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2007 ASME Boiler & Pressure Vessel Code

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II

Part D

Properties (Customary)

MATERIALS

ASME Boiler and Pressure Vessel Committee
Subcommittee on Materials

The American Society of Mechanical Engineers

ASME SETTING THE STANDARD

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SUMMARY OF CHANGES

Addenda to the 2007 Edition of the Code are issued in the form of replacement pages. Revisions, additions, or deletions are incorporated directly into the affected pages. It is advisable, however, that all replaced pages be retained for reference.

Replace or insert the pages listed. Changes given below are identified on the pages by a margin note, **A08**, placed next to the affected area. Revisions to the 2007 Edition are indicated by **07**. For the listing below, the *Page* references the affected area. A margin note, **A08**, placed next to the heading indicates *Location*. Revisions are listed under *Change*.

The Record Numbers listed below are explained in more detail in "List of Changes in Record Number Order" following the Summary of Changes.

Page	*Location*	*Change (Record Number)*
xv–xxv	Roster	Updated to reflect 2008 Addenda
2–5	Guideline on Locating Materials	(1) Paragraph 1 revised *(05-1160)* (2) Paragraph 2 revised (3) Paragraphs 4 and 4.4 revised *(05-1160)* (4) Paragraph 4.5 deleted *(05-1160)*
14–17	Table 1A, Line 30	For Sections I and VIII, Division 1, Carbon steel SA/EN 10028-2 P295GH added *(01-610)*
	Table 1A, Line 31	(1) For I and VIII-1, for SA/EN 10028-2 P295GH, Size/Thickness revised *(01-610)* (2) For Section XII, SA/EN 10028-2 P295GH deleted *(01-610)*
	Table 1A, Line 42	For VIII-1, SA/GB 6654 16MnR added *(05-533)*
18–21	Table 1A, Line 4	(1) For I and VIII-1, for SA/EN 10028-2 P295GH, stress value for 700°F revised *(01-610)* (2) For XII, SA/EN 10028-2 P295GH deleted *(01-610)*
	Table 1A, Line 5	For I and VIII-1, for SA/EN 10028-2 P295GH, stress value for 700°F revised *(01-610)*
	Table 1A, Lines 6 & 7	For VIII-1, SA/GB 6654 16MnR added *(05-533)*
22–25	Table 1A, Lines 12 & 14	For VIII-1, SA/GB 6654 16MnR added *(05-533)*
26–29.4	Table 1A, Lines 5–12	For XII, C–Mn–Si–V–Cb SA-656 T3 and T7 added *(02-3339)*
30–33	Table 1A, Line 17	For Section III, $^{3}/_{4}$Cr–$^{3}/_{4}$Ni–Cu–Al SA-333 4 added *(07-1927)*
42–45	Table 1A, Line 40	For III, 12Cr–Al SA/JIS G4303 SUS405 added *(03-386)*
62–65	Table 1A, Lines 14 & 16	For VIII-1 and XII, for 3Ni–1$^{3}/_{4}$Cr–$^{1}/_{2}$Mo SA-372 M, Class revised *(04-1636)*
70–73	Table 1A, Line 1	(1) For VIII-1, for 16Cr–4Ni–6Mn SA-240 201LN, Max. Temperature Limit, External Pressure Chart No., and Notes revised, and stress values added *(07-800)* (2) For XII, SA-240 201LN added *(07-800)*
	Table 1A, Line 2	For VIII-1 and XII, SA-240 201LN added *(07-800)*

Page	Location	Change (Record Number)
	Table 1A, Line 32	For III, 16Cr–12Ni–2Mo SA/JIS G4303 SUS316L added *(03-386)*
74–77	Table 1A, Line 27	For III, SA/JIS G4303 SUS316 added *(03-386)*
78–81	Table 1A, Lines 13 & 14	For VIII-1, SA/EN 10028-7 X5CrNiMo17-12-2 added *(06-1330)*
86–89	Table 1A, Line 15	For III, 18Cr–8Ni SA/JIS G4303 SUS304L added *(03-386)*
94–97	Table 1A, Lines 8 & 9	For III, SA/JIS G4303 SUS302 and SUS304 added *(03-386)*
	Table 1A, Lines 10 & 11	For VIII-1, SA/EN 10028-7 X5CrNi18-10 added *(06-1330)*
102–105	Table 1A, Line 17	For III, 18Cr–10Ni–Cb SA/JIS G4303 SUS347 added *(03-386)*
114–117	Table 1A, Line 12	For III, 18Cr–10Ni–Ti SA/JIS G4303 SUS321 added *(03-386)*
142–145	Table 1A, Line 13	For III, 25Cr–20Ni SA/JIS G4303 SUS310S added *(03-386)*
150	Table 1A	Notes G10 and G11 revised *(00-547)*
186–189	Table 1B, Line 30	For III, C12500 O25 SB-152 deleted *(07-120)*
190–193	Table 1B, Line 1	For I, III, VIII-1, and XII, C23000 H58 SB-43 added *(07-1321)*
	Table 1B, Line 7	For III, VIII-1, and XII, line sorting sequence corrected for WO61 SB-543
210–213	Table 1B, Lines 7–21	For I, N06022 Solution ann. SB-366, SB-462, SB-564, SB-574, SB-575, SB-619, SB-622, and SB-626 added *(03-425)*
218–221.4	Table 1B, Lines 7–19	For VIII-1, N06210 Solution ann. SB-366, SB-564, SB-574, SB-575, SB-619, SB-622, and SB-626 added *(03-752)*
	Table 1B, Lines 40 & 41	For VIII-1 and XII, for N06455 Solution ann. SB-622, Product Form revised *(07-1933)*
	Table 1B, Lines 1 & 2	For III, VIII-1, and XII, for N06600 Hot fin./ann. SB-167, Size/Thickness added *(00-040)*
	Table 1B, Lines 4 & 5	For III, VIII-1 and XII, for Cold drawn/ann. SB-167, Size/Thickness added *(00-040)*
	Table 1B, Line 7	For III, VIII-1, and XII, for Hot fin./ann. SB-167, Size/Thickness added *(00-040)*
	Table 1B, Line 8	For VIII-1 and XII, for Hot fin./ann. SB-167, Size/Thickness added *(00-040)*
222–225	Table 1B, Lines 11 & 12	For I, III, VIII-1, and XII, for Cold drawn/ann. SB-167, Size/Thickness added *(00-040)*
	Table 1B, Lines 35–40	For I, N06625 Solution ann. SB-443, SB-444, and SB-446 added *(01-416)*
226–229	Table 1B, Lines 1–3	For I, Annealed SB-366, SB-446, and SB-564 added *(01-416)*
	Table 1B, Lines 5–8	For I, Annealed SB-443, SB-444, and SB-446 added *(01-416)*

