	SB-564	...	N06230	Solution ann.
9	57Ni–22Cr–14W–2Mo–La	Bar	SB-572	...	N06230	Solution ann.
10	57Ni–22Cr–14W–2Mo–La	Wld. pipe	SB-619	...	N06230	Solution ann.
11	57Ni–22Cr–14W–2Mo–La	Smls. pipe & tube	SB-622	...	N06230	Solution ann.
12	57Ni–22Cr–14W–2Mo–La	Wld. tube	SB-626	...	N06230	Solution ann.
13	61Ni–16Mo–16Cr	Smls. & wld. fittings	SB-366	...	N06455	Annealed
14	61Ni–16Mo–16Cr	Rod	SB-574	...	N06455	Solution ann.
15	61Ni–16Mo–16Cr	Plate, sheet, strip	SB-575	...	N06455	Solution ann.
16	61Ni–16Mo–16Cr	Wld. pipe	SB-619	...	N06455	Solution ann.
17	61Ni–16Mo–16Cr	Wld. pipe & tube	SB-622	...	N06455	Solution ann.
18	61Ni–16Mo–16Cr	Wld. tube	SB-626	...	N06455	Solution ann.
19	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.
20	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.
21	72Ni–15Cr–8Fe	Smls. & wld. fittings	SB-366	...	N06600	Annealed
22	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Cold drawn/ann.
23	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.
24	72Ni–15Cr–8Fe	Smls. tube	SB-163	...	N06600	Annealed
25	72Ni–15Cr–8Fe	Bar	SB-166	...	N06600	Annealed
26	72Ni–15Cr–8Fe	Plate	SB-168	...	N06600	Annealed
27	72Ni–15Cr–8Fe	Wld. tube	SB-516	...	N06600	Annealed
28	72Ni–15Cr–8Fe	Forgings	SB-564	...	N06600	...
29	72Ni–15Cr–8Fe	Pipe, tube	SB-167	...	N06600	Cold drawn/ann.
30	72Ni–15Cr–8Fe	Wld. pipe	SB-517	...	N06600	Cold drawn/ann.
31	72Ni–15Cr–8Fe	Smls. tube	SB-163	...	N06600	...
32	72Ni–15Cr–8Fe	Bar, rod	SB-166	...	N06600	Hot fin.
33	72Ni–15Cr–8Fe	Plate, sheet, strip	SB-168	...	N06600	Hot rolled
34	60Ni–22Cr–9Mo–3.5Cb	Smls. & wld. fittings	SB-366	...	N06625	Annealed
35	60Ni–22Cr–9Mo–3.5Cb	Bar	SB-446	1	N06625	Annealed
36	60Ni–22Cr–9Mo–3.5Cb	Forgings	SB-564	1	N06625	Annealed
37	60Ni–22Cr–9Mo–3.5Cb	Plate	SB-443	...	N06625	Annealed
38	60Ni–22Cr–9Mo–3.5Cb	Plate, sheet, strip	SB-443	1	N06625	Annealed
39	60Ni–22Cr–9Mo–3.5Cb	Plate, sheet, strip	SB-443	1	N06625	Annealed
40	60Ni–22Cr–9Mo–3.5Cb	Smls. pipe	SB-444	1	N06625	Annealed
41	60Ni–22Cr–9Mo–3.5Cb	Bar	SB-446	1	N06625	Annealed

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Nonferrous Materials (Cont'd)
1	...	100	45	...
2	...	100	45	...
3	...	100	45	...
4	...	100	45	...
5	...	100	45	...
6	...	100	45	...
7	...	110	45	...
8	...	110	45	...
9	...	110	45	...
10	...	110	45	...
11	...	110	45	...
12	...	110	45	...
13	...	100	40	...
14	...	100	40	...
15	...	100	40	...
16	...	100	40	...
17	...	100	40	...
18	...	100	40	...
19	...	75	25	...
20	...	80	30	...
21	...	80	30	...
22	...	80	30	...
23	...	80	30	...
24	≤ 3	80	35	...
25	...	80	35	...
26	...	80	35	...
27	...	80	35	...
28	...	80	35	...
29	...	80	35	...
30	...	80	35	...
31	...	80	40	...
32	...	85	35	...
33	...	85	35	...
34	...	110	50	...
35	> 4	110	50	...
36	> 4	110	50	...
37	...	110	55	...
38	...	110	55	...
39	...	120	60	...
40	...	120	60	...
41	≤ 4	120	60	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	–20 to 100	150	200	250	300	350	400	450	500
	Nonferrous Materials (Cont'd)								
1	45.0	41.8	40.0	38.5	37.1	35.9	34.8	33.8	32.9
2	45.0	41.8	40.0	38.5	37.1	35.9	34.8	33.8	32.9
3	45.0	41.8	40.0	38.5	37.1	35.9	34.8	33.8	32.9
4	45.0	41.8	40.0	38.5	37.1	35.9	34.8	33.8	32.9
5	45.0	41.8	40.0	38.5	37.1	35.9	34.8	33.8	32.9
6	45.0	41.8	40.0	38.5	37.1	35.9	34.8	33.8	32.9
7	45.0	...	42.3	...	39.6	...	37.0	...	34.7
8	45.0	...	42.3	...	39.6	...	37.0	...	34.7
9	45.0	...	42.3	...	39.6	...	37.0	...	34.7
10	45.0	...	42.3	...	39.6	...	37.0	...	34.7
11	45.0	...	42.3	...	39.6	...	37.0	...	34.7
12	45.0	...	42.3	...	39.6	...	37.0	...	34.7
13	40.0	38.2	36.9	35.6	34.5	33.5	32.6	31.8	31.2
14	40.0	38.2	36.9	35.6	34.5	33.5	32.6	31.8	31.2
15	40.0	38.2	36.9	35.6	34.5	33.5	32.6	31.8	31.2
16	40.0	38.2	36.9	35.6	34.5	33.5	32.6	31.8	31.2
17	40.0	38.2	36.9	35.6	34.5	33.5	32.6	31.8	31.2
18	40.0	38.2	36.9	35.6	34.5	33.5	32.6	31.8	31.2
19	25.0	24.3	23.8	23.3	22.8	22.3	21.9	21.4	21.0
20	30.0	29.2	28.6	28.0	27.4	26.8	26.2	25.7	25.2
21	30.0	29.2	28.6	28.0	27.4	26.8	26.2	25.7	25.2
22	30.0	29.2	28.6	28.0	27.4	26.8	26.2	25.7	25.2
23	30.0	29.2	28.6	28.0	27.4	26.8	26.2	25.7	25.2
24	35.0	32.8	32.0	31.5	31.2	30.9	30.7	30.5	30.3
25	35.0	32.8	32.0	31.5	31.2	30.9	30.7	30.5	30.3
26	35.0	32.8	32.0	31.5	31.2	30.9	30.7	30.5	30.3
27	35.0	32.8	32.0	31.5	31.2	30.9	30.7	30.5	30.3
28	35.0	32.8	32.0	31.5	31.2	30.9	30.7	30.5	30.3
29	35.0	32.8	32.0	31.5	31.2	30.9	30.7	30.5	30.3
30	35.0	32.8	32.0	31.5	31.2	30.9	30.7	30.5	30.3
31	40.0	...	36.6	...	35.6	...	35.1	...	34.7
32	35.0	33.8	33.2	32.7	32.3	32.1	31.9	31.9	31.9
33	35.0	33.8	33.2	32.7	32.3	32.1	31.9	31.9	31.9
34	50.0	48.9	48.2	47.5	46.8	46.1	45.4	44.8	44.1
35	50.0	48.9	48.2	47.5	46.8	46.1	45.4	44.8	44.1
36	50.0	48.9	48.2	47.5	46.8	46.1	45.4	44.8	44.1
37	55.0	53.8	53.0	52.2	51.4	50.7	49.9	49.2	48.5
38	55.0	53.8	53.0	52.2	51.4	50.7	49.9	49.2	48.5
39	60.0	58.7	57.8	56.9	56.1	55.3	54.5	53.7	52.9
40	60.0	58.7	57.8	56.9	56.1	55.3	54.5	53.7	52.9
41	60.0	58.7	57.8	56.9	56.1	55.3	54.5	53.7	52.9

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Nonferrous Materials (Cont'd)
1	32.1	31.3	30.5	29.8	29.0	28.4	27.8	27.2	...	...
2	32.1	31.3	30.5	29.8	29.0	28.4	27.8	27.2	...	...
3	32.1	31.3	30.5	29.8	29.0	28.4	27.8	27.2	...	...
4	32.1	31.3	30.5	29.8	29.0	28.4	27.8	27.2	...	...
5	32.1	31.3	30.5	29.8	29.0	28.4	27.8	27.2	...	...
6	32.1	31.3	30.5	29.8	29.0	28.4	27.8	27.2	...	...
7	...	32.9	32.3	31.9	31.6	31.4	31.3	31.3	31.3	31.3
8	...	32.9	32.3	31.9	31.6	31.4	31.3	31.3	31.3	31.3
9	...	32.9	32.3	31.9	31.6	31.4	31.3	31.3	31.3	31.3
10	...	32.9	32.3	31.9	31.6	31.4	31.3	31.3	31.3	31.3
11	...	32.9	32.3	31.9	31.6	31.4	31.3	31.3	31.3	31.3
12	...	32.9	32.3	31.9	31.6	31.4	31.3	31.3	31.3	31.3
13	30.6	30.2	29.8	29.4	29.0	28.7	28.3	27.9	27.6	27.3
14	30.6	30.2	29.8	29.4	29.0	28.7	28.3	27.9	27.6	27.3
15	30.6	30.2	29.8	29.4	29.0	28.7	28.3	27.9	27.6	27.3
16	30.6	30.2	29.8	29.4	29.0	28.7	28.3	27.9	27.6	27.3
17	30.6	30.2	29.8	29.4	29.0	28.7	28.3	27.9	27.6	27.3
18	30.6	30.2	29.8	29.4	29.0	28.7	28.3	27.9	27.6	27.3
19	20.6	20.3	19.9	19.6	19.3	19.1	18.8	18.6	...	...
20	24.7	24.3	23.9	23.5	23.2	22.9	22.6	22.3	...	...
21	24.7	24.3	23.9	23.5	23.2	22.9	22.6	22.3	...	...
22	24.7	24.3	23.9	23.5	23.2	22.9	22.6	22.3	...	...
23	24.7	24.3	23.9	23.5	23.2	22.9	22.6	22.3	...	...
24	30.1	29.9	29.7	29.4	29.1	28.7	28.1	27.3	...	...
25	30.1	29.9	29.7	29.4	29.1	28.7	28.1	27.3	...	...
26	30.1	29.9	29.7	29.4	29.1	28.7	28.1	27.3	...	...
27	30.1	29.9	29.7	29.4	29.1	28.7	28.1	27.3	...	...
28	30.1	29.9	29.7	29.4	29.1	28.7	28.1	27.3	...	...
29	30.1	29.9	29.7	29.4	29.1	28.7	28.1	27.3	...	...
30	30.1	29.9	29.7	29.4	29.1	28.7	28.1	27.3	...	...
31	...	34.2	33.9	33.6	33.2	32.8	...	...	...	...
32	31.9	31.8	31.7	31.5	31.2	30.7	30.1	29.5	28.9	...
33	31.9	31.8	31.7	31.5	31.2	30.7	30.1	29.5	28.9	...
34	43.5	42.9	42.4	41.9	41.5	41.1	40.7	40.4	40.2	40.0
35	43.5	42.9	42.4	41.9	41.5	41.1	40.7	40.4	40.2	40.0
36	43.5	42.9	42.4	41.9	41.5	41.1	40.7	40.4	40.2	40.0
37	47.9	47.2	46.6	46.1	45.6	45.2	44.8	44.5	44.2	43.9
38	47.9	47.2	46.6	46.1	45.6	45.2	44.8	44.5	44.2	43.9
39	52.2	51.5	50.9	50.3	49.8	49.3	48.9	48.5	48.2	47.9
40	52.2	51.5	50.9	50.3	49.8	49.3	48.9	48.5	48.2	47.9
41	52.2	51.5	50.9	50.3	49.8	49.3	48.9	48.5	48.2	47.9

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Nonferrous Materials (Cont'd)					
1	60Ni–22Cr–9Mo–3.5Cb	Forgings	SB-564	...	N06625	Hot fin.
2	60Ni–22Cr–9Mo–3.5Cb	Forgings	SB-564	1	N06625	Annealed
3	60Ni–22Cr–9Mo–3.5Cb	Wld. tube	SB-704	...	N06625	Annealed
4	60Ni–22Cr–9Mo–3.5Cb	Wld. pipe	SB-705	...	N06625	Annealed
5	58Ni–29Cr–9Fe	Smls. tube	SB-163	...	N06690	Annealed
6	58Ni–29Cr–9Fe	Bar, rod	SB-166	...	N06690	Annealed
7	58Ni–29Cr–9Fe	Smls. pipe & tube	SB-167	...	N06690	Annealed
8	58Ni–29Cr–9Fe	Plate, sheet, strip	SB-168	...	N06690	Annealed
9	58Ni–29Cr–9Fe	Forgings	SB-564	...	N06690	Annealed
10	58Ni–29Cr–9Fe	Smls. tube	SB-163	...	N06690	Annealed
11	49Ni–25Cr–18Fe–6Mo	Plate, sheet, strip	SB-582	...	N06975	Solution ann.
12	49Ni–25Cr–18Fe–6Mo	Wld. pipe	SB-619	...	N06975	Solution ann.
13	49Ni–25Cr–18Fe–6Mo	Smls. pipe & tube	SB-622	...	N06975	Solution ann.
14	49Ni–25Cr–18Fe–6Mo	Wld. tube	SB-626	...	N06975	Solution ann.
15	47Ni–22Cr–20Fe–7Mo	Rod	SB-581	...	N06985	Annealed
16	47Ni–22Cr–20Fe–7Mo	Plate, sheet, strip	SB-582	...	N06985	Annealed
17	47Ni–22Cr–20Fe–7Mo	Smls. & wld. fittings	SB-366	...	N06985	Annealed
18	47Ni–22Cr–20Fe–7Mo	Rod	SB-581	...	N06985	Annealed
19	47Ni–22Cr–20Fe–7Mo	Plate, sheet, strip	SB-582	...	N06985	Annealed
20	47Ni–22Cr–20Fe–7Mo	Wld. pipe	SB-619	...	N06985	Annealed
21	47Ni–22Cr–20Fe–7Mo	Smls. pipe & tube	SB-622	...	N06985	Annealed
22	47Ni–22Cr–20Fe–7Mo	Wld. tube	SB-626	...	N06985	Annealed
23	35Ni–35Fe–20Cr–Cb	Forgings	SB-462	...	N08020	Annealed
24	35Ni–35Fe–20Cr–Cb	Plate	SB-463	...	N08020	Annealed
25	35Ni–35Fe–20Cr–Cb	Bar	SB-473	...	N08020	Annealed
26	35Ni–35Fe–20Cr–Cb	Smls. pipe & tube	SB-729	...	N08020	Annealed
27	35Ni–35Fe–20Cr–Cb	Wld. pipe	SB-464	...	N08020	Wld. ann.
28	35Ni–35Fe–20Cr–Cb	Wld. tube	SB-468	...	N08020	Wld. ann.
29	35Ni–35Fe–20Cr–Cb	Smls. & wld. fittings	SB-366	...	N08020	Annealed
30	37Ni–33Fe–23Cr–4Mo–Cu	Plate, sheet, strip	SB-463	...	N08024	Annealed
31	37Ni–33Fe–23Cr–4Mo–Cu	Wld. pipe	SB-464	...	N08024	Wld. ann.
32	37Ni–33Fe–23Cr–4Mo–Cu	Wld. tube	SB-468	...	N08024	Wld. ann.
33	35Ni–30Fe–24Cr–6Mo–Cu	Plate, sheet, strip	SB-463	...	N08026	Annealed
34	35Ni–30Fe–24Cr–6Mo–Cu	Wld. pipe	SB-464	...	N08026	Wld. ann.
35	35Ni–30Fe–24Cr–6Mo–Cu	Wld. tube	SB-468	...	N08026	Wld. ann.
36	31Ni–31Fe–29Cr–Mo	Smls. tube	SB-668	...	N08028	Annealed
37	31Ni–31Fe–29Cr–Mo	Plate, sheet, strip	SB-709	...	N08028	Annealed

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Nonferrous Materials (Cont'd)
1	≤ 4	120	60	…
2	≤ 4	120	60	…
3	…	120	60	…
4	…	120	60	…
5	…	85	35	…
6	…	85	35	…
7	…	85	35	…
8	…	85	35	…
9	…	85	35	…
10	…	85	40	…
11	…	85	32	…
12	…	85	32	…
13	…	85	32	…
14	…	85	32	…
15	> 3/4	85	30	…
16	> 3/4	85	30	…
17	…	90	35	…
18	≤ 3/4	90	35	…
19	≤ 3/4	90	35	…
20	…	90	35	…
21	…	90	35	…
22	…	90	35	…
23	…	80	35	…
24	…	80	35	…
25	…	80	35	…
26	…	80	35	…
27	…	80	35	…
28	…	80	35	…
29	…	85	40	…
30	…	80	35	…
31	…	80	35	…
32	…	80	35	…
33	…	80	35	…
34	…	80	35	…
35	…	80	35	…
36	…	73	31	…
37	…	73	31	…

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	−20 to 100	150	200	250	300	350	400	450	500
	Nonferrous Materials (Cont'd)								
1	60.0	58.7	57.8	56.9	56.1	55.3	54.5	53.7	52.9
2	60.0	58.7	57.8	56.9	56.1	55.3	54.5	53.7	52.9
3	60.0	58.7	57.8	56.9	56.1	55.3	54.5	53.7	52.9
4	60.0	58.7	57.8	56.9	56.1	55.3	54.5	53.7	52.9
5	35.0	32.9	31.7	30.7	29.8	29.1	28.6	28.2	27.9
6	35.0	32.9	31.7	30.7	29.8	29.1	28.6	28.2	27.9
7	35.0	32.9	31.7	30.7	29.8	29.1	28.6	28.2	27.9
8	35.0	32.9	31.7	30.7	29.8	29.1	28.6	28.2	27.9
9	35.0	32.9	31.7	30.7	29.8	29.1	28.6	28.2	27.9
10	40.0	...	36.2	...	34.1	...	32.7	...	31.9
11	32.0	30.2	29.3	28.5	27.7	27.0	26.2	25.5	24.8
12	32.0	30.2	29.3	28.5	27.7	27.0	26.2	25.5	24.8
13	32.0	30.2	29.3	28.5	27.7	27.0	26.2	25.5	24.8
14	32.0	30.2	29.3	28.5	27.7	27.0	26.2	25.5	24.8
15	30.0	28.0	26.7	25.5	24.3	23.3	22.4	21.5	20.8
16	30.0	28.0	26.7	25.5	24.3	23.3	22.4	21.5	20.8
17	35.0	32.7	31.2	29.7	28.4	27.2	26.1	25.1	24.3
18	35.0	32.7	31.2	29.7	28.4	27.2	26.1	25.1	24.3
19	35.0	32.7	31.2	29.7	28.4	27.2	26.1	25.1	24.3
20	35.0	32.7	31.2	29.7	28.4	27.2	26.1	25.1	24.3
21	35.0	32.7	31.2	29.7	28.4	27.2	26.1	25.1	24.3
22	35.0	32.7	31.2	29.7	28.4	27.2	26.1	25.1	24.3
23	35.0	32.0	30.9	30.2	29.6	29.0	28.4	27.8	27.3
24	35.0	32.0	30.9	30.2	29.6	29.0	28.4	27.8	27.3
25	35.0	32.0	30.9	30.2	29.6	29.0	28.4	27.8	27.3
26	35.0	32.0	30.9	30.2	29.6	29.0	28.4	27.8	27.3
27	35.0	32.0	30.9	30.2	29.6	29.0	28.4	27.8	27.3
28	35.0	32.0	30.9	30.2	29.6	29.0	28.4	27.8	27.3
29	40.0	36.6	35.4	34.5	33.8	33.1	32.5	31.8	31.2
30	35.0	32.2	30.9	29.8	28.8	28.0	27.2	26.3	25.5
31	35.0	32.2	30.9	29.8	28.8	28.0	27.2	26.3	25.5
32	35.0	32.2	30.9	29.8	28.8	28.0	27.2	26.3	25.5
33	35.0	32.6	31.1	29.7	28.4	27.3	26.3	25.3	24.4
34	35.0	32.6	31.1	29.7	28.4	27.3	26.3	25.3	24.4
35	35.0	32.6	31.1	29.7	28.4	27.3	26.3	25.3	24.4
36	31.0	29.4	28.4	27.4	26.5	25.6	24.8	23.9	23.2
37	31.0	29.4	28.4	27.4	26.5	25.6	24.8	23.9	23.2

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Nonferrous Materials (Cont'd)
1	52.2	51.5	50.9	50.3	49.8	49.3	48.9	48.5	48.2	47.9
2	52.2	51.5	50.9	50.3	49.8	49.3	48.9	48.5	48.2	47.9
3	52.2	51.5	50.9	50.3	49.8	49.3	48.9	48.5	48.2	47.9
4	52.2	51.5	50.9	50.3	49.8	49.3	48.9	48.5	48.2	47.9
5	27.7	27.6	27.5	27.5	27.5	27.5	27.5	27.5	27.4	27.1
6	27.7	27.6	27.5	27.5	27.5	27.5	27.5	27.5	27.4	27.1
7	27.7	27.6	27.5	27.5	27.5	27.5	27.5	27.5	27.4	27.1
8	27.7	27.6	27.5	27.5	27.5	27.5	27.5	27.5	27.4	27.1
9	27.7	27.6	27.5	27.5	27.5	27.5	27.5	27.5	27.4	27.1
10	...	31.5	31.5	31.5	31.5	31.5	...	...	...	...
11	24.1	23.4	22.9	22.5	22.2	22.0	21.9	21.9	21.9	21.9
12	24.1	23.4	22.9	22.5	22.2	22.0	21.9	21.9	21.9	21.9
13	24.1	23.4	22.9	22.5	22.2	22.0	21.9	21.9	21.9	21.9
14	24.1	23.4	22.9	22.5	22.2	22.0	21.9	21.9	21.9	21.9
15	20.2	19.7	19.2	18.8	18.4	18.0	17.6	17.3	17.0	16.7
16	20.2	19.7	19.2	18.8	18.4	18.0	17.6	17.3	17.0	16.7
17	23.6	23.0	22.4	21.9	21.4	21.0	20.6	20.2	19.8	19.5
18	23.6	23.0	22.4	21.9	21.4	21.0	20.6	20.2	19.8	19.5
19	23.6	23.0	22.4	21.9	21.4	21.0	20.6	20.2	19.8	19.5
20	23.6	23.0	22.4	21.9	21.4	21.0	20.6	20.2	19.8	19.5
21	23.6	23.0	22.4	21.9	21.4	21.0	20.6	20.2	19.8	19.5
22	23.6	23.0	22.4	21.9	21.4	21.0	20.6	20.2	19.8	19.5
23	26.8	26.5	26.2	26.0	25.8	25.2	...	...	...	...
24	26.8	26.5	26.2	26.0	25.8	25.2	...	...	...	...
25	26.8	26.5	26.2	26.0	25.8	25.2	...	...	...	...
26	26.8	26.5	26.2	26.0	25.8	25.2	...	...	...	...
27	26.8	26.5	26.2	26.0	25.8	25.2	...	...	...	...
28	26.8	26.5	26.2	26.0	25.8	25.2	...	...	...	...
29	30.7	30.3	30.0	29.8	29.4	28.8	...	...	...	...
30	24.8	24.0	23.3	22.7	22.2	21.8	21.5	21.3	21.0	20.7
31	24.8	24.0	23.3	22.7	22.2	21.8	21.5	21.3	21.0	20.7
32	24.8	24.0	23.3	22.7	22.2	21.8	21.5	21.3	21.0	20.7
33	23.7	23.0	22.3	21.8	21.3	20.9	20.6	20.3	20.1	19.9
34	23.7	23.0	22.3	21.8	21.3	20.9	20.6	20.3	20.1	19.9
35	23.7	23.0	22.3	21.8	21.3	20.9	20.6	20.3	20.1	19.9
36	22.4	21.7	21.0	20.3	19.7	19.1	18.6	18.1	17.6	17.2
37	22.4	21.7	21.0	20.3	19.7	19.1	18.6	18.1	17.6	17.2

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
		Nonferrous Materials (Cont'd)					
01	1	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Smls. & wld. fittings	SB-366	...	N08031	Solution ann.
01	2	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Forgings	SB-564	...	N08031	Solution ann.
01	3	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Rod	SB-581	...	N08031	Solution ann.
01	4	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Wld. pipe	SB-619	...	N08031	Solution ann.
01	5	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Smls. pipe & tube	SB-622	...	N08031	Solution ann.
01	6	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Plate, sheet, strip	SB-625	...	N08031	Solution ann.
01	7	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Wld. tube	SB-626	...	N08031	Solution ann.
	8	26Ni–43Fe–22Cr–5Mo	Wld. pipe	SB-619	...	N08320	Solution ann.
	9	26Ni–43Fe–22Cr–5Mo	Plate, sheet, strip	SB-620	...	N08320	Solution ann.
	10	26Ni–43Fe–22Cr–5Mo	Rod	SB-621	...	N08320	Solution ann.
	11	26Ni–43Fe–22Cr–5Mo	Smls. pipe & tube	SB-622	...	N08320	Solution ann.
	12	26Ni–43Fe–22Cr–5Mo	Wld. tube	SB-626	...	N08320	Solution ann.
	13	35Ni–19Cr–1¼Si	Bar	SB-511	...	N08330	...
	14	35Ni–19Cr–1¼Si	Pipe	SB-535	...	N08330	...
	15	35Ni–19Cr–1¼Si	Plate	SB-536	...	N08330	...
	16	35Ni–19Cr–1¼Si	Smls. & wld. fittings	SB-366	...	N08330	Annealed
	17	35Ni–19Cr–1¼Si	Smls. & wld. pipe	SB-535	...	N08330	Annealed
	18	35Ni–19Cr–1¼Si	Plate, sheet, strip	SB-536	...	N08330	Annealed
	19	35Ni–19Cr–1¼Si	Wld. pipe	SB-710	...	N08330	Annealed
	20	46Fe–24Ni–21Cr–6Mo	Bar, rod, wire	SB-691	...	N08366	Annealed
	21	46Fe–24Ni–21Cr–6Mo	Wld. pipe	SB-675	...	N08366	Sol. treat.
	22	46Fe–24Ni–21Cr–6Mo	Wld. tube	SB-676	...	N08366	Sol. treat.
	23	46Fe–24Ni–21Cr–6Mo	Smls. pipe & tube	SB-690	...	N08366	Sol. treat.
	24	46Fe–24Ni–21Cr–6Mo	Plate, sheet, strip	SB-688	...	N08366	Annealed
	25	46Fe–24Ni–21Cr–6Mo–Cu–N	Forgings	SB-462	...	N08367	Solution ann.
	26	46Fe–24Ni–21Cr–6Mo–Cu–N	Forgings	SB-564	...	N08367	Solution ann.
01	27	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. pipe	SB-675	...	N08367	Solution ann.
01	28	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. tube	SB-676	...	N08367	Solution ann.
01	29	46Fe–24Ni–21Cr–6Mo–Cu–N	Plate, sheet, strip	SB-688	...	N08367	Solution ann.
01	30	46Fe–24Ni–21Cr–6Mo–Cu–N	Smls. pipe & tube	SB-690	...	N08367	Solution ann.
	31	46Fe–24Ni–21Cr–6Mo–Cu–N	Bar, rod, wire	SB-691	...	N08367	Solution ann.
01	32	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. pipe	SB-804	...	N08367	Solution ann.
01	33	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. pipe	SB-675	...	N08367	Solution ann.
01	34	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. tube	SB-676	...	N08367	Solution ann.
01	35	46Fe–24Ni–21Cr–6Mo–Cu–N	Plate, sheet, strip	SB-688	...	N08367	Solution ann.
01	36	...	...	...	...	...	...
01	37	46Fe–24Ni–21Cr–6Mo–Cu–N	Smls. pipe & tube	SB-690	...	N08367	Solution ann.
01	38	46Fe–24Ni–21Cr–6Mo–Cu–N	Wld. pipe	SB-804	...	N08367	Solution ann.
	39	46Fe–24Ni–21Cr–6Mo–Cu–N	Castings	SA-351	CN-3MN	J94651	Solution ann.

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes	
				Nonferrous Materials (Cont'd)	
1	...	94	40	...	**01**
2	...	94	40	...	**01**
3	...	94	40	...	**01**
4	...	94	40	...	**01**
5	...	94	40	...	**01**
6	...	94	40	...	**01**
7	...	94	40	...	**01**
8	...	75	28	...	
9	...	75	28	...	
10	...	75	28	...	
11	...	75	28	...	
12	...	75	28	...	
13	...	70	30	...	
14	...	70	30	...	
15	...	70	30	...	
16	...	70	30	...	
17	...	70	30	...	
18	...	70	30	...	
19	...	70	30	...	
20	...	75	30	...	
21	...	75	30	...	
22	...	75	30	...	
23	...	75	30	...	
24	...	75	35	...	
25	...	95	45	...	
26	...	95	45	...	
27	$> 3/16$	95	45	...	**01**
28	$> 3/16$	95	45	...	**01**
29	$> 3/16$	95	45	...	**01**
30	$> 3/16$	95	45	...	**01**
31	...	95	45	...	
32	$> 3/16$	95	45	...	**01**
33	$\leq 3/16$	100	45	...	**01**
34	$\leq 3/16$	100	45	...	**01**
35	$\leq 3/16$	100	45	...	**01**
36	...	...	...	...	**01**
37	$\leq 3/16$	100	45	...	**01**
38	$\leq 3/16$	100	45	...	**01**
39	...	80	38	...	