Page	*Location*	*Change (Record Number)*
	Table 1B, Lines 10–12	For I, Annealed SB-564, SB-704, and SB-705 added *(01-416)*
258–261	Table 1B, Lines 7 & 8	For VIII-1, N10665 Solution ann. SB-564 added *(06-1641)*
262–265	Table 1B, Line 25	For I, III, and VIII-1, for R50250 Annealed SB-338, Min. Yield Strength and stress values for 450°F through 600°F revised *(06-470)*
	Table 1B, Line 26	For I, III, and VIII-1, for Annealed SB-338, Min. Yield Strength and stress values for 450°F through 550°F revised *(06-470)*
	Table 1B, Line 27	For I, III, and VIII-1, for Annealed SB-348, Min. Yield Strength and stress values for 450°F through 600°F revised *(06-470)*
	Table 1B, Lines 28 & 29	For III and VIII-1, for Annealed SB-363 and SB-381, Min. Yield Strength and stress values for 450°F through 600°F revised *(06-470)*
	Table 1B, Line 30	For I, III, and VIII-1, for Annealed SB-861, Min. Yield Strength and stress values for 450°F through 600°F revised *(06-470)*
	Table 1B, Line 31	For I, III, and VIII-1, for Annealed SB-862, Min. Yield Strength and stress values for 450°F through 550°F revised *(06-470)*
266–269.4	Table 1B, Lines 1–9	For VIII-1, R50400 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
	Table 1B, Lines 32–40	For VIII-1, R52400 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
	Table 1B, Lines 6–14	For VIII-1, R52402 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
	Table 1B, Lines 24–32	For VIII-1, R52404 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
296–298	Table 2A, Line 25	12Cr–Al SA/JIS G4303 SUS405 added *(03-386)*
308–310	Table 2A, Lines 1 & 2	16Cr–12Ni–2Mo SA-312 TP316L lines merged
	Table 2A, Line 10	SA/JIS G4303 SUS316L added *(03-386)*
	Table 2A, Lines 23 & 24	SA-312 TP316 lines merged
	Table 2A, Line 33	SA/JIS G4303 SUS316 added *(03-386)*
	Table 2A, Lines 38 & 39	SA-312 TP316H lines merged
316–318	Table 2A, Line 5	18Cr–8Ni SA/JIS G4303 SUS304L added *(03-386)*
	Table 2A, Line 16	SA/JIS G4303 SUS302 added *(03-386)*
	Table 2A, Lines 21 & 22	SA-312 TP304 lines merged
	Table 2A, Line 31	SA/JIS G4303 SUS304 added *(03-386)*
	Table 2A, Lines 36 & 37	SA-312 TP304H lines merged

Page	*Location*	*Change (Record Number)*
324–326	Table 2A, Lines 5 & 6	18Cr–10Ni–Cb SA-312 TP347 lines merged
	Table 2A, Line 14	SA/JIS G4303 SUS347 added *(03-386)*
	Table 2A, Lines 19 & 20	SA-312 TP347H lines merged
	Table 2A, Lines 31 & 32	SA-312 TP348 lines merged
328–330	Table 2A, Lines 5 & 6	SA-312 TP348H lines merged
	Table 2A, Lines 22 & 23	18Cr–10Ni–Ti SA-312 TP321 lines merged
	Table 2A, Line 31	SA/JIS G4303 SUS321 added *(03-386)*
	Table 2A, Lines 36 & 37	SA-312 TP321H lines merged
332–334	Table 2A, Lines 5–8	21Cr–6Ni–9Mn SA-182 FXM-11, SA-312 TPXM-11, SA-666 XM-11, and SA-965 FXM-11 added *(07-1638)*
	Table 2A, Lines 12 & 13	22Cr–13Ni–5Mn SA-312 TPXM-19 lines merged
	Table 2A, Line 25	23Cr–12Ni SA/JIS G4303 SUS309S added *(03-386)*
364–367	Table 3, Line 7	For Sections III; VIII, Division 1; VIII, Division 2; and XII; for A96061 T6 SB-211, Size/Thickness revised *(99-141)*
	Table 3, Line 8	For VIII-1, VIII-2, and XII, for T651 SB-211, Size/Thickness revised *(99-141)*
	Table 3, Line 9	For III, VIII-1, VIII-2, and XII, T6 wld. SB-211 deleted *(99-141)*
	Table 3, Line 10	For VIII-1, VIII-2, and XII, T651 wld. SB-211 deleted *(99-141)*
368–371	Table 3, Lines 26 & 27	For VIII-1, N05500 Ann./aged SF-468 added *(05-530)*
376	Table 3	(1) General Note (i) added (2) Note G10 revised *(99-141)* (3) Note W5 deleted *(99-141)*
398–401	Table 5A, Line 13	C–$^{1}/_{2}$Mo SA-336 F12 deleted by errata
406–409	Table 5A, Line 25	5Cr–$^{1}/_{2}$Mo SA-234 WP5 deleted by errata
414–417	Table 5A, Line 13	For 2Ni–1$^{1}/_{2}$Cr–$^{1}/_{4}$Mo–V SA-723 1, Note G1 deleted *(06-198)*
	Table 5A, Line 21	For 2$^{3}/_{4}$Ni–1$^{1}/_{2}$Cr–$^{1}/_{2}$Mo–V SA-723 2, Note G1 deleted *(06-198)*
	Table 5A, Line 39	For 4Ni–1$^{1}/_{2}$Cr–$^{1}/_{2}$Mo–V SA-723 3, Note G1 deleted *(06-198)*
418–421	Table 5A, Line 13	For 16Cr–4Ni–6Mn SA-240 201LN, Max. Use Temperature and External Pressure Chart No. revised, and stress values for 200°F through 800°F added *(07-800)*
	Table 5A, Line 14	SA-240 201LN added *(07-800)*

Page	*Location*	*Change (Record Number)*
	Table 5A, Line 37	For 16Cr–12Ni–2Mo SA-312 TP316, Note G4 added by errata
422–425	Table 5A, Line 16	For 16Cr–12Ni–2Mo–N SA-965 F316N, Size/Thickness deleted by errata
	Table 5A, Lines 18 & 19	For 18Cr–3Ni–12Mn SA-240 XM-29, Size/Thickness added by errata
	Table 5A, Lines 30 & 31	For 18Cr–8Ni SA-312 TP304L, stress lines corrected by errata
426–429	Table 5A, Line 7	For SA-312 TP304, Note G4 reference added by errata
	Table 5A, Line 38	For 18Cr–10Ni–Cb SA-182 F347H, Size/Thickness added by errata
434–437	Table 5A, Line 17	For 18Cr–10Ni–Ti SA-312 TP321, Size/Thickness corrected by errata
	Table 5A, Line 18	For SA-312 TP321, Size/Thickness deleted by errata
	Table 5A, Line 19	For SA-376 TP321, Size/Thickness corrected by errata
442–445	Table 5A, Line 23	For 25Cr–20Ni SA-403 310S WP-S, stress line corrected by errata
450	Table 5A	(1) Note G1 deleted *(06-198)* (2) Notes G13 and G14 revised *(00-547)*
460–463	Table 5B, Line 23	For C11000 O60 SB-187, Temper H04 deleted *(07-1272)*
	Table 5B, Line 34	For C70600 M20 or O25 SB-171, Max. Use Temperature revised and stress values added *(07-1272)*
490, 491	Table U, Line 7	Carbon steel SA/EN 10028-2 P295GH added *(01-610)*
	Table U, Line 8	For SA/EN 10028-2 P295GH, Size/Thickness revised *(01-610)*
	Table U, Line 19	SA/GB 6654 16MnR added *(05-533)*
	Table U, Lines 24 & 25	SA/GB 6654 16MnR added *(05-533)*
492, 493	Table U, Lines 23 & 25	SA/GB 6654 16MnR added *(05-533)*
494–495.2	Table U, Lines 28–35	C–Mn–Si–V–Cb SA-656 T3 and T7 added *(02-3339)*
504, 505	Table U, Line 24	12Cr–Al SA/JIS G4303 SUS405 added *(03-386)*
506, 507	Table U, Lines 13–15	17Cr–4Ni–4Cu SA-705 630 added *(03-725)*
514, 515	Table U, Line 20	16Cr–4Ni–6Mn SA-240 201LN added *(07-800)*
	Table U, Line 36	16Cr–12Ni–2Mo SA/JIS G4303 SUS316L added *(03-386)*
516, 517	Table U, Line 17	SA/JIS G4303 SUS316 added *(03-386)*
	Table U, Line 18	SA/EN 10028-7 X5CrNiMo17-12-2 added *(06-1330)*
520, 521	Table U, Line 10	18Cr–8Ni SA/JIS G4303 SUS304L added *(03-386)*
522, 523	Table U, Lines 10 & 11	SA/JIS G4303 SUS302 and SUS304 added *(03-386)*
	Table U, Line 12	SA/EN 10028-7 X5CrNi18-10 added *(06-1330)*

Page	Location	Change (Record Number)
524, 525	Table U, Line 28	18Cr–10Ni–Cb SA/JIS G4303 SUS347 added *(03-386)*
528, 529	Table U, Line 4	18Cr–10Ni–Ti SA/JIS G4303 SUS321 added *(03-386)*
532, 533	Table U, Line 24	23Cr–12Ni SA/JIS G4303 SUS309S added *(03-386)*
534, 535	Table U, Line 34	25Cr–20Ni SA/JIS G4303 SUS310S added *(03-386)*
540, 541	Table U, Line 31	C12500 O25 SB-152 deleted *(07-120)*
544, 545	Table U, Line 24	N05500 Ann./aged SF-468 added *(05-530)*
546, 547	Table U, Lines 41–44	N06210 Solution ann. SB-366, SB-564, SB-574, and SB-575 added *(03-752)*
548, 549	Table U, Lines 1–3	Solution ann. SB-619, SB-622, and SB-626 added *(03-752)*
	Table U, Line 14	For N06455 Solution ann. SB-622, Product Form revised *(07-1933)*
	Table U, Lines 16 & 17	For N06600 Hot fin./ann. SB-167, Size/Thickness added *(00-040)*
	Table U, Lines 19 & 20	For Cold drawn/ann. and Hot fin./ann. SB-167, Size/Thickness added *(00-040)*
	Table U, Line 26	For Cold drawn/ann. SB-167, Size/Thickness added *(00-040)*
558, 559	Table U, Line 11	N10665 Solution ann. SB-564 added *(06-1641)*
560–561.2	Table U, Lines 12–19	R50400 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
	Table U, Lines 32–39	R52400 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
	Table U, Lines 4–11	R52402 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
	Table U, Lines 20–27	R52404 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
574–577	Table Y-1, Line 6	Carbon steel SA/EN 10028-2 P295GH added *(01-610)*
	Table Y-1, Lines 7 & 8	For SA/AS 1548 7-430, Size/Thickness revised *(07-1034)*
	Table Y-1, Line 11	For SA/EN 10028-2 P295GH, Size/Thickness revised *(07-1034)*
	Table Y-1, Line 22	SA/GB 6654 16MnR added *(05-533)*
	Table Y-1, Lines 26 & 27	For SA/AS 1548 7-460, Size/Thickness revised *(07-1034)*
	Table Y-1, Lines 33 & 34	SA/GB 6654 16MnR added *(05-533)*
578–581	Table Y-1, Lines 34 & 35	For SA/AS 1548 7-490, Size/Thickness revised *(07-1034)*
	Table Y-1, Lines 38 & 40	SA/GB 6654 16MnR added *(05-533)*
586–589.4	Table Y-1, Lines 12 & 13	For C–Mn–Si–Cb SA/AS 1548 5-490, Size/Thickness revised *(07-1034)*
	Table Y-1, Lines 17–24	C–Mn–Si–V–Cb SA-656 T3 and T7 added *(02-3339)*

Page	*Location*	*Change (Record Number)*
606–609	Table Y-1, Line 9	12Cr–Al SA/JIS G4303 SUS405 added *(03-386)*
614–617	Table Y-1, Line 8	For 17Cr–4Ni–4Cu SA-705 630 H1025, yield strength values for 150°F, 250°F, and 600°F through 700°F added *(03-725)*
	Table Y-1, Lines 9 & 10	For SA-705 630 H925 and H900, yield strength values for 150°F through 700°F added *(03-725)*
630–633	Table Y-1, Line 33	16Cr–4Ni–6Mn SA-240 201LN added *(07-800)*
634–637	Table Y-1, Line 9	16Cr–12Ni–2Mo SA/JIS G4303 SUS316L added *(03-386)*
	Table Y-1, Line 32	SA/JIS G4303 SUS316 added *(03-386)*
638–641	Table Y-1, Line 22	SA/EN 10028-7 X5CrNiMo17-12-2 added *(06-1330)*
642–645	Table Y-1, Line 33	18Cr–8Ni SA/JIS G4303 SUS304L added *(03-386)*
646–649	Table Y-1, Lines 31 & 32	SA/JIS G4303 SUS302 and SUS304 added *(03-386)*
	Table Y-1, Line 33	SA/EN 10028-7 X5CrNi18-10 added *(06-1330)*
654–657	Table Y-1, Line 15	18Cr–10Ni–Cb SA/JIS G4303 SUS347 added *(03-386)*
658–661	Table Y-1, Line 38	18Cr–10Ni–Ti SA/JIS G4303 SUS321 added *(03-386)*
670–673	Table Y-1, Line 31	23Cr–12Ni SA/JIS G4303 SUS309S added *(03-386)*
674–677	Table Y-1, Line 40	25Cr–20Ni SA/JIS G4303 SUS310S added *(03-386)*
694–697	Table Y-1, Line 10	C12500 O25 SB-152 deleted *(07-120)*
702–705	Table Y-1, Lines 7 & 8	N05500 Ann./aged SF-468 added *(05-530)*
706–709.4	Table Y-1, Lines 26–32	N06210 Solution ann. SB-366, SB-564, SB-574, SB-575, SB-619, SB-622, and SB-626 added *(03-752)*
	Table Y-1, Line 5	For N06455 Solution ann. SB-622, Product Form revised *(07-1933)*
	Table Y-1, Lines 7 & 8	For N06600 Hot fin./ann. SB-167, Size/Thickness added *(00-040)*
	Table Y-1, Lines 10 & 11	For Cold drawn/ann. and Hot fin./ann. SB-167, Size/Thickness added *(00-040)*
710–713	Table Y-1, Line 6	For Cold drawn/ann. SB-167, Size/Thickness added *(00-040)*
726–729	Table Y-1, Line 39	N10665 Solution ann. SB-564 added *(06-1641)*
730–733	Table Y-1, Lines 30–34	For R50250 Annealed SB-338, SB-348, SB-381, SB-861, and SB-862, Min. Yield Strength and all yield strength values revised *(06-470)*
734–737.4	Table Y-1, Lines 5–12	R50400 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
	Table Y-1, Lines 29–36	R52400 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
	Table Y-1, Lines 37–41	R52402 Annealed SB-265, SB-338, SB-348, and SB-363 added *(06-844)*
	Table Y-1, Lines 1–3	Annealed SB-381, SB-861, and SB-862 added *(06-844)*
	Table Y-1, Lines 12–19	R52404 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*