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
		–20 to 100	150	200	250	300	350	400	450	500
		Nonferrous Materials (Cont'd)								
01	1	40.0	...	33.0	...	29.7	...	27.4	...	25.9
01	2	40.0	...	33.0	...	29.7	...	27.4	...	25.9
01	3	40.0	...	33.0	...	29.7	...	27.4	...	25.9
01	4	40.0	...	33.0	...	29.7	...	27.4	...	25.9
01	5	40.0	...	33.0	...	29.7	...	27.4	...	25.9
01	6	40.0	...	33.0	...	29.7	...	27.4	...	25.9
01	7	40.0	...	33.0	...	29.7	...	27.4	...	25.9
	8	28.0	26.7	25.9	25.2	24.5	23.8	23.1	22.4	21.8
	9	28.0	26.7	25.9	25.2	24.5	23.8	23.1	22.4	21.8
	10	28.0	26.7	25.9	25.2	24.5	23.8	23.1	22.4	21.8
	11	28.0	26.7	25.9	25.2	24.5	23.8	23.1	22.4	21.8
	12	28.0	26.7	25.9	25.2	24.5	23.8	23.1	22.4	21.8
	13	30.0	27.7	26.5	25.5	24.7	23.9	23.2	22.6	22.0
	14	30.0	27.7	26.5	25.5	24.7	23.9	23.2	22.6	22.0
	15	30.0	27.7	26.5	25.5	24.7	23.9	23.2	22.6	22.0
	16	30.0	27.7	26.5	25.5	24.7	23.9	23.2	22.6	22.0
	17	30.0	27.7	26.5	25.5	24.7	23.9	23.2	22.6	22.0
	18	30.0	27.7	26.5	25.5	24.7	23.9	23.2	22.6	22.0
	19	30.0	27.7	26.5	25.5	24.7	23.9	23.2	22.6	22.0
	20	30.0	26.6	24.7	23.2	21.8	20.6	19.5	18.4	17.4
	21	30.0	26.6	24.7	23.2	21.8	20.6	19.5	18.4	17.4
	22	30.0	26.6	24.7	23.2	21.8	20.6	19.5	18.4	17.4
	23	30.0	26.6	24.7	23.2	21.8	20.6	19.5	18.4	17.4
	24	35.0	31.0	28.9	27.0	25.4	24.0	22.7	21.5	20.3
	25	45.0	41.3	39.3	37.4	35.7	34.2	32.9	31.8	30.8
	26	45.0	41.3	39.3	37.4	35.7	34.2	32.9	31.8	30.8
01	27	45.0	41.3	39.3	37.4	35.7	34.2	32.9	31.8	30.8
01	28	45.0	41.3	39.3	37.4	35.7	34.2	32.9	31.8	30.8
01	29	45.0	41.3	39.3	37.4	35.7	34.2	32.9	31.8	30.8
01	30	45.0	41.3	39.3	37.4	35.7	34.2	32.9	31.8	30.8
	31	45.0	41.3	39.3	37.4	35.7	34.2	32.9	31.8	30.8
01	32	45.0	41.3	39.3	37.4	35.7	34.2	32.9	31.8	30.8
01	33	45.0	41.3	39.3	37.4	35.7	34.2	32.9	31.8	30.8
01	34	45.0	41.3	39.3	37.4	35.7	34.2	32.9	31.8	30.8
01	35	45.0	41.3	39.3	37.4	35.7	34.2	32.9	31.8	30.8
01	36	...	...	...	...	...	...	...	...	...
01	37	45.0	41.3	39.3	37.4	35.7	34.2	32.9	31.8	30.8
01	38	45.0	41.3	39.3	37.4	35.7	34.2	32.9	31.8	30.8
	39	38.0	34.3	32.0	30.0	28.2	26.6	25.4	24.3	23.5

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding										
	550	600	650	700	750	800	850	900	950	1000	
										Nonferrous Materials (Cont'd)	
1	...	24.7	24.1	23.6	23.2	22.8	22.4	22.2	...	...	**01**
2	...	24.7	24.1	23.6	23.2	22.8	22.4	22.2	...	...	**01**
3	...	24.7	24.1	23.6	23.2	22.8	22.4	22.2	...	...	**01**
4	...	24.7	24.1	23.6	23.2	22.8	22.4	22.2	...	...	**01**
5	...	24.7	24.1	23.6	23.2	22.8	22.4	22.2	...	...	**01**
6	...	24.7	24.1	23.6	23.2	22.8	22.4	22.2	...	...	**01**
7	...	24.7	24.1	23.6	23.2	22.8	22.4	22.2	...	...	**01**
8	21.2	20.7	20.2	19.8	19.4	19.1	...	...	...	...	
9	21.2	20.7	20.2	19.8	19.4	19.1	...	...	...	...	
10	21.2	20.7	20.2	19.8	19.4	19.1	...	...	...	...	
11	21.2	20.7	20.2	19.8	19.4	19.1	...	...	...	...	
12	21.2	20.7	20.2	19.8	19.4	19.1	...	...	...	...	
13	21.5	21.0	20.6	20.1	19.7	19.3	18.9	18.5	18.2	17.9	
14	21.5	21.0	20.6	20.1	19.7	19.3	18.9	18.5	18.2	17.9	
15	21.5	21.0	20.6	20.1	19.7	19.3	18.9	18.5	18.2	17.9	
16	21.5	21.0	20.6	20.1	19.7	19.3	18.9	18.5	18.2	17.9	
17	21.5	21.0	20.6	20.1	19.7	19.3	18.9	18.5	18.2	17.9	
18	21.5	21.0	20.6	20.1	19.7	19.3	18.9	18.5	18.2	17.9	
19	21.5	21.0	20.6	20.1	19.7	19.3	18.9	18.5	18.2	17.9	
20	16.4	15.4	...	...	...	...	...	...	...	...	
21	16.4	15.4	...	...	...	...	...	...	...	...	
22	16.4	15.4	...	...	...	...	...	...	...	...	
23	16.4	15.4	...	...	...	...	...	...	...	...	
24	19.2	18.0	...	...	...	...	...	...	...	...	
25	29.9	29.1	28.5	27.9	27.4	27.0	26.6	26.2	...	...	
26	29.9	29.1	28.5	27.9	27.4	27.0	26.6	26.2	...	...	
27	29.9	29.1	28.5	27.9	27.4	27.0	26.6	26.2	...	...	**01**
28	29.9	29.1	28.5	27.9	27.4	27.0	26.6	26.2	...	...	**01**
29	29.9	29.1	28.5	27.9	27.4	27.0	26.6	26.2	...	...	**01**
30	29.9	29.1	28.5	27.9	27.4	27.0	26.6	26.2	...	...	**01**
31	29.9	29.1	28.5	27.9	27.4	27.0	26.6	26.2	...	...	
32	29.9	29.1	28.5	27.9	27.4	27.0	26.6	26.2	...	...	**01**
33	29.9	29.1	28.5	27.9	27.4	27.0	26.6	26.2	...	...	**01**
34	29.9	29.1	28.5	27.9	27.4	27.0	26.6	26.2	...	...	**01**
35	29.9	29.1	28.5	27.9	27.4	27.0	26.6	26.2	...	...	**01**
36	...	...	...	...	...	...	...	...	...	...	**01**
37	29.9	29.1	28.5	27.9	27.4	27.0	26.6	26.2	...	...	**01**
38	29.9	29.1	28.5	27.9	27.4	27.0	26.6	26.2	...	...	**01**
39	22.9	22.4	22.0	21.8	21.5	21.4	21.2	21.1	21.1	21.1	

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
	Nonferrous Materials (Cont'd)					
1	25Ni–47Fe–21Cr–5Mo	Plate, sheet, strip	SB-599	...	N08700	Solution ann.
2	25Ni–47Fe–21Cr–5Mo	Bar, wire	SB-672	...	N08700	Solution ann.
3	32Ni–45Fe–20Cr–Cb	Castings	SA-351	CT15C	...	As cast
4	33Ni–42Fe–21Cr	Smls. tube	SB-163	...	N08800	Annealed
5	33Ni–42Fe–21Cr	Smls. & wld. fittings	SB-366	...	N08800	Annealed
6	33Ni–42Fe–21Cr	Smls. pipe & tube	SB-407	...	N08800	Annealed
7	33Ni–42Fe–21Cr	Bar	SB-408	...	N08800	Annealed
8	33Ni–42Fe–21Cr	Plate	SB-409	...	N08800	Annealed
9	33Ni–42Fe–21Cr	Wld. pipe	SB-514	...	N08800	Annealed
10	33Ni–42Fe–21Cr	Wld. tube	SB-515	...	N08800	Annealed
11	33Ni–42Fe–21Cr	Forgings	SB-564	...	N08800	Annealed
12	33Ni–42Fe–21Cr	Smls. tube	SB-163	...	N08800	Annealed
13	33Ni–42Fe–21Cr	Smls. tube	SB-163	...	N08800	Cold worked
14	33Ni–42Fe–21Cr	Smls. tube	SB-163	...	N08810	Annealed
15	33Ni–42Fe–21Cr	Smls. pipe & tube	SB-407	...	N08810	Annealed
16	33Ni–42Fe–21Cr	Bar	SB-408	...	N08810	Annealed
17	33Ni–42Fe–21Cr	Plate	SB-409	...	N08810	Annealed
18	33Ni–42Fe–21Cr	Wld. pipe	SB-514	...	N08810	Annealed
19	33Ni–42Fe–21Cr	Wld. tube	SB-515	...	N08810	Annealed
20	33Ni–42Fe–21Cr	Forgings	SB-564	...	N08810	Annealed
21	42Ni–21.5Cr–3Mo–2.3Cu	Smls. tube	SB-163	...	N08825	Annealed
22	42Ni–21.5Cr–3Mo–2.3Cu	Smls. & wld. fittings	SB-366	...	N08825	Annealed
23	42Ni–21.5Cr–3Mo–2.3Cu	Smls. pipe & tube	SB-423	...	N08825	Cold worked/ann.
24	42Ni–21.5Cr–3Mo–2.3Cu	Plate	SB-424	...	N08825	Annealed
25	42Ni–21.5Cr–3Mo–2.3Cu	Bar, rod	SB-425	...	N08825	Annealed
26	42Ni–21.5Cr–3Mo–2.3Cu	Wld. tube	SB-704	...	N08825	Annealed
27	42Ni–21.5Cr–3Mo–2.3Cu	Wld. pipe	SB-705	...	N08825	Annealed
28	44Fe–25Ni–21Cr–Mo	Plate, sheet, strip	SB-625	...	N08904	Annealed
29	44Fe–25Ni–21Cr–Mo	Bar, wire	SB-649	...	N08904	Annealed
30	44Fe–25Ni–21Cr–Mo	Wld. pipe	SB-673	...	N08904	Annealed
31	44Fe–25Ni–21Cr–Mo	Wld. tube	SB-674	...	N08904	Annealed
32	44Fe–25Ni–21Cr–Mo	Smls. pipe & tube	SB-677	...	N08904	Annealed
33	25Ni–20Cr–6Mo–Cu–N	Plate, sheet, strip	SB-625	...	N08925	Annealed
34	25Ni–20Cr–6Mo–Cu–N	Bar, wire	SB-649	...	N08925	Annealed
35	25Ni–20Cr–6Mo–Cu–N	Wld. pipe	SB-673	...	N08925	Annealed
36	25Ni–20Cr–6Mo–Cu–N	Wld. tube	SB-674	...	N08925	Annealed
37	25Ni–20Cr–6Mo–Cu–N	Smls. pipe & tube	SB-677	...	N08925	Annealed

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
				Nonferrous Materials (Cont'd)
1	...	80	35	...
2	...	80	35	...
3	...	63	25	...
4	...	75	30	...
5	...	75	30	...
6	...	75	30	...
7	...	75	30	...
8	...	75	30	...
9	...	75	30	...
10	...	75	30	...
11	...	75	30	...
12	...	80	40	...
13	...	83	47	...
14	...	65	25	...
15	...	65	25	...
16	...	65	25	...
17	...	65	25	...
18	...	65	25	...
19	...	65	25	...
20	...	65	25	...
21	...	85	35	...
22	...	85	35	...
23	...	85	35	...
24	...	85	35	...
25	...	85	35	...
26	...	85	35	...
27	...	85	35	...
28	...	71	31	...
29	...	71	31	...
30	...	71	31	...
31	...	71	31	...
32	...	71	31	...
33	...	87	43	...
34	...	87	43	...
35	...	87	43	...
36	...	87	43	...
37	...	87	43	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
	–20 to 100	150	200	250	300	350	400	450	500
	Nonferrous Materials (Cont'd)								
1	35.0	33.1	31.5	29.9	28.5	27.4	26.6	26.1	25.7
2	35.0	33.1	31.5	29.9	28.5	27.4	26.6	26.1	25.7
3	25.0	24.1	23.6	23.2	22.9	22.7	22.4	22.1	21.8
4	30.0	28.5	27.7	27.1	26.6	26.2	25.8	25.5	25.1
5	30.0	28.5	27.7	27.1	26.6	26.2	25.8	25.5	25.1
6	30.0	28.5	27.7	27.1	26.6	26.2	25.8	25.5	25.1
7	30.0	28.5	27.7	27.1	26.6	26.2	25.8	25.5	25.1
8	30.0	28.5	27.7	27.1	26.6	26.2	25.8	25.5	25.1
9	30.0	28.5	27.7	27.1	26.6	26.2	25.8	25.5	25.1
10	30.0	28.5	27.7	27.1	26.6	26.2	25.8	25.5	25.1
11	30.0	28.5	27.7	27.1	26.6	26.2	25.8	25.5	25.1
12	40.0	...	37.0	...	35.5	...	34.4	...	33.5
13	47.0	...	43.4	...	41.7	...	40.4	...	39.5
14	25.0	23.8	23.0	22.3	21.7	21.0	20.4	19.8	19.3
15	25.0	23.8	23.0	22.3	21.7	21.0	20.4	19.8	19.3
16	25.0	23.8	23.0	22.3	21.7	21.0	20.4	19.8	19.3
17	25.0	23.8	23.0	22.3	21.7	21.0	20.4	19.8	19.3
18	25.0	23.8	23.0	22.3	21.7	21.0	20.4	19.8	19.3
19	25.0	23.8	23.0	22.3	21.7	21.0	20.4	19.8	19.3
20	25.0	23.8	23.0	22.3	21.7	21.0	20.4	19.8	19.3
21	35.0	33.0	32.1	31.2	30.5	29.7	29.1	28.4	27.8
22	35.0	33.0	32.1	31.2	30.5	29.7	29.1	28.4	27.8
23	35.0	33.0	32.1	31.2	30.5	29.7	29.1	28.4	27.8
24	35.0	33.0	32.1	31.2	30.5	29.7	29.1	28.4	27.8
25	35.0	33.0	32.1	31.2	30.5	29.7	29.1	28.4	27.8
26	35.0	33.0	32.1	31.2	30.5	29.7	29.1	28.4	27.8
27	35.0	33.0	32.1	31.2	30.5	29.7	29.1	28.4	27.8
28	31.0	26.8	25.1	23.8	22.7	21.7	20.8	19.9	19.0
29	31.0	26.8	25.1	23.8	22.7	21.7	20.8	19.9	19.0
30	31.0	26.8	25.1	23.8	22.7	21.7	20.8	19.9	19.0
31	31.0	26.8	25.1	23.8	22.7	21.7	20.8	19.9	19.0
32	31.0	26.8	25.1	23.8	22.7	21.7	20.8	19.9	19.0
33	43.0	37.0	34.8	33.2	31.9	30.8	29.6	28.5	27.5
34	43.0	37.0	34.8	33.2	31.9	30.8	29.6	28.5	27.5
35	43.0	37.0	34.8	33.2	31.9	30.8	29.6	28.5	27.5
36	43.0	37.0	34.8	33.2	31.9	30.8	29.6	28.5	27.5
37	43.0	37.0	34.8	33.2	31.9	30.8	29.6	28.5	27.5