Page	*Location*	*Change (Record Number)*
745	Subpart 2 Introduction	Revised *(05-1160)*
763	Table TE-5	Second column head revised *(06-844)*
772	Table TCD	Under Titanium Alloys, first column head revised *(06-844)*
781	Table TM-5	In first column, under Titanium Alloys, Grades 2H, 7H, 16H, and 26H added *(06-844)*
782	Table NF-1	Deleted *(05-1160)*
783, 784	Table NF-2	Deleted *(05-1160)*
	Table PRD	Added *(05-1160)*
786	Fig. G	Caption revised *(06-738)*
788–827	Figs. CS-1 through NFZ-2	All captions revised *(06-1600)*
	Fig. NFT-4	Curves corrected by errata *(07-1768)*
828	Notes to Figures	(1) General Note (a) revised *(06-1600)* (2) General Note (b) added *(06-1600)* (3) Notes (1), (5), (6), (7), and (11) deleted *(06-1600)* (4) Notes (2) and (3) revised *(06-1600)* (5) Note (14) added *(06-738)*
830	Table G	General Note added *(06-738)*
897–898.1	A-200	(1) A-200 redesignated as A-220 and new A-200 title added *(00-547)* (2) A-240 added *(00-547)*

LIST OF CHANGES IN RECORD NUMBER ORDER

Record Number	Change
99-141	(1) Table 3: Revised the size/thickness column for SB-211 A96061 T6 and T651. (2) Notes to Table 3: Revised Note G10. (3) Table 3: Deleted SB-211 A96061 T6 wld. and T651 wld. stress lines.
00-040	Table 1B: Added size designations for SB-167 (UNS N06600).
00-547	(1) Nonmandatory Appendix A: Revised A-200 and A-240. (2) Table 1A: Revised Notes G10 and G11 to add a reference to Nonmandatory Appendix A, A-240. (3) Table 5A: Revised Notes G13 and G14 to add a reference to Nonmandatory Appendix A, A-240.
01-416	Table 1B: Revised the Applicability column to permit use of UNS N06625 material for Section I applications up to 1100°F.
01-610	Tables 1A, U, and Y-1: Added stress lines for SA/EN 10028-2 P295GH with thickness 6 in. to 10 in.
02-3339	Tables 1A, U, and Y-1: Added stress lines for SA-656/SA-656M for Section XII applications.
03-386	Tables 1A, 2A, U, and Y-1: Incorporated SA/JIS G4303 (Grades SUS302, SUS304, SUS304L, SUS310S, SUS309S, SUS316, SUS316L, SUS321, SUS347, and SUS405) stress lines for Section III applications.
03-425	Table 1B: Added UNS N06022 for Section I applications.
03-725	Tables U and Y-1: Added tensile and yield strength values for three conditions of SA-705 Type 630 at 200°F to 550°F for Section VIII, Division 3 applications.
03-752	(1) Tables 1B, U, and Y-1: Incorporated stress values for UNS N06210 from Code Case 2302 for Section VIII, Division 1 applications up to 800°F. (2) Subpart 3: Approved external pressure chart and Table NFN-13. Table 1B: Added external pressure chart reference NFN-13 to UNS N06210 stress lines.
04-1636	Table 1A: Revised the Class designation for SA-372.
05-530	Tables 3, U, and Y-1: Added SF-468 UNS N05500 stress lines.
05-533	Tables 1A, U, and Y-1: Added stress lines for SA/GB 6654 material.
05-1160	(1) Replaced Tables NF-1 and NF-2 with a new Table PRD covering only Poisson's ratio and density, expanded to provide the same properties for ferrous as well as nonferrous materials. (2) Editorially corrected Subpart 2 Introduction.
06-198	Table 5A: Deleted Note G1.
06-470	Tables 1B and Y-1: Changed minimum yield strength from 25 ksi to 20 ksi to match revised Section II, Part B titanium specifications.
06-738	Figure G: Revised to prohibit extrapolation.
06-844	Tables 1B, U, and Y-1: Added Ti Grade H material (UNS R50400, R52400, R52402, and R52404) and assigned external pressure chart NFT-2. Revised physical property Tables TE-4, TE-5, and TM-5.
06-1330	Tables 1A, U, and Y-1: Added stress lines for SA/EN 10028-7 Grades X5CrNi18-10 and X5CrNiMo17-12-2.
06-1600	Clarified external pressure chart captions to show the specific material for which each chart was developed, and to clarify and remove redundant Notes and add a new General Note directing designers to the stress tables for selecting the appropriate chart to get "B."
06-1641	Table 1B: Incorporated allowable stress lines for SB-564 UNS N10665.
07-120	Deleted SB-152 UNS C12500 from Tables 1B, U, and Y-1.
07-800	(1) Table 1A: Added allowable stresses for UNS S20153 to 800°F, added high stress line, changed external pressure chart assignment to HA-6, and corrected GXX notes. (2) Tables U and Y-1: Added UNS S20153. (3) Table 5A: Added allowable stresses for UNS S20153, changed external pressure chart assignment to HA-6, and added high stress line with appropriate GXX note.
07-1034	Table Y-1: Changed 3 in. into $3\frac{1}{4}$ in. for SA/AS 1548 grades.
07-1272	Table 5B: Deleted H04 temper from SB-187 UNS C11000 stress line. Added stress values from 400°F to 600°F to SB-171 UNS C70600 stress line.
07-1321	Table 1B: Added H58 temper for SB-43 UNS C23000.
07-1638	Incorporated UNS S21904 (XM-11, FXM-11, and TPXM-11) in Table 2A.
07-1768	Revised Fig. NFT-4 by errata.
07-1927	Table 1A: Revised to permit use of SA-333 Grade 4 pipe for Section III, Class 2 and 3 construction up to 700°F.
07-1933	Table 1B: Editorial revision changed "Wld." to "Smls." in the Product Form column for SB-622 UNS N06455.

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SUBPART 1
STRESS TABLES

STATEMENT OF POLICY ON INFORMATION PROVIDED IN THE STRESS TABLES

The purpose of this Statement of Policy is to clarify which information in the stress tables is mandatory and which is not. The information and restrictions provided in the Notes found throughout the various stress tables provided in Subpart 1 of Section II, Part D are mandatory. It is vital to recognize that lines of information in Tables 1A, 1B, 2A, 2B, 3, and 4 frequently have essential information referenced in the Notes column. These Notes are organized as follows:

(a) EXX: defining onset of values based on successful experience in service
(b) GXX: general requirements
(c) HXX: heat treatment requirements
(d) SXX: size requirements
(e) TXX: defining onset of time-dependent behavior
(f) WXX: welding requirements

The specifications and grades or types, coupled with the assigned Notes for each line, provide the complete description of material in the context of the allowable stresses or design stress intensities. Additional requirements for particular types of construction must also be obtained from the rules governing the construction.

In Tables 1A and 2A, the information in the Nominal Composition column is nonmandatory and is for information only. However, these nominal compositions are the primary sorting used in these two tables. See Appendix A. The information in the Alloy Designation/UNS Number column is nonmandatory for specifications for which a grade or type is provided. This is primarily true for the nonstainless-steel alloys in these tables. For specifications for which no type or grade is listed, the UNS number is mandatory. Particularly for the stainless steels, for which no type or grade is listed, the UNS number is the grade.

The only difference between Tables 1A and 2A, and Tables 1B and 2B, with regard to the mandatory/nonmandatory nature of the information, is that in Tables 1B and 2B, the UNS number information is used as the basis of the sorting scheme for materials and is almost always mandatory.

Where provided, the information in the columns for Product Form, Specification Number, Type/Grade, Class/Condition/Temper, Size/Thickness, and External Pressure Chart Number is mandatory. The information in the P-Number and Group Number columns is also mandatory; however, the primary source for this information is Table QW/QB-422 in Section IX. When there is a conflict between the P-number and Group number information in these stress tables and that in Section IX, the numbers in Section IX shall govern.

The information in the Minimum Tensile Strength and Minimum Yield Strength columns is nonmandatory. These values are a primary basis for establishing the allowable stresses and design stress intensities. When there is a conflict between the tensile and yield strength values in the stress tables and those in the material specifications in Section II, Parts A and B, the values in Parts A and B shall govern.

The information in the Applicability and Maximum Temperature Limits columns is mandatory. Where a material is permitted for use in more than one Construction Code, and in the SI units version of these tables, the maximum use temperature limit in these columns is critical. The temperature to which allowable stress or design stress intensity values are listed is not necessarily the temperature to which use is permitted by a particular Construction Code. Different Construction Codes often have different use temperature limits for the same material and condition. Further, in the SI units version of the stress tables, values may be listed in the table at temperatures above the maximum use temperature limit. These stress values are provided to permit interpolation to be used to determine the allowable stress or design stress intensity at temperatures between the next lowest temperature for which stress values are listed and the maximum-use temperature limit listed in these columns.

A08

GUIDELINE ON LOCATING MATERIALS IN STRESS TABLES, AND IN TABLES OF MECHANICAL AND PHYSICAL PROPERTIES

1 INTRODUCTION

The goal of this Guideline is to assist the users of Section II, Part D in locating materials in stress tables (Tables 1A, 1B, 2A, 2B, 3, 4, 5A, and 5B), tables of mechanical properties (Tables U, U-2, and Y-1), and tables of physical properties (Tables TE-1 through TE-5, TCD, TM-1 through TM-5, and PRD). This Guideline defines the logic used to place materials within these tables.

2 STRESS TABLES

Stress tables are all found within Subpart 1 of Section II, Part D. Tables 1A, 1B, 3, 5A, and 5B cover allowable stresses, while Tables 2A, 2B, and 4 cover design stress intensities. Although Subpart 1 also covers ultimate tensile strength and yield strength, the organization of those mechanical property tables will be discussed separately in para. 3. A table-by-table listing of the materials-organization logic used to place materials within the designated tables follows.

2.1 TABLE 1A

Table 1A provides allowable stresses for ferrous[1] materials used in Section I; Section III, Division 1, Classes 2 and 3; Section VIII, Division 1; and Section XII construction. Within Table 1A, the first step in ordering materials is to use their nominal compositions. These nominal compositions are nothing more than accepted compositional fingerprints or widely recognized designators for each alloy or alloy class. These nominal compositions are arranged in Table 1A as follows:

(a) carbon steels

(b) carbon steels with small additions of Cb, Ti, and V (microalloyed steels)

(c) C–½Mo steels

(d) chromium steels, including ferritic stainless steels, by increasing Cr content [½Cr, ¾Cr, 1Cr, 1¼Cr, 2¼Cr, 3Cr, 5Cr, 9Cr, 11Cr, 12Cr, 13Cr, 15Cr, 17Cr (including 17Cr–4Ni–4Cu and 17Cr–4Ni–6Mn), 18Cr, 26Cr, 27Cr, and 29Cr]

(e) manganese steels (Mn–¼Mo, Mn–½Mo, Mn–½Ni, and Mn–V)

(f) silicon steel (1½Si–½Mo)

(g) nickel steels (½Ni, ¾Ni, 1Ni, 1¼Ni, 2Ni, 2½Ni, 2¾Ni, 3Ni, 3½Ni, 4Ni, 5Ni, 8Ni, and 9Ni)

(h) other high nickel steels [25Ni–15Cr–2Ti (Grade 660) and 29Ni–20Cr–3Cu–2Mo (CN7M)]

(i) high alloy steels, including the duplex stainless steels, in order of increasing chromium content [beginning with 16Cr–9Mn–2Ni–N, then 16Cr–12Ni–2Mo (316L), etc.], then by increasing nickel content within a given chromium or other alloy content [18Cr–8Ni, 18Cr–8Ni–N, 18Cr–8Ni–4Si–N, 18Cr–10Ni–Cb (first S34700, then S34709, S34800, and S34809), 18Cr–10Ni–Ti, 18Cr–11Ni, etc., ending with 25Cr–22Ni–2Mo–N].

Unfortunately, most specifications for materials do not give nominal compositions — and without that information, one may not know the nominal composition for a particular material in Table 1A. If the specification number and alloy grade or type designation are known, then one can go to Table QW/QB-422 of Section IX of the Code and find the corresponding nominal composition.

Now, for a given nominal composition, Table 1A is arranged by increasing tensile strength. For a given nominal composition and tensile strength, stress listings are provided in order of increasing specification number. Sometimes, for a given nominal composition, tensile strength, yield strength, and specification number/grade or type, there may be more than one line of stresses. At this point, the Notes referenced on the second page of each page set within Table 1A will define why there are two or more lines of stresses and when each applies.