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
	550	600	650	700	750	800	850	900	950	1000
										Nonferrous Materials (Cont'd)
1	25.3	24.7	23.8	...	...	...	...	...	...	...
2	25.3	24.7	23.8	...	...	...	...	...	...	...
3	21.5	21.2	20.9	20.6	20.3	19.9	19.6	19.3	19.0	18.8
4	24.8	24.5	24.1	23.8	23.5	23.2	22.9	22.7	22.4	22.1
5	24.8	24.5	24.1	23.8	23.5	23.2	22.9	22.7	22.4	22.1
6	24.8	24.5	24.1	23.8	23.5	23.2	22.9	22.7	22.4	22.1
7	24.8	24.5	24.1	23.8	23.5	23.2	22.9	22.7	22.4	22.1
8	24.8	24.5	24.1	23.8	23.5	23.2	22.9	22.7	22.4	22.1
9	24.8	24.5	24.1	23.8	23.5	23.2	22.9	22.7	22.4	22.1
10	24.8	24.5	24.1	23.8	23.5	23.2	22.9	22.7	22.4	22.1
11	24.8	24.5	24.1	23.8	23.5	23.2	22.9	22.7	22.4	22.1
12	...	32.6	32.2	31.8	31.4	31.0	...	...	...	...
13	...	38.7	38.7	...	...	...	...	...	...	...
14	18.8	18.3	17.9	17.4	17.1	16.7	16.4	16.1	15.8	15.5
15	18.8	18.3	17.9	17.4	17.1	16.7	16.4	16.1	15.8	15.5
16	18.8	18.3	17.9	17.4	17.1	16.7	16.4	16.1	15.8	15.5
17	18.8	18.3	17.9	17.4	17.1	16.7	16.4	16.1	15.8	15.5
18	18.8	18.3	17.9	17.4	17.1	16.7	16.4	16.1	15.8	15.5
19	18.8	18.3	17.9	17.4	17.1	16.7	16.4	16.1	15.8	15.5
20	18.8	18.3	17.9	17.4	17.1	16.7	16.4	16.1	15.8	15.5
21	27.2	26.7	26.3	26.0	25.7	25.6	25.4	25.3	25.1	24.8
22	27.2	26.7	26.3	26.0	25.7	25.6	25.4	25.3	25.1	24.8
23	27.2	26.7	26.3	26.0	25.7	25.6	25.4	25.3	25.1	24.8
24	27.2	26.7	26.3	26.0	25.7	25.6	25.4	25.3	25.1	24.8
25	27.2	26.7	26.3	26.0	25.7	25.6	25.4	25.3	25.1	24.8
26	27.2	26.7	26.3	26.0	25.7	25.6	25.4	25.3	25.1	24.8
27	27.2	26.7	26.3	26.0	25.7	25.6	25.4	25.3	25.1	24.8
28	18.4	17.8	17.4	17.1	...	...	...	...	...	...
29	18.4	17.8	17.4	17.1	...	...	...	...	...	...
30	18.4	17.8	17.4	17.1	...	...	...	...	...	...
31	18.4	17.8	17.4	17.1	...	...	...	...	...	...
32	18.4	17.8	17.4	17.1	...	...	...	...	...	...
33	26.6	25.9	25.5	25.3	25.3	25.3	...	...	...	...
34	26.6	25.9	25.5	25.3	25.3	25.3	...	...	...	...
35	26.6	25.9	25.5	25.3	25.3	25.3	...	...	...	...
36	26.6	25.9	25.5	25.3	25.3	25.3	...	...	...	...
37	26.6	25.9	25.5	25.3	25.3	25.3	...	...	...	...

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
		Nonferrous Materials (Cont'd)					
	1	62Ni–28Mo–5Fe	Plate, sheet, strip	SB-333	...	N10001	Annealed
	2	62Ni–28Mo–5Fe	Smls. & wld. fittings	SB-366	...	N10001	Annealed
	3	62Ni–28Mo–5Fe	Wld. pipe	SB-619	...	N10001	Solution ann.
	4	62Ni–28Mo–5Fe	Smls. pipe & tube	SB-622	...	N10001	Solution ann.
	5	62Ni–28Mo–5Fe	Wld. tube	SB-626	...	N10001	Solution ann.
	6	62Ni–28Mo–5Fe	Rod	SB-335	...	N10001	Annealed
	7	62Ni–28Mo–5Fe	Plate, strip	SB-333	...	N10001	Annealed
	8	70Ni–16Mo–7Cr–5Fe	Smls. & wld. fittings	SB-366	...	N10003	Annealed
	9	70Ni–16Mo–7Cr–5Fe	Plate, sheet, strip	SB-434	...	N10003	Annealed
	10	70Ni–16Mo–7Cr–5Fe	Rod	SB-573	...	N10003	Annealed
	11	54Ni–16Mo–15Cr	Smls. & wld. fittings	SB-366	...	N10276	Solution ann.
	12	54Ni–16Mo–15Cr	Forgings	SB-564	...	N10276	Solution ann.
	13	54Ni–16Mo–15Cr	Rod	SB-574	...	N10276	Solution ann.
	14	54Ni–16Mo–15Cr	Plate, sheet, strip	SB-575	...	N10276	Solution ann.
	15	54Ni–16Mo–15Cr	Wld. pipe	SB-619	...	N10276	Solution ann.
	16	54Ni–16Mo–15Cr	Smls. pipe & tube	SB-622	...	N10276	Solution ann.
	17	54Ni–16Mo–15Cr	Wld. tube	SB-626	...	N10276	Solution ann.
01	18	Ni–28Mo–3Fe–1.3Cr–0.25Al	Plate, sheet, strip	SB-333	...	N10629	Solution ann.
01	19	Ni–28Mo–3Fe–1.3Cr–0.25Al	Rod	SB-335	...	N10629	Solution ann.
01	20	Ni–28Mo–3Fe–1.3Cr–0.25Al	Smls. & wld. fittings	SB-366	...	N10629	Solution ann.
01	21	Ni–28Mo–3Fe–1.3Cr–0.25Al	Forgings	SB-564	...	N10629	Solution ann.
01	22	Ni–28Mo–3Fe–1.3Cr–0.25Al	Wld. pipe	SB-619	...	N10629	Solution ann.
01	23	Ni–28Mo–3Fe–1.3Cr–0.25Al	Smls. pipe & tube	SB-622	...	N10629	Solution ann.
01	24	Ni–28Mo–3Fe–1.3Cr–0.25Al	Wld. tube	SB-626	...	N10629	Solution ann.
	25	65Ni–28Mo–2Fe	Smls. & wld. fittings	SB-366	...	N10665	Annealed
	26	65Ni–28Mo–2Fe	Wld. pipe	SB-619	...	N10665	Annealed
	27	65Ni–28Mo–2Fe	Wld. tube	SB-626	...	N10665	Annealed
	28	65Ni–28Mo–2Fe	Plate, strip	SB-333	...	N10665	Solution ann.
	29	65Ni–28Mo–2Fe	Rod	SB-335	...	N10665	Solution ann.
	30	65Ni–28Mo–2Fe	Wld. pipe	SB-619	...	N10665	Solution ann.
	31	65Ni–28Mo–2Fe	Smls. pipe & tube	SB-622	...	N10665	Solution ann.
	32	65Ni–28Mo–2Fe	Wld. tube	SB-626	...	N10665	Solution ann.
	33	65Ni–29.5Mo–2Fe–2Cr	Plate, sheet, strip	SB-333	...	N10675	Solution ann.
	34	65Ni–29.5Mo–2Fe–2Cr	Rod	SB-335	...	N10675	Solution ann.
	35	65Ni–29.5Mo–2Fe–2Cr	Smls. & wld. fittings	SB-366	...	N10675	Solution ann.

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes	
				Nonferrous Materials (Cont'd)	
1	...	100	45	...	
2	...	100	45	...	
3	...	100	45	...	
4	...	100	45	...	
5	...	100	45	...	
6	...	100	46	...	
7	...	115	50	...	
8	...	100	40	...	
9	...	100	40	...	
10	...	100	40	...	
11	...	100	41	...	
12	...	100	41	...	
13	...	100	41	...	
14	...	100	41	...	
15	...	100	41	...	
16	...	100	41	...	
17	...	100	41	...	
18	...	110	51	...	**01**
19	...	110	51	...	**01**
20	...	110	51	...	**01**
21	...	110	51	...	**01**
22	...	110	51	...	**01**
23	...	110	51	...	**01**
24	...	110	51	...	**01**
25	...	100	51	...	
26	...	110	51	...	
27	...	110	51	...	
28	...	110	51	...	
29	...	110	51	...	
30	...	110	51	...	
31	...	110	51	...	
32	...	110	51	...	
33	...	110	51	...	
34	...	110	51	...	
35	...	110	51	...	

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
		–20 to 100	150	200	250	300	350	400	450	500
		Nonferrous Materials (Cont'd)								
	1	45.0	42.2	40.8	39.6	38.6	37.7	36.9	36.2	35.6
	2	45.0	42.2	40.8	39.6	38.6	37.7	36.9	36.2	35.6
	3	45.0	42.2	40.8	39.6	38.6	37.7	36.9	36.2	35.6
	4	45.0	42.2	40.8	39.6	38.6	37.7	36.9	36.2	35.6
	5	45.0	42.2	40.8	39.6	38.6	37.7	36.9	36.2	35.6
	6	46.0	43.1	41.7	40.5	39.4	38.5	37.7	37.0	36.4
	7	50.0	46.9	45.3	44.0	42.8	41.9	41.0	40.2	39.6
	8	40.0	38.2	36.8	35.4	34.0	32.7	31.6	30.7	30.0
	9	40.0	38.2	36.8	35.4	34.0	32.7	31.6	30.7	30.0
	10	40.0	38.2	36.8	35.4	34.0	32.7	31.6	30.7	30.0
	11	41.0	38.8	37.3	35.9	34.5	33.2	32.0	30.9	29.8
	12	41.0	38.8	37.3	35.9	34.5	33.2	32.0	30.9	29.8
	13	41.0	38.8	37.3	35.9	34.5	33.2	32.0	30.9	29.8
	14	41.0	38.8	37.3	35.9	34.5	33.2	32.0	30.9	29.8
	15	41.0	38.8	37.3	35.9	34.5	33.2	32.0	30.9	29.8
	16	41.0	38.8	37.3	35.9	34.5	33.2	32.0	30.9	29.8
	17	41.0	38.8	37.3	35.9	34.5	33.2	32.0	30.9	29.8
01	18	51.0	...	47.1	...	44.4	...	42.2	...	40.5
01	19	51.0	...	47.1	...	44.4	...	42.2	...	40.5
01	20	51.0	...	47.1	...	44.4	...	42.2	...	40.5
01	21	51.0	...	47.1	...	44.4	...	42.2	...	40.5
01	22	51.0	...	47.1	...	44.4	...	42.2	...	40.5
01	23	51.0	...	47.1	...	44.4	...	42.2	...	40.5
01	24	51.0	...	47.1	...	44.4	...	42.2	...	40.5
	25	51.0	49.2	47.9	46.6	45.4	44.3	43.4	42.6	41.9
	26	51.0	49.2	47.9	46.6	45.4	44.3	43.4	42.6	41.9
	27	51.0	49.2	47.9	46.6	45.4	44.3	43.4	42.6	41.9
	28	51.0	49.2	47.9	46.6	45.4	44.3	43.4	42.6	41.9
	29	51.0	49.2	47.9	46.6	45.4	44.3	43.4	42.6	41.9
	30	51.0	49.2	47.9	46.6	45.4	44.3	43.4	42.6	41.9
	31	51.0	49.2	47.9	46.6	45.4	44.3	43.4	42.6	41.9
	32	51.0	49.2	47.9	46.6	45.4	44.3	43.4	42.6	41.9
	33	51.0	...	47.8	...	45.4	...	43.2	...	41.1
	34	51.0	...	47.8	...	45.4	...	43.2	...	41.1
	35	51.0	...	47.8	...	45.4	...	43.2	...	41.1

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding										
	550	600	650	700	750	800	850	900	950	1000	
										Nonferrous Materials (Cont'd)	
1	35.0	34.6	34.1	33.8	33.4	33.2	...	...	...	...	
2	35.0	34.6	34.1	33.8	33.4	33.2	...	...	...	...	
3	35.0	34.6	34.1	33.8	33.4	33.2	...	...	...	...	
4	35.0	34.6	34.1	33.8	33.4	33.2	...	...	...	...	
5	35.0	34.6	34.1	33.8	33.4	33.2	...	...	...	...	
6	35.8	35.3	34.9	34.5	34.2	33.9	...	...	...	...	
7	38.9	38.4	37.9	37.5	37.2	36.9	...	...	...	...	
8	29.4	29.0	28.7	28.4	28.1	27.7	27.1	26.3	25.3	23.9	
9	29.4	29.0	28.7	28.4	28.1	27.7	27.1	26.3	25.3	23.9	
10	29.4	29.0	28.7	28.4	28.1	27.7	27.1	26.3	25.3	23.9	
11	28.9	28.0	27.3	26.7	26.1	25.7	25.3	25.1	24.9	24.8	
12	28.9	28.0	27.3	26.7	26.1	25.7	25.3	25.1	24.9	24.8	
13	28.9	28.0	27.3	26.7	26.1	25.7	25.3	25.1	24.9	24.8	
14	28.9	28.0	27.3	26.7	26.1	25.7	25.3	25.1	24.9	24.8	
15	28.9	28.0	27.3	26.7	26.1	25.7	25.3	25.1	24.9	24.8	
16	28.9	28.0	27.3	26.7	26.1	25.7	25.3	25.1	24.9	24.8	
17	28.9	28.0	27.3	26.7	26.1	25.7	25.3	25.1	24.9	24.8	
18	...	39.2	38.7	38.3	37.9	37.7	37.4	37.3	37.1	...	**01**
19	...	39.2	38.7	38.3	37.9	37.7	37.4	37.3	37.1	...	**01**
20	...	39.2	38.7	38.3	37.9	37.7	37.4	37.3	37.1	...	**01**
21	...	39.2	38.7	38.3	37.9	37.7	37.4	37.3	37.1	...	**01**
22	...	39.2	38.7	38.3	37.9	37.7	37.4	37.3	37.1	...	**01**
23	...	39.2	38.7	38.3	37.9	37.7	37.4	37.3	37.1	...	**01**
24	...	39.2	38.7	38.3	37.9	37.7	37.4	37.3	37.1	...	**01**
25	41.3	40.8	40.3	39.8	39.3	38.7	38.0	37.3	36.5	35.8	
26	41.3	40.8	40.3	39.8	39.3	38.7	38.0	37.3	36.5	35.8	
27	41.3	40.8	40.3	39.8	39.3	38.7	38.0	37.3	36.5	35.8	
28	41.3	40.8	40.3	39.8	39.3	38.7	38.0	37.3	36.5	35.8	
29	41.3	40.8	40.3	39.8	39.3	38.7	38.0	37.3	36.5	35.8	
30	41.3	40.8	40.3	39.8	39.3	38.7	38.0	37.3	36.5	35.8	
31	41.3	40.8	40.3	39.8	39.3	38.7	38.0	37.3	36.5	35.8	
32	41.3	40.8	40.3	39.8	39.3	38.7	38.0	37.3	36.5	35.8	
33	...	39.4	38.7	38.1	37.6	37.3	37.0	36.8	36.6	36.3	
34	...	39.4	38.7	38.1	37.6	37.3	37.0	36.8	36.6	36.3	
35	...	39.4	38.7	38.1	37.6	37.3	37.0	36.8	36.6	36.3	