2.2 TABLE 1B

Table 1B provides allowable stresses for nonferrous materials used in Section I; Section III, Division 1, Classes

[1] ASME uses the current ASTM definition of *ferrous alloy:* an alloy whose major constituent is iron, even if the iron content is less than 50% of the total composition. However, this is a recently adopted definition and the change to specifications is occurring over time. Therefore, some alloys that were formerly defined as nonferrous are still listed in the nonferrous tables or both.

2 and 3; Section VIII, Division 1; and Section XII construction. Aluminum alloys (UNS AXXXXX materials) are the first materials covered in Table 1B, followed by copper alloys (UNS CXXXXX), nickel alloys (UNS NXXXXX), and the reactive and refractory metals and alloys (UNS RXXXXX). Within this latter category there are the following:

(a) chromium alloys (R2XXXX)
(b) cobalt alloys (R3XXXX)
(c) titanium alloys (R5XXXX)
(d) zirconium alloys (R6XXXX)

Within each of these material class groupings, stress lines are first organized by increasing UNS (Unified Numbering System) number. The nonferrous specifications now show these numbers in association with grade designations. Then, for a given UNS number, stress lines are next ordered by strength — first tensile strength and then yield strength. Finally, for a given UNS number, tensile strength, and yield strength, stress lines are ordered by increasing specification number. Again, some materials may have two or more stress lines even if their UNS number, tensile strength, yield strength, and specification number are the same. The Notes provide direction for the applicability of each line.

For those material specifications that may not show UNS numbers associated with alloy grades, one again can refer to Section IX's Table QW/QB-422 for that information.

For Table 1B, nominal compositions are shown only for the NXXXXX and RXXXXX materials, but they have no influence on the location of alloys in the table. In this table, the nominal compositions are simply for information.

07 2.3 TABLE 2A

Table 2A provides design stress intensities for ferrous materials for Section III, Division 1, Classes 1, TC, and SC construction. This table is organized in the same manner as Table 1A. Refer back to para. 2.1 for that description.

07 2.4 TABLE 2B

Table 2B provides design stress intensities for nonferrous materials for Section III, Division 1, Classes 1, TC, and SC construction. Table 2B materials are ordered in the same manner as in Table 1B. Refer back to para. 2.2 for that description.

2.5 TABLE 3

Table 3 provides allowable stresses for bolting materials for use in Section III, Division 1, Classes 2 and 3; Section VIII, Division 1; Section VIII, Division 2 (using Part 4.16 of Section VIII, Division 2); and Section XII construction. The table first covers ferrous materials and then nonferrous materials. For the ferrous materials, the ordering logic parallels that used in Tables 1A and 2A — first by nominal composition, then by increasing ultimate tensile strength, then by increasing yield strength, and finally by increasing specification number. Again, refer back to para. 2.1 for a discussion on nominal composition.

Nonferrous materials are presented using the same logic as in Tables 1B and 2B; see para. 2.2 for that discussion.

2.6 TABLE 4 07

Table 4 provides design stress intensities for bolting materials used in Section III, Division 1, Classes 1, TC, and SC; and in Section VIII, Division 2 (using Part 5 and Annex 5.F of Section VIII, Division 2).

Table 4 is organized in the same manner as Table 3 — first covering ferrous materials and then nonferrous materials — except that Table 4 covers far fewer materials. For the ordering logic, again refer to paras. 2.1 and 2.2 for ferrous and nonferrous materials, respectively.

2.7 TABLE 5A 07

Table 5A provides allowable stresses for ferrous materials for Section VIII, Division 2 construction. This Table is organized in the same manner as Table 1A. Refer back to para. 2.1 for that description.

2.8 TABLE 5B 07

Table 5B provides allowable stresses for nonferrous materials for Section VIII, Division 2 construction. This Table is organized in the same manner as Table 1B. Refer back to para. 2.2 for that description.

3 MECHANICAL PROPERTY TABLES

Ultimate tensile strength values and yield strength values are to be used in design calculations according to the rules of the Construction Codes. However, they are not to be construed as minimum strength values at temperature. This is explained in the General Notes to these tables. Paragraphs 3.1 through 3.3 provide a table-by-table listing of the materials-organization logic.

3.1 TABLE U

Table U provides tensile strength values for ferrous and nonferrous materials, in that order. The ordering logic for ferrous materials is the same as used in Table 1A, except yield strength level is not shown. Using the logic described

in para. 2.1, stress lines are organized by nominal composition, then by increasing tensile strength level, and then by increasing specification number.

Nonferrous materials coverage begins following the last of the high alloy steels (25Cr–22Ni–2Mo–N). Coverage of nonferrous alloys begins with the UNS CXXXXX alloys, followed by NXXXXX and RXXXXX alloys. No tensile strength values are available at this time for the aluminum alloys. The ordering of materials within these three groups has been previously described in para. 2.2.

3.2 TABLE U-2

Table U-2 provides ultimate tensile strengths for special ferrous materials used in Section VIII, Division 3 construction. The only material covered is wire produced to either SA-231 or SA-232, and lines are arranged in order of decreasing tensile strength, resulting from increasing wire diameter.

3.3 TABLE Y-1

Table Y-1 provides yield strength values for ferrous and nonferrous materials, in that order. Again, the ordering of yield strength lines parallels the logic described for ferrous and nonferrous materials in paras. 2.1 and 2.2, respectively. Unlike Table U, for ferrous materials, the tensile strength level does enter into the ordering process, again following nominal composition designation. And, unlike Table U, Table Y-1's nonferrous materials listings do begin with the aluminum-base alloys (UNS AXXXXX). These are followed by the copper materials (CXXXXX), nickel-base materials (NXXXXX), and the reactive and refractory metals and alloys (RXXXXX).

4 PHYSICAL PROPERTY TABLES

Since physical properties (thermal conductivity, thermal diffusivity, thermal expansion, and density), Young's modulus, and Poisson's ratio values can be shown for numerous materials with a single set of property values, most of the tables found in Subpart 2 of Section II, Part D are based on nominal composition. Paragraphs 4.1 through 4.4 describe how these tables are organized.

4.1 TABLE TE

Table TE covers thermal expansion behavior, presented in terms of A (instantaneous coefficient of thermal expansion), B (mean coefficient of thermal expansion), and C (linear thermal expansion). This table is split into five parts as follows:

(a) Table TE-1 covers numerous individual ferrous materials and ferrous material groupings. Notes at the end of Table TE-1 list the nominal compositions covered by the designated groupings. Again, knowledge of the nominal composition for a given material is essential, and it was noted previously that these can be extracted from Table QW/QB-422 of Section IX, given the specification number and grade or type designation.

(b) Table TE-2 covers aluminum alloys. One set of A/B/C values covers all of the aluminum-base materials listed in General Note (a) of Table TE-2.