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
		Nonferrous Materials (Cont'd)					
	1	65Ni–29.5Mo–2Fe–2Cr	Forgings	SB-564	...	N10675	Solution ann.
	2	65Ni–29.5Mo–2Fe–2Cr	Wld. pipe	SB-619	...	N10675	Solution ann.
	3	65Ni–29.5Mo–2Fe–2Cr	Smls. pipe & tube	SB-622	...	N10675	Solution ann.
	4	65Ni–29.5Mo–2Fe–2Cr	Wld. tube	SB-626	...	N10675	Solution ann.
01	5	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Smls. & wld. fittings	SB-366	...	R20033	Solution ann.
01	6	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Forgings	SB-564	...	R20033	Solution ann.
01	7	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Wld. pipe	SB-619	...	R20033	Solution ann.
01	8	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Smls. pipe & tube	SB-622	...	R20033	Solution ann.
01	9	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Plate, sheet, strip	SB-625	...	R20033	Solution ann.
01	10	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Wld. tube	SB-626	...	R20033	Solution ann.
01	11	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Rod	SB-649	...	R20033	Solution ann.
	12	21Ni–30Fe–22Cr–18Co–3Mo–3W	Plate, sheet, strip	SB-435	...	R30556	Annealed
	13	21Ni–30Fe–22Cr–18Co–3Mo–3W	Rod	SB-572	...	R30556	Annealed
	14	21Ni–30Fe–22Cr–18Co–3Mo–3W	Wld. pipe	SB-619	...	R30556	Annealed
	15	21Ni–30Fe–22Cr–18Co–3Mo–3W	Smls. pipe & tube	SB-622	...	R30556	Annealed
	16	21Ni–30Fe–22Cr–18Co–3Mo–3W	Wld. tube	SB-626	...	R30556	Annealed
	17	Ti	Plate, sheet, strip	SB-265	1	R50250	Annealed
	18	Ti	Smls. & wld. tube	SB-338	1	R50250	Annealed
	19	Ti	Bar, billet	SB-348	1	R50250	Annealed
01	20	...	...	...	...	...	...
	21	Ti	Forgings	SB-381	F1	R50250	Annealed
01	22	Ti	Smls. pipe	SB-861	1	R50250	Annealed
01	23	Ti	Wld. pipe	SB-862	1	R50250	Annealed
01	24	Ti	Castings	SB-367	C-2	R50400	...
01	25	Ti	Plate, sheet, strip	SB-265	2	R50400	Annealed
01	26	Ti	Smls. & wld. tube	SB-338	2	R50400	Annealed
01	27	Ti	Bar, billet	SB-348	2	R50400	Annealed
01	28	Ti	Forgings	SB-381	F2	R50400	Annealed
01	29	Ti	Smls. pipe	SB-861	2	R50400	Annealed
01	30	Ti	Wld. pipe	SB-862	2	R50400	Annealed
	31	Ti	Plate, sheet, strip	SB-265	3	R50550	Annealed
	32	Ti	Smls. & wld. tube	SB-338	3	R50550	Annealed
	33	Ti	Bar, billet	SB-348	3	R50550	Annealed
01	34	...	...	...	...	...	...
01	35	Ti	Castings	SB-367	C-3	R50550	Annealed
	36	Ti	Forgings	SB-381	F3	R50550	Annealed
01	37	Ti	Smls. pipe	SB-861	3	R50550	Annealed
01	38	Ti	Wld. pipe	SB-862	3	R50550	Annealed

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes	
				Nonferrous Materials (Cont'd)	
1	...	110	51	...	
2	...	110	51	...	
3	...	110	51	...	
4	...	110	51	...	
5	...	109	55	...	**01**
6	...	109	55	...	**01**
7	...	109	55	...	**01**
8	...	109	55	...	**01**
9	...	109	55	...	**01**
10	...	109	55	...	**01**
11	...	109	55	...	**01**
12	...	100	45	...	
13	...	100	45	...	
14	...	100	45	...	
15	...	100	45	...	
16	...	100	45	...	
17	...	35	25	...	
18	...	35	25	...	
19	...	35	25	...	
20	...	...	...	...	**01**
21	...	35	25	...	
22	...	35	25	...	**01**
23	...	35	25	...	**01**
24	...	50	40	...	**01**
25	...	50	40	...	**01**
26	...	50	40	...	**01**
27	...	50	40	...	**01**
28	...	50	40	...	**01**
29	...	50	40	...	**01**
30	...	50	40	...	**01**
31	...	65	55	...	
32	...	65	55	...	
33	...	65	55	...	
34	...	...	...	...	**01**
35	...	65	55	...	**01**
36	...	65	55	...	
37	...	65	55	...	**01**
38	...	65	55	...	**01**

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
		–20 to 100	150	200	250	300	350	400	450	500
		Nonferrous Materials (Cont'd)								
	1	51.0	...	47.8	...	45.4	...	43.2	...	41.1
	2	51.0	...	47.8	...	45.4	...	43.2	...	41.1
	3	51.0	...	47.8	...	45.4	...	43.2	...	41.1
	4	51.0	...	47.8	...	45.4	...	43.2	...	41.1
01	5	55.0	...	46.3	...	42.1	...	39.2	...	37.1
01	6	55.0	...	46.3	...	42.1	...	39.2	...	37.1
01	7	55.0	...	46.3	...	42.1	...	39.2	...	37.1
01	8	55.0	...	46.3	...	42.1	...	39.2	...	37.1
01	9	55.0	...	46.3	...	42.1	...	39.2	...	37.1
01	10	55.0	...	46.3	...	42.1	...	39.2	...	37.1
01	11	55.0	...	46.3	...	42.1	...	39.2	...	37.1
	12	45.0	40.8	38.4	36.4	34.7	33.2	32.0	31.0	30.2
	13	45.0	40.8	38.4	36.4	34.7	33.2	32.0	31.0	30.2
	14	45.0	40.8	38.4	36.4	34.7	33.2	32.0	31.0	30.2
	15	45.0	40.8	38.4	36.4	34.7	33.2	32.0	31.0	30.2
	16	45.0	40.8	38.4	36.4	34.7	33.2	32.0	31.0	30.2
	17	25.0	20.1	17.5	15.4	13.5	11.7	10.2	8.9	7.9
	18	25.0	20.1	17.5	15.4	13.5	11.7	10.2	8.9	7.9
	19	25.0	20.1	17.5	15.4	13.5	11.7	10.2	8.9	7.9
01	20	...	...	...	...	...	...	...	...	...
	21	25.0	20.1	17.5	15.4	13.5	11.7	10.2	8.9	7.9
01	22	25.0	20.1	17.5	15.4	13.5	11.7	10.2	8.9	7.9
01	23	25.0	20.1	17.5	15.4	13.5	11.7	10.2	8.9	7.9
01	24	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
01	25	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
01	26	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
01	27	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
01	28	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
01	29	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
01	30	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
	31	55.0	48.4	44.0	39.8	35.7	32.0	28.6	25.5	22.5
	32	55.0	48.4	44.0	39.8	35.7	32.0	28.6	25.5	22.5
	33	55.0	48.4	44.0	39.8	35.7	32.0	28.6	25.5	22.5
01	34	...	...	...	...	...	...	...	...	...
01	35	55.0	48.4	44.0	39.8	35.7	32.0	28.6	25.5	22.5
	36	55.0	48.4	44.0	39.8	35.7	32.0	28.6	25.5	22.5
01	37	55.0	48.4	44.0	39.8	35.7	32.0	28.6	25.5	22.5
01	38	55.0	48.4	44.0	39.8	35.7	32.0	28.6	25.5	22.5

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding										
	550	600	650	700	750	800	850	900	950	1000	
											Nonferrous Materials (Cont'd)
1	...	39.4	38.7	38.1	37.6	37.3	37.0	36.8	36.6	36.3	
2	...	39.4	38.7	38.1	37.6	37.3	37.0	36.8	36.6	36.3	
3	...	39.4	38.7	38.1	37.6	37.3	37.0	36.8	36.6	36.3	
4	...	39.4	38.7	38.1	37.6	37.3	37.0	36.8	36.6	36.3	
5	...	35.7	35.2	34.7	34.3	33.9	33.6	33.2	...	...	**01**
6	...	35.7	35.2	34.7	34.3	33.9	33.6	33.2	...	...	**01**
7	...	35.7	35.2	34.7	34.3	33.9	33.6	33.2	...	...	**01**
8	...	35.7	35.2	34.7	34.3	33.9	33.6	33.2	...	...	**01**
9	...	35.7	35.2	34.7	34.3	33.9	33.6	33.2	...	...	**01**
10	...	35.7	35.2	34.7	34.3	33.9	33.6	33.2	...	...	**01**
11	...	35.7	35.2	34.7	34.3	33.9	33.6	33.2	...	...	**01**
12	29.5	28.9	28.4	28.0	27.6	27.3	27.0	26.7	26.5	26.2	
13	29.5	28.9	28.4	28.0	27.6	27.3	27.0	26.7	26.5	26.2	
14	29.5	28.9	28.4	28.0	27.6	27.3	27.0	26.7	26.5	26.2	
15	29.5	28.9	28.4	28.0	27.6	27.3	27.0	26.7	26.5	26.2	
16	29.5	28.9	28.4	28.0	27.6	27.3	27.0	26.7	26.5	26.2	
17	7.1	6.6	...	...	...	...	...	...	...	...	
18	7.1	6.6	...	...	...	...	...	...	...	...	
19	7.1	6.6	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	**01**
21	7.1	6.6	...	...	...	...	...	...	...	...	
22	7.1	6.6	...	...	...	...	...	...	...	...	**01**
23	7.1	6.6	...	...	...	...	...	...	...	...	**01**
24	12.6	11.4	...	...	...	...	...	...	...	...	**01**
25	12.6	11.4	...	...	...	...	...	...	...	...	**01**
26	12.6	11.4	...	...	...	...	...	...	...	...	**01**
27	12.6	11.4	...	...	...	...	...	...	...	...	**01**
28	...	...	...	...	...	...	...	...	...	...	**01**
29	12.6	11.4	...	...	...	...	...	...	...	...	**01**
30	12.6	11.4	...	...	...	...	...	...	...	...	**01**
31	19.8	17.1	...	...	...	...	...	...	...	...	
32	19.8	17.1	...	...	...	...	...	...	...	...	
33	19.8	17.1	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	**01**
35	...	...	...	...	...	...	...	...	...	...	**01**
36	19.8	17.1	...	...	...	...	...	...	...	...	
37	19.8	17.1	...	...	...	...	...	...	...	...	**01**
38	19.8	17.1	...	...	...	...	...	...	...	...	**01**

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	Alloy Desig./ UNS No.	Class/ Cond./ Temper
		Nonferrous Materials (Cont'd)					
01	1	Ti–Pd	Plate, sheet, strip	SB-265	11	R52250	Annealed
01	2	Ti–Pd	Plate, sheet, strip	SB-265	7	R52400	Annealed
01	3	Ti–Pd	Smls. & wld. tube	SB-338	7	R52400	Annealed
01	4	Ti–Pd	Bar, billet	SB-348	7	R52400	Annealed
01	5	Ti–Pd	Forgings	SB-381	F7	R52400	Annealed
01	6	Ti–Pd	Smls. pipe	SB-861	7	R52400	Annealed
01	7	Ti–Pd	Wld. pipe	SB-862	7	R52400	Annealed
01	8	Ti–0.3Mo–0.8Ni	Plate, sheet, strip	SB-265	12	R53400	Annealed
01	9	Ti–0.3Mo–0.8Ni	Smls. & wld. tube	SB-338	12	R53400	Annealed
01	10	Ti–0.3Mo–0.8Ni	Bar, billet	SB-348	12	R53400	Annealed
01	11	Ti–0.3Mo–0.8Ni	Forgings	SB-381	F12	R53400	Annealed
01	12	Ti–0.3Mo–0.8Ni	Smls. pipe	SB-861	12	R53400	Annealed
01	13	Ti–0.3Mo–0.8Ni	Wld. pipe	SB-862	12	R53400	Annealed
01	14	Ti–3Al–2.5V	Plate, sheet, strip	SB-265	9	R56320	Annealed
01	15	Ti–3Al–2.5V	Smls. & wld. tube	SB-338	9	R56320	Annealed
01	16	Ti–3Al–2.5V	Bar, billet	SB-348	9	R56320	Annealed
01	17	Ti–3Al–2.5V	Wld. fittings	SB-363	WPT9	R56320	Annealed
01	18	Ti–3Al–2.5V	Wld. fittings	SB-363	WPT9W	R56320	Annealed
01	19	Ti–3Al–2.5V	Forgings	SB-381	F9	R56320	Annealed
01	20	Ti–3Al–2.5V	Smls. pipe	SB-861	9	R56320	Annealed
01	21	Ti–3Al–2.5V	Wld. pipe	SB-862	9	R56320	Annealed
01	22	99.2Zr	Forgings	SB-493	...	R60702	Annealed
01	23	99.2Zr	Smls. tube	SB-523	...	R60702	Annealed
01	24	99.2Zr	Wld. tube	SB-523	...	R60702	Annealed
01	25	99.2Zr	Bar, wire	SB-550	...	R60702	Annealed
01	26	99.2Zr	Plate, sheet, strip	SB-551	...	R60702	Annealed
01	27	99.2Zr	Smls. & wld. pipe	SB-658	...	R60702	Annealed

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Size/ Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes	
				Nonferrous Materials (Cont'd)	
1	...	35	25	...	**01**
2	...	50	40	...	**01**
3	...	50	40	...	**01**
4	...	50	40	...	**01**
5	...	50	40	...	**01**
6	...	50	40	...	**01**
7	...	50	40	...	**01**
8	...	70	50	...	**01**
9	...	70	50	...	**01**
10	...	70	50	...	**01**
11	...	70	50	...	**01**
12	...	70	50	...	**01**
13	...	70	50	...	**01**
14	...	90	70	...	**01**
15	...	90	70	...	**01**
16	...	90	70	...	**01**
17	...	90	70	...	**01**
18	...	90	70	...	**01**
19	...	90	70	...	**01**
20	...	90	70	...	**01**
21	...	90	70	...	**01**
22	...	55	30	...	**01**
23	...	55	30	...	**01**
24	...	55	30	...	**01**
25	...	55	30	...	**01**
26	...	55	30	...	**01**
27	...	55	30	...	**01**

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding								
		–20 to 100	150	200	250	300	350	400	450	500
		Nonferrous Materials (Cont'd)								
01	1	25.0	20.1	17.5	15.4	13.5	11.7	10.2	8.9	7.9
01	2	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
01	3	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
01	4	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
01	5	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
01	6	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
01	7	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
01	8	50.0	45.0	41.5	38.1	35.0	32.2	29.4	27.7	26.0
01	9	50.0	45.0	41.5	38.1	35.0	32.2	29.4	27.7	26.0
01	10	50.0	45.0	41.5	38.1	35.0	32.2	29.4	27.7	26.0
01	11	50.0	45.0	41.5	38.1	35.0	32.2	29.4	27.7	26.0
01	12	50.0	45.0	41.5	38.1	35.0	32.2	29.4	27.7	26.0
01	13	50.0	45.0	41.5	38.1	35.0	32.2	29.4	27.7	26.0
01	14	70.0	65.1	61.1	58.1	55.3	52.5	49.7	46.9	44.8
01	15	70.0	65.1	61.1	58.1	55.3	52.5	49.7	46.9	44.8
01	16	70.0	65.1	61.1	58.1	55.3	52.5	49.7	46.9	44.8
01	17	70.0	65.1	61.1	58.1	55.3	52.5	49.7	46.9	44.8
01	18	70.0	65.1	61.1	58.1	55.3	52.5	49.7	46.9	44.8
01	19	70.0	65.1	61.1	58.1	55.3	52.5	49.7	46.9	44.8
01	20	70.0	65.1	61.1	58.1	55.3	52.5	49.7	46.9	44.8
01	21	70.0	65.1	61.1	58.1	55.3	52.5	49.7	46.9	44.8
01	22	30.0	25.8	23.1	20.4	18.0	15.9	14.0	12.4	11.0
01	23	30.0	25.8	23.1	20.4	18.0	15.9	14.0	12.4	11.0
01	24	30.0	25.8	23.1	20.4	18.0	15.9	14.0	12.4	11.0
01	25	30.0	25.8	23.1	20.4	18.0	15.9	14.0	12.4	11.0
01	26	30.0	25.8	23.1	20.4	18.0	15.9	14.0	12.4	11.0
01	27	30.0	25.8	23.1	20.4	18.0	15.9	14.0	12.4	11.0

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TABLE Y-1 (CONT'D)
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding										
	550	600	650	700	750	800	850	900	950	1000	
										Nonferrous Materials (Cont'd)	
1	7.1	6.6	...	...	...	...	...	...	...	...	**01**
2	12.6	11.4	...	...	...	...	...	...	...	...	**01**
3	12.6	11.4	...	...	...	...	...	...	...	...	**01**
4	12.6	11.4	...	...	...	...	...	...	...	...	**01**
5	12.6	11.4	...	...	...	...	...	...	...	...	**01**
6	12.6	11.4	...	...	...	...	...	...	...	...	**01**
7	12.6	11.4	...	...	...	...	...	...	...	...	**01**
8	24.8	24.0	...	...	...	...	...	...	...	...	**01**
9	24.8	24.0	...	...	...	...	...	...	...	...	**01**
10	24.8	24.0	...	...	...	...	...	...	...	...	**01**
11	24.8	24.0	...	...	...	...	...	...	...	...	**01**
12	24.8	24.0	...	...	...	...	...	...	...	...	**01**
13	24.8	24.0	...	...	...	...	...	...	...	...	**01**
14	43.4	41.3	...	...	...	...	...	...	...	...	**01**
15	43.4	41.3	...	...	...	...	...	...	...	...	**01**
16	43.4	41.3	...	...	...	...	...	...	...	...	**01**
17	43.4	41.3	...	...	...	...	...	...	...	...	**01**
18	43.4	41.3	...	...	...	...	...	...	...	...	**01**
19	43.4	41.3	...	...	...	...	...	...	...	...	**01**
20	43.4	41.3	...	...	...	...	...	...	...	...	**01**
21	43.4	41.3	...	...	...	...	...	...	...	...	**01**
22	9.9	9.0	8.4	7.9	7.6	7.5	...	...	...	...	**01**
23	9.9	9.0	8.4	7.9	7.6	7.5	...	...	...	...	**01**
24	9.9	9.0	8.4	7.9	7.6	7.5	...	...	...	...	**01**
25	9.9	9.0	8.4	7.9	7.6	7.5	...	...	...	...	**01**
26	9.9	9.0	8.4	7.9	7.6	7.5	...	...	...	...	**01**
27	9.9	9.0	8.4	7.9	7.6	7.5	...	...	...	...	**01**

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NOTES TO TABLE Y-1

GENERAL NOTES:

(a) The following abbreviations are used: ann., annealed; Cond., Condition; cond., condenser; Desig., Designation; extr., extruded; fin., finished; fr., from; rel., relieved; rld., rolled; Smls., Seamless; Sol., Solution; treat., treated; and Wld., Welded.

(b) The tabulated values of yield strength are those which the Committee believes are suitable for use in design calculations. At temperatures above room temperature, the yield strength values correspond to the yield strength trend curve adjusted to the minimum specified room temperature yield strength. The yield strength values do not correspond exactly to "minimum" as this term is applied to a statistical treatment of a homogeneous set of data. Neither the ASME Material Specifications nor the rules of Section I, Section III, or Section VIII require elevated temperature testing for yield strengths of production material for use in Code components. It is not intended that results of such tests, if performed, be compared with these tabulated yield strength values for ASME Code acceptance/rejection purposes for materials. If some elevated temperature test results on production material appear lower than the tabulated values by a large amount (more than the typical variability of material and suggesting the possibility of some error), further investigation by retest or other means should be considered.

(c) Notes limiting applications of these materials appear in Tables 1A, 1B, 2A, 2B, 3, and 4.

(d) These values represent yield strength design values that are appropriate for use in any section of the ASME Boiler & Pressure Vessel Code in which the material is permitted and not otherwise restricted by applicability temperature limits, application limits, or notes.

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TABLE Y-2
FACTORS FOR LIMITING PERMANENT STRAIN IN NICKEL, HIGH NICKEL ALLOYS, AND HIGH ALLOY STEELS

Strain, %	Factors
0.10	0.90
0.09	0.89
0.08	0.88
0.07	0.86
0.06	0.83
0.05	0.80
0.04	0.77
0.03	0.73
0.02	0.69
0.01	0.63

GENERAL NOTE:
This Table lists multiplying factors which, when applied to the yield strength values shown in Table Y-1, will give a value that will result in lower levels of permanent strain. If this value is less than the maximum allowable stress value listed in Table 1A or Table 1B, or the design stress intensity value listed in Table 2A or Table 2B, the lower value shall be used.

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TABLE Y-3
SECTION VIII, DIVISION 3
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	UNS No.	Class/ Cond./ Temper	Thickness, in.	P-No.	Group No.	Specified Min. Tensile, ksi	Specified Min. Yield, ksi
	Ferrous Materials										
1	Carbon steel	Smls. pipe	SA-333	6	K03006	...	...	1	1	60	35
01 2	Carbon steel	Forgings	SA-105	...	K03504	...	...	1	2	70	36
3	Carbon steel	Plate	SA-724	A	K11831	...	...	1	4	90	70
4	Carbon steel	Plate	SA-724	C	K12037	...	...	1	4	90	70
5	Carbon steel	Plate	SA-724	B	K12031	...	...	1	4	95	75
6	Carbon steel	Flat wire	SA-905	...	...	2	0.059	...	...	246	210
7	Carbon steel	Flat wire	SA-905	...	...	2	0.051	...	...	250	214
8	Carbon steel	Flat wire	SA-905	...	...	2	0.040	...	...	256	221
9	Carbon steel	Flat wire	SA-905	...	...	2	0.030	...	...	262	226
10	Carbon steel	Flat wire	SA-905	...	...	2	0.020	...	...	268	232
11	Carbon steel	Flat wire	SA-905	...	...	1	0.059	...	...	275	239
12	Carbon steel	Flat wire	SA-905	...	...	1	0.051	...	...	280	243
13	Carbon steel	Flat wire	SA-905	...	...	1	0.040	...	...	285	250
14	Carbon steel	Flat wire	SA-905	...	...	1	0.030	...	...	290	255
15	Carbon steel	Flat wire	SA-905	...	...	1	0.020	...	...	296	260
16	C–¼Mo	Bolt	SA-320	L7A	G40370	...	≤ 2½	...	...	125	105
17	C–½Mo	Plate	SA-517	J	K11625	...	...	11B	6	115	100
18	½Cr–⅕Mo–V	Plate	SA-517	B	K11630	...	...	11B	4	115	100
19	½Cr–¼Mo–Si	Plate	SA-517	A	K11856	...	...	11B	1	115	100
20	1Cr–⅕Mo	Bolt	SA-193	B7	G41400	...	> 4	...	...	100	75
21	1Cr–⅕Mo	Bolt	SA-320	L7M	G41400	...	≤ 2½	...	...	100	80
22	1Cr–⅕Mo	Bolt	SA-193	B7	G41400	...	2½ < t ≤ 4	...	...	115	95
23	1Cr–⅕Mo	Forgings	SA-372	E	K13047	70	...	...	...	120	70
24	1Cr–⅕Mo	Forgings	SA-372	F	G41350	70	...	...	...	120	70
25	1Cr–⅕Mo	Bolt	SA-193	B7	G41400	...	≤ 2½	...	...	125	105
26	1Cr–⅕Mo	Bolt	SA-320	L7	G41400	...	≤ 2½	...	...	125	105
27	1Cr–⅕Mo	Forgings	SA-372	J	G41370	110	...	...	...	135	110
28	1Cr–½Mo–V	Bolt	SA-193	B16	K14072	...	> 4	...	...	100	85
29	1Cr–½Mo–V	Bolt	SA-193	B16	K14072	...	2½ < t ≤ 4	...	...	110	95
30	1Cr–½Mo–V	Bolt	SA-193	B16	K14072	...	≤ 2½	...	...	125	105
31	1¾Cr–½Mo–Ti	Plate	SA-517	E	K21604	...	> 2½	11B	2	105	90
32	1¾Cr–½Mo–Ti	Plate	SA-517	E	K21604	...	≤ 2½	11B	2	115	100
33	2¼Cr–1Mo	Forgings	SA-336	F22	K21590	3	...	5	1	75	45
34	13Cr–8Ni–2Mo	Forgings	SA-705	XM-13	S13800	H1150M	...	...	...	125	85
35	13Cr–8Ni–2Mo	Forgings	SA-705	XM-13	S13800	H1150	...	...	...	135	90
36	13Cr–8Ni–2Mo	Forgings	SA-705	XM-13	S13800	H1100	...	...	...	150	135

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TABLE Y-3
SECTION VIII, DIVISION 3
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Notes	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding												
		100	200	300	400	500	550	600	650	700	750	800	850	900
														Ferrous Materials
1	...	35.0	31.9	31.0	30.0	28.3	...	25.9	25.4	25.2	...	...	...	...
2	...	36.0	33.0	31.8	30.8	29.3	...	27.6	26.7	25.8	...	...	...	...
3	...	70.0	64.1	60.9	58.3	55.7	...	53.6	52.9	51.9	...	...	...	...
4	...	70.0	64.1	60.9	58.3	55.7	...	53.6	52.9	51.9	...	...	...	...
5	...	75.0	68.7	65.3	62.5	59.6	...	57.4	56.6	55.7	...	...	...	...
6	(1)(2)	210.0	...	...	...	...	...	...	...	...	...	...	...	...
7	(1)(2)	214.0	...	...	...	...	...	...	...	...	...	...	...	...
8	(1)(2)	221.0	...	...	...	...	...	...	...	...	...	...	...	...
9	(1)(2)	226.0	...	...	...	...	...	...	...	...	...	...	...	...
10	(1)(2)	232.0	...	...	...	...	...	...	...	...	...	...	...	...
11	(1)(2)	239.0	224.0	...	...	...	...	...	...	...	...	...	...	...
12	(1)(2)	243.0	228.0	...	...	...	...	...	...	...	...	...	...	...
13	(1)(2)	250.0	234.0	...	...	...	...	...	...	...	...	...	...	...
14	(1)(2)	255.0	239.0	...	...	...	...	...	...	...	...	...	...	...
15	(1)(2)	260.0	244.0	...	...	...	...	...	...	...	...	...	...	...
16	...	105.0	...	...	...	...	...	...	...	...	...	...	...	...
17	(3)	100.0	95.5	92.5	89.8	87.6	...	85.5	84.3	83.0	...	...	...	...
18	(3)	100.0	95.5	92.5	89.8	87.6	...	85.5	84.3	83.0	...	...	...	...
19	(3)	100.0	95.5	92.5	89.8	87.6	...	85.5	84.3	83.0	...	...	...	...
20	...	75.0	69.9	67.2	65.4	63.2	...	60.9	59.2	...	...	...	...	...
21	(4)	80.0	...	...	...	...	...	...	...	...	...	...	...	...
22	...	95.0	88.5	85.1	82.3	80.1	...	77.1	75.1	...	...	...	...	...
23	(5)(6)	70.0	66.9	65.4	64.5	63.6	...	62.6	62.0	61.4	...	...	...	...
24	(5)(6)(7)	70.0	66.4	64.1	60.8	60.5	...	58.8	56.9	54.1	...	...	...	...
25	...	105.0	98.0	94.1	91.5	88.5	...	85.3	83.0	...	...	...	...	...
26	(4)	105.0	98.0	94.1	91.5	88.5	...	85.3	83.0	...	...	...	...	...
27	(5)(6)(7)(8)	110.0	103.0	97.4	93.2	89.0	...	85.7	83.6	...	...	...	...	...
28	...	85.0	82.5	80.7	78.9	77.1	...	75.0	73.1	71.4	...	...	...	...
29	...	95.0	92.1	90.0	88.2	86.4	...	83.7	81.7	79.8	...	...	...	...
30	...	105.0	102.0	99.6	97.5	95.4	...	92.5	90.3	88.2	...	...	...	...
31	(9)	90.0	86.0	83.3	80.8	78.8	...	77.0	75.9	74.7	...	...	...	...
32	...	100.0	95.5	92.5	89.8	87.6	...	85.5	84.3	83.0	...	...	...	...
33	...	45.0	41.3	39.2	38.3	37.2	...	36.5	36.0	35.6	...	...	...	...
34	...	85.0	...	...	...	...	...	...	...	...	...	...	...	...
35	...	90.0	...	...	...	...	...	...	...	...	...	...	...	...
36	...	135.0	...	...	...	...	...	...	...	...	...	...	...	...