(c) Table TE-3 covers copper alloys, currently in five general groupings: C1XXXX alloys, bronze alloys, brass alloys, 70Cu–30Ni, and 90Cu–10Ni. According to an article in ASM International's "Advanced Materials & Processes" (December 1999), the general terms of bronze and brass cover the following alloys:

(1) wrought copper-base alloys

(a) C20500–C28580 — brasses (Cu–Zn)

(b) C31200–C38590 — leaded brasses (Cu–Zn–Pb)

(c) C40400–C49080 — tin brasses (Cu–Zn–Sn–Pb)

(d) C60600–C64400 — aluminum bronzes (Cu–Al–Ni–Fe–Si–Sn)

(e) C64700–C66100 — silicon bronzes (Cu–Si–Sn)

(2) cast copper-base alloys

(a) C83300–C85800 — red and leaded red brasses (Cu–Zn–Sn–Pb)

(b) C86100–C86800 — manganese bronzes and leaded manganese bronzes (Cu–Zn–Mn–Fe–Pb)

(c) C90200–C94500 — tin bronzes and leaded tin bronzes (Cu–Sn–Zn–Pb)

(d) C95300–C95810 — aluminum bronzes (Cu–Al–Fe–Ni)

This guidance should help define which group of A/B/C values of thermal expansion to select for a given brass or bronze.

(d) Table TE-4 provides thermal expansion values for nickel alloys and refractory alloys. The thermal expansion value sets for the nickel alloys are arranged by increasing UNS NXXXXX numbers.

(e) Table TE-5 provides thermal expansion values for two groupings of titanium-base alloys. One group covers only Grade 9; the other group covers the other alloys. In this table, there is no reference to the UNS number, just to the grade number.

4.2 TABLE TCD

Table TCD provides both thermal conductivity (TC) and thermal diffusivity (TD) values for numerous ferrous and

nonferrous materials and material groupings. The table begins with ferrous materials, split into groups of carbon and low alloy steels, followed by groups of high chromium steels and groups of high alloy steels. For each of these groups, there is a listing of nominal composition designations found at the end of the table, defining the extent of coverage.

The next series of materials are the nickel-base alloys, covered by TC/TD listings for nickel alloys (arranged by increasing UNS number) and refractory alloys. Then there are TC/TD listings for individual titanium and aluminum alloys (arranged by increasing UNS number). Table TCD does not currently provide values for copper or zirconium alloys.

4.3 TABLE TM

Table TM provides moduli of elasticity for five categories of materials, as follows:

(a) Table TM-1 covers ferrous materials in nine general categories and with additional lines for specific materials. Groups A through G are subdivided by nominal composition; see the Notes at the end of Table TM-1.

(b) Table TM-2 covers aluminum alloys, listed by UNS number designation.

(c) Table TM-3 covers copper alloys, listed by UNS number designation.

(d) Table TM-4 covers nickel alloys, listed by UNS number designation.

(e) Table TM-5 covers titanium alloys, listed by increasing grade numbers, and zirconium-base alloys, listed by increasing UNS number (or grade) designation.

4.4 TABLE PRD

Table PRD provides Poisson's ratio and density for ferrous and nonferrous materials.

5 REFERENCES

The official reference for UNS numbers is *Metals & Alloys in the Unified Numbering System,* ASTM DS-56. This document is periodically updated as various material specifications are revised, added, or deleted by their sponsoring organizations. Only UNS numbers published in this reference appear in Section II, Part A and Part B specifications, and in the various Section II, Part D stress tables, mechanical property tables, and physical property tables.

Nominal compositions are defined by various groups within the ASME Code committee structure and there are no published guidelines describing how these designations are developed. These designations have the greatest relevance in the arrangement of ferrous materials and, as indicated previously, the simplest way to obtain these designations is to look in Section IX of the ASME Boiler and Pressure Vessel Code and use Table QW/QB-422, which is arranged by increasing specification number. These start with the "SA" specification numbers, followed by the "SB" numbers.

TABLE 1A
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
1	Carbon steel	Sheet	SA-1008	CS-A	...	...	...	1	1
2	Carbon steel	Sheet	SA-1008	CS-B	...	...	...	1	1
3	Carbon steel	Bar	SA-675	45	...	...	...	1	1
4	Carbon steel	Wld. pipe	SA-134	A283A	...	...	...	1	1
5	Carbon steel	Plate	SA-283	A	...	...	...	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	Smls. tube	SA-179	...	K01200	...	...	1	1
12	Carbon steel	Smls. tube	SA-192	...	K01201	...	...	1	1
13	Carbon steel	Wld. tube	SA-214	...	K01807	...	...	1	1
14	Carbon steel	Smls. tube	SA-556	A2	K01807	...	...	1	1
15	Carbon steel	Wld. tube	SA-557	A2	K01807	...	...	1	1
16	Carbon steel	Wld. pipe	SA-53	E/A	K02504	...	...	1	1
17	Carbon steel	Wld. pipe	SA-53	E/A	K02504	...	...	1	1
18	Carbon steel	Wld. pipe	SA-53	E/A	K02504	...	...	1	1
19	Carbon steel	Wld. pipe	SA-53	F/A	...	...	...	1	1
20	Carbon steel	Smls. pipe	SA-53	S/A	K02504	...	...	1	1
21	Carbon steel	Smls. pipe	SA-53	S/A	K02504	...	...	1	1
22	Carbon steel	Smls. pipe	SA-106	A	K02501	...	...	1	1
23	Carbon steel	Wld. pipe	SA-135	A	...	...	...	1	1
24	Carbon steel	Forged pipe	SA-369	FPA	K02501	...	...	1	1
25	Carbon steel	Wld. pipe	SA-587	...	K11500	...	...	1	1
26	Carbon steel	Wld. pipe	SA-587	...	K11500	...	...	1	1
27	Carbon steel	Bar	SA-675	50	...	...	...	1	1
28	Carbon steel	Bar	SA-675	50	...	...	...	1	1
29	Carbon steel	Wld. pipe	SA-134	A283B	...	...	...	1	1
30	Carbon steel	Plate	SA-283	B	...	...	...	1	1
31	Carbon steel	Plate	SA-285	B	K02200	...	...	1	1
32	Carbon steel	Plate	SA-285	B	K02200	...	...	1	1
33	Carbon steel	Wld. pipe	SA-672	A50	K02200	...	...	1	1
34	Carbon steel	Sheet	SA-414	B	K02201	...	...	1	1
35	Carbon steel	Plate	SA/EN 10028-3	P275NH	...	...	$2 < t \leq 4$	1	1
36	Carbon steel	Bar	SA-675	55	...	...	...	1	1
37	Carbon steel	Bar	SA-675	55	...	...	...	1	1

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
8	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
21	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
22	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
23	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
29	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
30	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

TION I; SECTION III, CLASSES
MAXIMUM ALLOWABLE
(*See Maximum Te

BLE 1A (CONT'D)
ND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
ESS VALUES *S* FOR FERR MATERIALS
rature Limits for Restriction Class)