01

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TABLE Y-3 (CONT'D)
SECTION VIII, DIVISION 3
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	UNS No.	Class/ Cond./ Temper	Thickness, in.	P-No.	Group No.	Specified Min. Tensile, ksi	Specified Min. Yield, ksi
	Ferrous Materials (Cont'd)										
1	13Cr–8Ni–2Mo	Forgings	SA-705	XM-13	S13800	H1050	...	...	...	175	165
2	13Cr–8Ni–2Mo	Forgings	SA-705	XM-13	S13800	H1025	...	...	...	185	175
3	13Cr–8Ni–2Mo	Forgings	SA-705	XM-13	S13800	H1000	...	...	...	205	190
4	13Cr–8Ni–2Mo	Forgings	SA-705	XM-13	S13800	H950	...	...	...	220	205
5	15Cr–5Ni–3Cu	Forgings	SA-705	XM-12	S15500	H1150M	...	...	...	115	75
6	15Cr–5Ni–3Cu	Forgings	SA-705	XM-12	S15500	H1150	...	...	...	135	105
01 7	15Cr–5Ni–3Cu	Forgings	SA-705	XM-12	S15500	H1100	...	...	...	140	115
8	15Cr–5Ni–3Cu	Forgings	SA-705	XM-12	S15500	H1075	...	...	...	145	125
9	15Cr–5Ni–3Cu	Forgings	SA-705	XM-12	S15500	H1025	...	...	...	155	145
10	15Cr–5Ni–3Cu	Forgings	SA-705	XM-12	S15500	H925	...	...	...	170	155
11	15Cr–5Ni–3Cu	Forgings	SA-705	XM-12	S15500	H900	...	...	...	190	170
12	15Cr–6Ni–Cu–Mo	Forgings	SA-705	XM-25	S45000	H1150	...	...	...	125	75
13	15Cr–6Ni–Cu–Mo	Forgings	SA-705	XM-25	S45000	H1100	...	...	...	130	105
14	15Cr–6Ni–Cu–Mo	Forgings	SA-705	XM-25	S45000	H1050	...	...	...	145	135
15	15Cr–6Ni–Cu–Mo	Forgings	SA-705	XM-25	S45000	H1025	...	...	...	150	140
16	15Cr–6Ni–Cu–Mo	Forgings	SA-705	XM-25	S45000	H1000	...	...	...	160	150
17	15Cr–6Ni–Cu–Mo	Forgings	SA-705	XM-25	S45000	H950	...	...	...	170	160
18	15Cr–6Ni–Cu–Mo	Forgings	SA-705	XM-25	S45000	H900	...	...	...	180	170
19	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1150M	...	...	...	115	75
20	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1150	...	...	...	135	105
21	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1150	...	...	...	135	105
22	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1100	...	...	...	140	115
23	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1100	...	...	...	140	115
24	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1075	...	...	...	145	125
25	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1075	...	...	...	145	125
26	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1025	...	...	...	155	145
27	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1025	...	...	...	155	145
28	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H925	...	...	...	170	155
29	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H900	...	...	...	190	170
30	17Cr–4Ni–1Al	Forgings	SA-705	631	S17700	TH1050	...	...	...	170	140
31	17Cr–4Ni–1Al	Forgings	SA-705	631	S17700	RH950	...	...	...	185	150
32	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	3	...	...	...	100	83
33	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	3	...	...	...	100	83
34	Mn–½Ni–V	Plate	SA-225	C	K12524	...	...	10A	1	105	70

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TABLE Y-3 (CONT'D)
SECTION VIII, DIVISION 3
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Notes	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding												
		100	200	300	400	500	550	600	650	700	750	800	850	900
														Ferrous Materials (Cont'd)
1	(10)	165.0	...	...	...	...	...	...	...	...	...	...	...	...
2	(10)	175.0	...	...	...	...	...	...	...	...	...	...	...	...
3	(10)	190.0	...	...	...	...	...	...	...	...	...	...	...	...
4	(10)	205.0	...	...	...	...	...	...	...	...	...	...	...	...
5	...	75.0	...	...	...	...	...	...	...	...	...	...	...	...
6	...	105.0	...	...	...	...	...	...	...	...	...	...	...	...
7	(13)(19)	115.0	107.1	103.2	100.5	98.1	96.8	...	...	...	...	...	...	... **01**
8	...	125.0	...	...	...	...	...	...	...	...	...	...	...	...
9	(10)	145.0	...	...	...	...	...	...	...	...	...	...	...	...
10	(10)	155.0	...	...	...	...	...	...	...	...	...	...	...	...
11	(10)	170.0	...	...	...	...	...	...	...	...	...	...	...	...
12	...	75.0	...	...	...	...	...	...	...	...	...	...	...	...
13	...	105.0	...	...	...	...	...	...	...	...	...	...	...	...
14	...	135.0	...	...	...	...	...	...	...	...	...	...	...	...
15	(10)	140.0	...	...	...	...	...	...	...	...	...	...	...	...
16	(10)	150.0	...	...	...	...	...	...	...	...	...	...	...	...
17	(10)	160.0	...	...	...	...	...	...	...	...	...	...	...	...
18	(10)	170.0	...	...	...	...	...	...	...	...	...	...	...	...
19	...	75.0	...	...	...	...	...	...	...	...	...	...	...	...
20	(13)(18)	105.0	97.1	93.0	89.7	87.0	85.8	...	...	...	...	...	...	...
21	...	105.0	97.1	93.0	89.8	87.0	...	...	...	...	...	...	...	...
22	(13)(18)	115.0	106.3	101.8	98.3	95.2	93.9	...	...	...	...	...	...	...
23	...	115.0	106.3	101.9	98.3	95.2	...	...	...	...	...	...	...	...
24	(13)(18)	125.0	115.6	110.7	106.8	103.5	102.1	...	...	...	...	...	...	...
25	...	125.0	115.6	110.7	106.9	103.5	...	...	...	...	...	...	...	...
26	(13)(18)	145.0	134.1	128.4	123.9	120.1	118.4	...	...	...	...	...	...	...
27	(10)	145.0	...	...	...	...	...	...	...	...	...	...	...	...
28	(10)	155.0	...	...	...	...	...	...	...	...	...	...	...	...
29	(10)	170.0	...	...	...	...	...	...	...	...	...	...	...	...
30	...	140.0	...	...	...	...	...	...	...	...	...	...	...	...
31	(10)	150.0	...	...	...	...	...	...	...	...	...	...	...	...
32	...	83.0	78.9	76.5	74.9	73.9	...	72.8	72.2	71.5	...	...	...	...
33	...	83.0	78.9	76.5	74.9	73.9	...	72.8	72.2	71.5	...	...	...	...
34	(11)	70.0	64.0	62.0	59.9	56.6	...	51.7	50.8	50.4	...	...	...	...

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TABLE Y-3 (CONT'D)
SECTION VIII, DIVISION 3
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	UNS No.	Class/ Cond./ Temper	Thickness, in.	P-No.	Group No.	Specified Min. Tensile, ksi	Specified Min. Yield, ksi
		Ferrous Materials (Cont'd)										
	1	$\frac{3}{4}$Ni–$\frac{1}{2}$Cr–$\frac{1}{2}$Mo–Si	Plate	SA-517	F	K11576	...	...	11B	3	115	100
	2	$\frac{3}{4}$Ni–$\frac{1}{2}$Mo–$\frac{1}{3}$Cr–V	Forgings	SA-508	2	K12766	1	...	3	3	80	50
	3	$\frac{3}{4}$Ni–$\frac{1}{2}$Mo–Cr–V	Forgings	SA-508	3	K12042	1	...	3	3	80	50
	4	1$\frac{1}{4}$Ni–1Cr–$\frac{1}{2}$Mo	Plate	SA-517	P	K21650	...	> 2$\frac{1}{2}$	11B	8	105	90
	5	1$\frac{1}{4}$Ni–1Cr–$\frac{1}{2}$Mo	Plate	SA-517	P	K21650	...	≤ 2$\frac{1}{2}$	11B	8	115	100
	6	1$\frac{3}{4}$Ni–$\frac{3}{4}$Cr–$\frac{1}{4}$Mo	Bolt	SA-320	L43	G43400	...	≤ 4	...	...	125	105
01	7	2Ni–1$\frac{1}{2}$Cr–$\frac{1}{4}$Mo–V	Forgings	SA-723	1	K23550	1	...	...	...	115	100
01	8	2Ni–1$\frac{1}{2}$Cr–$\frac{1}{4}$Mo–V	Forgings	SA-723	1	K23550	2	...	...	...	135	120
01	9	2Ni–1$\frac{1}{2}$Cr–$\frac{1}{4}$Mo–V	Forgings	SA-723	1	K23550	3	...	...	...	155	140
01	10	2Ni–1$\frac{1}{2}$Cr–$\frac{1}{4}$Mo–V	Forgings	SA-723	1	K23550	4	...	...	...	175	160
01	11	2Ni–1$\frac{1}{2}$Cr–$\frac{1}{4}$Mo–V	Forgings	SA-723	1	K23550	5	...	...	...	190	180
01	12	2$\frac{3}{4}$Ni–1$\frac{1}{2}$Cr–$\frac{1}{2}$Mo–V	Forgings	SA-723	2	K34035	1	...	...	...	115	100
01	13	2$\frac{3}{4}$Ni–1$\frac{1}{2}$Cr–$\frac{1}{2}$Mo–V	Forgings	SA-723	2	K34035	2	...	...	...	135	120
01	14	2$\frac{3}{4}$Ni–1$\frac{1}{2}$Cr–$\frac{1}{2}$Mo–V	Forgings	SA-723	2	K34035	3	...	...	...	155	140
01	15	2$\frac{3}{4}$Ni–1$\frac{1}{2}$Cr–$\frac{1}{2}$Mo–V	Forgings	SA-723	2	K34035	4	...	...	...	175	160
01	16	2$\frac{3}{4}$Ni–1$\frac{1}{2}$Cr–$\frac{1}{2}$Mo–V	Forgings	SA-723	2	K34035	5	...	...	...	190	180
	17	3$\frac{1}{2}$Ni–1$\frac{3}{4}$Cr–$\frac{1}{2}$Mo	Forgings	SA-508	4N	K22375	3	...	3	3	90	70
	18	3$\frac{1}{2}$Ni–1$\frac{3}{4}$Cr–$\frac{1}{2}$Mo	Forgings	SA-508	4N	K22375	1	...	11A	5	105	85
	19	3$\frac{1}{2}$Ni–1$\frac{3}{4}$Cr–$\frac{1}{2}$Mo	Forgings	SA-508	4N	K22375	2	...	11A	5	115	100
	20	3$\frac{1}{2}$Ni–1$\frac{3}{4}$Cr–$\frac{1}{2}$Mo–V	Forgings	SA-541	4N	K42343	3	...	...	...	90	70
	21	3$\frac{1}{2}$Ni–1$\frac{3}{4}$Cr–$\frac{1}{2}$Mo–V	Forgings	SA-541	5	K42348	1	...	...	...	105	85
	22	3$\frac{1}{2}$Ni–1$\frac{3}{4}$Cr–$\frac{1}{2}$Mo–V	Forgings	SA-541	4N	K42343	2	...	...	...	115	100
	23	3$\frac{1}{2}$Ni–1$\frac{3}{4}$Cr–$\frac{1}{2}$Mo–V	Forgings	SA-541	5	K42348	2	...	...	...	115	100
01	24	4Ni–1$\frac{1}{2}$Cr–$\frac{1}{2}$Mo–V	Forgings	SA-723	3	K44045	1	...	...	...	115	100
01	25	4Ni–1$\frac{1}{2}$Cr–$\frac{1}{2}$Mo–V	Forgings	SA-723	3	K44045	2	...	...	...	135	120
01	26	4Ni–1$\frac{1}{2}$Cr–$\frac{1}{2}$Mo–V	Forgings	SA-723	3	K44045	3	...	...	...	155	140
01	27	4Ni–1$\frac{1}{2}$Cr–$\frac{1}{2}$Mo–V	Forgings	SA-723	3	K44045	4	...	...	...	175	160
01	28	4Ni–1$\frac{1}{2}$Cr–$\frac{1}{2}$Mo–V	Forgings	SA-723	3	K44045	5	...	...	...	190	180
	29	25Ni–15Cr–2Ti	Bolt	SA-453	660	S66286	A	...	...	...	130	85
	30	25Ni–15Cr–2Ti	Bolt	SA-453	660	S66286	B	...	...	...	130	85
	31	25Ni–15Cr–2Ti	Forgings	SA-638	660	S66286	1	...	...	...	130	85
	32	25Ni–15Cr–2Ti	Forgings	SA-638	660	S66286	2	...	...	...	130	85
	33	16Cr–12Ni–2Mo	Forgings	SA-336	F316	S31600	...	...	8	1	70	30
	34	16Cr–12Ni–2Mo	Forgings	SA-336	F316H	S31609	...	...	8	1	70	30
	35	16Cr–12Ni–2Mo	Bolt	SA-320	B8M	S31600	1	...	...	...	75	30
	36	16Cr–12Ni–2Mo	Bolt	SA-320	B8MA	S31600	1A	...	...	...	75	30

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TABLE Y-3 (CONT'D)
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YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Notes	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
		100	200	300	400	500	550	600	650	700	750	800	850	900	
														Ferrous Materials (Cont'd)	
1	(12)	100.0	95.5	92.5	89.8	87.6	...	85.5	84.3	83.0	...	...	...	...	
2	...	50.0	47.2	45.3	44.5	43.2	...	42.0	41.4	40.6	...	...	...	...	
3	...	50.0	47.2	45.3	44.5	43.2	...	42.0	41.4	40.6	...	...	...	...	
4	(9)	90.0	86.0	83.3	80.8	78.8	...	77.0	75.9	74.7	...	...	...	...	
5	...	100.0	95.5	92.5	89.8	87.6	...	85.5	84.3	83.0	...	...	...	...	
6	...	105.0	99.0	95.7	91.8	88.5	...	84.3	82.1	79.2	...	...	...	...	
7	(13)(17)	100.0	96.0	93.5	91.9	90.6	...	88.9	87.6	86.0	84.0	81.6	...	...	**01**
8	(13)(17)	120.0	115.2	112.2	110.3	108.8	...	106.7	105.2	103.2	100.8	97.9	...	...	**01**
9	(13)(17)	140.0	134.4	130.9	128.7	126.9	...	124.5	122.7	120.4	117.6	114.2	...	...	**01**
10	(10)(13)	160.0	153.6	149.6	147.1	145.0	...	142.2	140.2	137.6	...	...	...	...	**01**
11	(10)(13)	180.0	172.8	168.3	165.5	163.2	...	160.0	157.7	154.8	...	...	...	...	**01**
12	(13)(17)	100.0	96.0	93.5	91.9	90.6	...	88.9	87.6	86.0	84.0	81.6	...	...	**01**
13	(13)(17)	120.0	115.2	112.2	110.3	108.8	...	106.7	105.2	103.2	100.8	97.9	...	...	**01**
14	(13)(17)	140.0	134.4	130.9	128.7	126.9	...	124.5	122.7	120.4	117.6	114.2	...	...	**01**
15	(10)(13)	160.0	153.6	149.6	147.1	145.0	...	142.2	140.2	137.6	...	...	...	...	**01**
16	(10)(13)	180.0	172.8	168.3	165.5	163.2	...	160.0	157.7	154.8	...	...	...	...	**01**
17	...	70.0	66.0	63.8	62.4	61.4	...	60.3	59.5	58.7	...	...	...	...	
18	...	85.0	80.0	77.5	75.8	74.5	...	73.2	72.3	71.3	...	...	...	...	
19	...	100.0	94.2	91.2	89.2	87.7	...	86.1	85.0	...	...	...	...	...	
20	...	70.0	65.9	63.8	62.4	61.4	...	60.3	59.6	58.7	...	...	...	...	
21	...	85.0	80.0	77.5	75.8	74.5	...	73.2	72.3	71.3	...	...	...	...	
22	...	100.0	94.2	91.2	89.2	87.7	...	86.1	85.0	83.9	...	...	...	...	
23	...	100.0	94.2	91.2	89.2	87.7	...	86.1	85.0	83.9	...	...	...	...	
24	(13)(17)	100.0	96.0	93.5	91.9	90.6	...	88.9	87.6	86.0	84.0	81.6	...	...	**01**
25	(13)(17)	120.0	115.2	112.2	110.3	108.8	...	106.7	105.2	103.2	100.8	97.9	...	...	**01**
26	(13)(17)	140.0	134.4	130.9	128.7	126.9	...	124.5	122.7	120.4	117.6	114.2	...	...	**01**
27	(10)(13)	160.0	153.6	149.6	147.1	145.0	...	142.2	140.2	137.6	...	...	...	...	**01**
28	(10)(13)	180.0	172.8	168.3	165.5	163.2	...	160.0	157.7	154.8	...	...	...	...	**01**
29	...	85.0	82.5	81.0	81.0	81.0	...	81.0	81.0	81.0	81.0	81.0	81.0	81.0	
30	...	85.0	82.5	81.0	81.0	81.0	...	81.0	81.0	81.0	81.0	81.0	81.0	81.0	
31	...	85.0	82.5	81.0	81.0	81.0	...	81.0	81.0	81.0	81.0	81.0	81.0	81.0	
32	...	85.0	82.5	81.0	81.0	81.0	...	81.0	81.0	81.0	81.0	81.0	81.0	81.0	
33	...	30.0	25.9	23.4	21.4	20.0	...	18.9	18.5	18.1	17.9	17.6	...	...	
34	...	30.0	25.9	23.4	21.4	20.0	...	18.9	18.5	18.1	17.9	17.6	...	...	
35	...	30.0	25.8	23.3	21.4	19.9	...	18.8	18.5	18.1	17.8	17.6	...	...	
36	...	30.0	25.8	23.3	21.4	19.9	...	18.8	18.5	18.1	17.8	17.6	...	...	

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TABLE Y-3 (CONT'D)
SECTION VIII, DIVISION 3
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/ Grade	UNS No.	Class/ Cond./ Temper	Thickness, in.	P-No.	Group No.	Specified Min. Tensile, ksi	Specified Min. Yield, ksi
	Ferrous Materials (Cont'd)										
1	16Cr–12Ni–2Mo	Bar	SA-479	316	S31600	...	...	8	1	75	30
2	16Cr–12Ni–2Mo	Bar	SA-479	316H	S31609	...	...	8	1	75	30
3	16Cr–12Ni–2Mo	Bolt	SA-320	B8M	S31600	2	$1\frac{1}{4} < t \le 1\frac{1}{2}$	...	...	90	50
4	16Cr–12Ni–2Mo	Bolt	SA-320	B8M	S31600	2	$1 < t \le 1\frac{1}{4}$	...	...	95	65
5	16Cr–12Ni–2Mo	Bolt	SA-320	B8M	S31600	2	$\frac{3}{4} < t \le 1$	...	...	100	80
6	16Cr–12Ni–2Mo	Bolt	SA-320	B8M	S31600	2	$\le \frac{3}{4}$	...	...	110	95
7	18Cr–8Ni	Bolt	SA-320	B8	S30400	1	...	...	...	75	30
8	18Cr–8Ni	Bolt	SA-320	B8A	S30400	1A	...	...	...	75	30
9	18Cr–8Ni	Bolt	SA-320	B8	S30400	2	$1\frac{1}{4} < t \le 1\frac{1}{2}$	...	...	100	50
10	18Cr–8Ni	Bolt	SA-320	B8	S30400	2	$1 < t \le 1\frac{1}{4}$	...	...	105	65
11	18Cr–8Ni	Bolt	SA-320	B8	S30400	2	$\frac{3}{4} < t \le 1$	...	...	115	80
12	18Cr–8Ni	Bolt	SA-320	B8	S30400	2	$\le \frac{3}{4}$	...	...	125	100
13	18Cr–8Ni–S	Bolt	SA-320	B8F	S30300	1	...	...	...	75	30
14	18Cr–8Ni–S	Bolt	SA-320	B8FA	S30300	1A	...	...	...	75	30
15	18Cr–8Ni–Se	Bolt	SA-320	B8F	S30323	1	...	...	...	75	30
16	18Cr–8Ni–Se	Bolt	SA-320	B8FA	S30323	1A	...	...	...	75	30
17	18Cr–10Ni–Cb	Bolt	SA-320	B8C	S34700	1	...	...	...	75	30
18	18Cr–10Ni–Cb	Bolt	SA-320	B8CA	S34700	1A	...	...	...	75	30
19	18Cr–10Ni–Cb	Bolt	SA-320	B8C	S34700	2	$1\frac{1}{4} < t \le 1\frac{1}{2}$	...	...	100	50
20	18Cr–10Ni–Cb	Bolt	SA-320	B8C	S34700	2	$1 < t \le 1\frac{1}{4}$	...	...	105	65
21	18Cr–10Ni–Cb	Bolt	SA-320	B8C	S34700	2	$\frac{3}{4} < t \le 1$	...	...	115	80
22	18Cr–10Ni–Cb	Bolt	SA-320	B8C	S34700	2	$\le \frac{3}{4}$	...	...	125	100
23	18Cr–10Ni–Ti	Bolt	SA-320	B8T	S32100	1	...	...	...	75	30
24	18Cr–10Ni–Ti	Bolt	SA-320	B8TA	S32100	1A	...	...	...	75	30
25	18Cr–10Ni–Ti	Bolt	SA-320	B8T	S32100	2	$1\frac{1}{4} < t \le 1\frac{1}{2}$	...	...	100	50
26	18Cr–10Ni–Ti	Bolt	SA-320	B8T	S32100	2	$1 < t \le 1\frac{1}{4}$	...	...	105	65
27	18Cr–10Ni–Ti	Bolt	SA-320	B8T	S32100	2	$\frac{3}{4} < t \le 1$	...	...	115	80
28	18Cr–10Ni–Ti	Bolt	SA-320	B8T	S32100	2	$\le \frac{3}{4}$	...	...	125	100
	Nonferrous Materials										
29	67Ni–30Cu	Bar	SB-164	...	N04400	Annealed	...	42	...	70	25
30	67Ni–30Cu	Forgings	SB-564	...	N04400	Annealed	...	42	...	70	25
31	72Ni–15Cr–8Fe	Bar	SB-166	...	N06600	Annealed	...	43	...	80	35
32	72Ni–15Cr–8Fe	Forgings	SB-564	...	N06600	Annealed	...	43	...	80	35
33	42Fe–33Ni–21Cr	Bar	SB-408	...	N08800	Annealed	...	45	...	75	30
34	42Fe–33Ni–21Cr	Plate	SB-409	...	N08800	Annealed	...	45	...	75	30
35	42Fe–33Ni–21Cr	Forgings	SB-564	...	N08800	Annealed	...	45	...	75	30
36	42Fe–33Ni–21Cr	Bar	SB-408	...	N08810	Annealed	...	45	...	65	25
37	42Fe–33Ni–21Cr	Plate	SB-409	...	N08810	Annealed	...	45	...	65	25
38	42Fe–33Ni–21Cr	Forgings	SB-564	...	N08810	Annealed	...	45	...	65	25
39	54Ni–16Cr–16Mo–5.5Fe	Bar	SB-574	...	N10276	Solution ann.	...	44	...	100	41

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TABLE Y-3 (CONT'D)
SECTION VIII, DIVISION 3
YIELD STRENGTH VALUES S_y FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Notes	Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding												
		100	200	300	400	500	550	600	650	700	750	800	850	900
														Ferrous Materials (Cont'd)
1	(14)(15)	30.0	25.9	23.4	21.4	20.0	...	18.9	18.5	18.1	17.9	17.6	...	...
2	(14)	30.0	25.9	23.4	21.4	20.0	...	18.9	18.5	18.1	17.9	17.6	...	...
3	(16)	50.0	...	...	...	...	...	...	...	...	...	...	...	...
4	(16)	65.0	...	...	...	...	...	...	...	...	...	...	...	...
5	(16)	80.0	...	...	...	...	...	...	...	...	...	...	...	...
6	(16)	95.0	...	...	...	...	...	...	...	...	...	...	...	...
7	...	30.0	25.0	22.5	20.7	19.4	...	18.2	17.9	17.7	17.3	16.8	...	...
8	...	30.0	25.0	22.5	20.7	19.4	...	18.2	17.9	17.7	17.3	16.8	...	...
9	(16)	50.0	...	...	...	...	...	...	...	...	...	...	...	...
10	(16)	65.0	...	...	...	...	...	...	...	...	...	...	...	...
11	(16)	80.0	...	...	...	...	...	...	...	...	...	...	...	...
12	(16)	100.0	...	...	...	...	...	...	...	...	...	...	...	...
13	...	30.0	25.0	22.5	20.7	19.4	...	18.2	17.9	17.7	17.3	16.9	...	...
14	...	30.0	25.0	22.5	20.7	19.4	...	18.2	17.9	17.7	17.3	16.9	...	...
15	...	30.0	25.0	22.5	20.7	19.4	...	18.2	17.9	17.7	17.3	16.9	...	...
16	...	30.0	25.0	22.5	20.7	19.4	...	18.2	17.9	17.7	17.3	16.9	...	...
17	...	30.0	27.5	25.6	23.9	22.5	...	21.4	21.0	20.6	20.5	20.3	...	...
18	...	30.0	27.5	25.6	23.9	22.5	...	21.4	21.0	20.6	20.5	20.3	...	...
19	(16)	50.0	...	...	...	...	...	...	...	...	...	...	...	...
20	(16)	65.0	...	...	...	...	...	...	...	...	...	...	...	...
21	(16)	80.0	...	...	...	...	...	...	...	...	...	...	...	...
22	(16)	100.0	...	...	...	...	...	...	...	...	...	...	...	...
23	...	30.0	26.9	24.8	23.0	21.5	...	20.3	19.9	19.4	19.1	18.8	...	...
24	...	30.0	26.9	24.8	23.0	21.5	...	20.3	19.9	19.4	19.1	18.8	...	...
25	(16)	50.0	...	...	...	...	...	...	...	...	...	...	...	...
26	(16)	65.0	...	...	...	...	...	...	...	...	...	...	...	...
27	(16)	80.0	...	...	...	...	...	...	...	...	...	...	...	...
28	(16)	100.0	...	...	...	...	...	...	...	...	...	...	...	...
														Nonferrous Materials
29	...	25.0	22.0	20.6	19.9	19.9	...	19.9	19.9	19.9	19.5	19.1	...	...
30	...	25.0	22.0	20.5	19.8	19.8	...	19.8	19.8	19.8	19.5	19.0	...	...
31	...	35.0	32.7	31.0	29.9	28.8	...	27.9	27.4	27.0	26.5	26.1	...	...
32	...	35.0	32.7	31.0	29.8	28.8	...	27.9	27.4	27.0	26.5	26.1	...	...
33	...	30.0	27.6	26.0	25.0	24.1	...	23.9	23.7	23.5	23.3	23.0	...	...
34	...	30.0	27.6	26.0	25.0	24.1	...	23.9	23.7	23.5	23.3	23.0	...	...
35	...	30.0	27.6	26.0	25.0	24.1	...	23.9	23.7	23.5	23.3	23.0	...	...
36	...	25.0	22.5	21.1	20.0	19.0	...	18.3	17.7	17.5	17.2	17.0	...	...
37	...	25.0	22.5	21.1	20.0	19.0	...	18.3	17.7	17.5	17.2	17.0	...	...
38	...	25.0	23.1	21.7	20.3	19.3	...	18.3	17.8	17.5	17.1	16.7	...	...
39	...	41.0	37.4	34.5	31.9	29.9	...	28.2	...	26.6	...	25.2	...	...

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NOTES TO TABLE Y-3

GENERAL NOTES:

(a) The tabulated values of yield strength are those which are suitable for use in design calculations required by this Division. At temperatures above room temperature, the yield strength values correspond to the yield strength trend curve adjusted to the minimum specified room temperature yield strength. The yield strength values do not correspond exactly to either average or minimum as these terms are applied to a statistical treatment of a homogenous set of data. Neither the ASME Material Specifications nor the rules of this Division require elevated temperature testing for yield strengths of production material for use in Code components. It is not intended that results of such tests, if performed, be compared with these tabulated yield strength values for ASME Code acceptance/rejection purposes for materials.

(b) The following abbreviations are used: ann., annealed; Cond., Condition; and Smls., Seamless.

NOTES:

(1) This material is permitted only in wire form when used for wire-wound vessels and wire-wound frames as described in Article KD-9 of Section VIII, Division 3.

(2) Strength values for intermediate thickness may be interpolated.

(3) The maximum nominal plate thickness shall not exceed $1\frac{1}{4}$ in.

(4) The minimum tempering temperature shall be 800°F.

(5) These yield strength values apply to liquid quenched and tempered materials only.

(6) Section IX, QW-250 Variables QW-404.12, QW-406.3, QW-407.2, and QW-409.1 shall also apply to this material. These variables shall be applied in accordance with the rules for welding of Part KF of Section VIII, Division 3.

(7) Welding is not permitted when carbon content exceeds 0.35% by ladle analysis except as permitted in Article KF-7 of Section VIII, Division 3.

(8) The nominal wall thickness of the cylindrical shell of vessels constructed of SA-372 Grade J, Class 110 material shall not exceed 2 in.

(9) The maximum nominal plate thickness shall not exceed 6.00 in. for Grade E or 4.00 in. for Grade P.

(10) This material is permitted only when used as a prestressed inner layer in a vessel whose design meets the leak-before-burst criteria of KD-141 of Section VIII, Division 3.

(11) The maximum nominal plate thickness shall not exceed 0.58 in.

(12) The maximum nominal plate thickness shall not exceed 2.50 in.

(13) No welding is permitted on this material.

(14) A tensile strength of 70 ksi minimum is permitted for extruded shapes.

(15) Yield strength values listed are for material in the annealed condition.

(16) For all design temperatures, the maximum hardness shall be Rockwell C35 immediately under thread roots. The hardness shall be taken on a flat area at least $\frac{1}{8}$ in. across, prepared by removing threads; no more material than necessary shall be removed to prepare the flat area. Hardness determinations shall be made at the same frequency as tensile tests.

(17) Caution is advised when using this material above 700°F. After exposure to temperatures above 700°F, this material may exhibit temper embrittlement and stress relaxation effects. The designer shall consider these effects and their influence on the vessel.

(18) This material has reduced toughness at room temperature after exposure at high temperature. The degree of embrittlement depends on composition, heat treatment, time, and temperature. The lowest temperature of concern is about 500°F. See Appendix 6, 6-360.

01 (19) Caution is advised when using this material at 550°F. After prolonged exposure at 550°F, the toughness of this material may be reduced. See Appendix 6, 6-360.

01 (20) ...

01 (21) ...

01 (22) ...

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