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2 A
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n	Product Form	Spec		Type/Grade	A Desig UNs	on/	Class/ Condition/ Temper	Size/Thickness, in.	No.	No.	Group No.
	Wld. pipe	SA-53		E/B	K03(		...	...	3	1	1
	Wld. pipe	SA-53		E/B	K03(		...	...	3	1	1
	Smls. pipe	SA-53		S/B	K03(		...	...	3	1	1
	Smls. pipe	SA-53		S/B	K03(		...	...	3	1	1
	Smls. pipe	SA-10		B	K03(		...	...	06	1	1
	Wld. pipe	SA-13		B	...		...	...	35	1	1
	Smls. & wld. fittings	SA-23		WPB	K03(		...	...	34	1	1
	Smls. & wld. pipe	SA-33		6	K03(		...	...	33	1	1
	Wld. pipe	SA-33		6	K03(		...	...	33	1	1
	Smls. & wld. tube	SA-33		6	K03(		...	...	34	1	1
	Wld. tube	SA-33		6	K03(		...	...	34	1	1
	Forged pipe	SA-36		FPB	K03(		...	...	09	1	1
	Forgings	SA-37		A	K03(		...	...	72	1	1
	Sheet	SA-41		D	K02(		...	...	14	1	1
	Smls. & wld. fittings	SA-42		WPL6	...		...	...	20	1	1
	Smls. pipe	SA-52		I	K02(		...	...	24	1	1
	Bar	SA-69		B/35	K03(		...	...	05	1	1
	Bar	SA-69		B	K03(		...	...	06	1	1
	Forgings	SA-72		...	K02(		...	...	27	1	1
	Wld. tube	SA-17		C	K03(		...	...	78	1	1
	Wld. tube	SA-17		C	K03(		...	...	78	1	1
	Wld. tube	SA-17		C	K03(		...	...	78	1	1
	Smls. tube	SA-21		A-1	K02(		...	...	10	1	1
	Smls. tube	SA-55		B2	K02(		...	...	56	1	1
	Wld. tube	SA-55		B2	K03(		...	...	57	1	1
	Plate, bar	SA/CS	40.21	38W	...		...	...	SA-G	1	1
	Plate	SA/AS	28	7-430A	...		Annealed	≤ 6	S 154	1	2
	Plate	SA/AS	28	7-430N	...		Normalized	≤ 6	S 154	1	2
	Plate	SA/AS	28	7-430R	...		As rolled	≤ 1½	S 154	1	2
	Plate	SA/EI	028-2	P295GH	...		...	6 < *t* ≤ 10	N 100	1	1
	Plate	SA/EI	028-2	P295GH	...		...	4 < *t* ≤ 6	N 100	1	1
	Bar	SA-67		65	...		...	...	75	1	1
	Castings	SA-35		LCB	J03(		...	...	52	1	1
	Plate	SA-51		65	K02(		...	...	15	1	1
	Plate	SA-51		65	K02(		...	...	16	1	1
	Wld. pipe	SA-67		CB65	K02(		...	...	71	1	1
	Wld. pipe	SA-67		CC65	K02(		...	...	71	1	1
	Wld. pipe	SA-67		B65	K02(		...	...	72	1	1
	Wld. pipe	SA-67		C65	K02(		...	...	72	1	1
	Sheet	SA-41		E	K02(		...	...	14	1	1
	Plate	SA-66		B	K02(		...	...	52	1	1
	Plate	SA/GI	54	16MnR	...		...	4 < *t* ≤ 5	B 665	1	1
	Plate	SA-53		...	K12(		1	2½ < *t* ≤ 4	37	1	2
	Wld. pipe	SA-69		CMSH-70	K12(		...	2½ < *t* ≤ 4	91	1	2

ISION 1; AND SECTION XI
OUS MATERIALS
s on Class)

Alloy gnation/ S No.	Class/ Condition/ Temper	Size/Thickn
005	...	...
005	...	...
005	...	...
005	...	...
006	...	...
	...	...
006	...	...
006	...	...
006	...	...
006	...	...
006	...	...
002	...	...
505	...	...
	...	...
104	...	...
504	...	...
200	...	...
506	...	...
503	...	...
503	...	...
503	...	...
707	...	...
707	...	...
007	...	...
	...	...
	Annealed	≤ 6
	Normalized	≤ 6
	As rolled	≤ 1½
	...	6 < *t* ≤ 10
	...	4 < *t* ≤ 6
	...	...
003	...	...
800	...	...
403	...	...
800	...	...
403	...	...
800	...	...
403	...	...
704	...	...
203	...	...
	...	4 < *t* ≤ 5
437	1	2½ < *t* ≤ 4
437	...	2½ < *t* ≤ 4

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	60	35	900	300 (Cl. 3 only)	NP	NP	CS-2	G10, S1, T1, W12, W13	
2	60	35	900	NP	900	650	CS-2	G3, G10, G24, G35, S1, T1, W6	
3	60	35	900	300 (Cl. 3 only)	NP	NP	CS-2	G10, S1, T1	
4	60	35	NP	700 (SPT)	900	650	CS-2	G10, G35, T1	
5	60	35	1000	700	1000	650	CS-2	G10, S1, T1	
6	60	35	NP	NP	900	650	CS-2	G24, G35, T1, W6	
7	60	35	1000	700	1000	650	CS-2	G10, S1, T1	
8	60	35	700	700	1000	650	CS-2	G10, T1, W12, W13, W14	07
9	60	35	700	NP	NP	NP	CS-2	T1	07
10	60	35	NP	700	650	650	CS-2	T1, W12, W14	
11	60	35	NP	NP	650	650	CS-2	G24, W6	
12	60	35	1000	NP	NP	NP	CS-2	G10, S1, T1	
13	60	35	NP	NP	650	650	CS-2	...	
14	60	35	NP	NP	900	650	CS-2	G10, G35, T1	
15	60	35	NP	700	850	650	CS-2	G10, T1, W14	
16	60	35	NP	NP	1000	650	CS-2	G10, T1	
17	60	35	NP	700	1000	650	CS-2	G10, G22, T1	
18	60	35	NP	700	NP	NP	CS-2	T1	
19	60	36	NP	700	1000	650	CS-2	G10, G22, T1	
20	60	37	1000	NP	NP	NP	CS-2	G4, G10, S1, T2	
21	60	37	1000	700	NP	NP	CS-2	G10, S1, T1, W13	
22	60	37	1000	NP	1000	650	CS-2	G3, G10, G24, G35, S1, T2, W6	
23	60	37	1000	700	1000	650	CS-2	G10, S1, T1	
24	60	37	NP	NP	1000	650	CS-2	G10, T1	
25	60	37	NP	NP	1000	650	CS-2	G24, G35, T1, W6	
26	60	38	NP	NP	650	650	CS-2	G35	
27	62.5	...	1000	NP	1000	NP	CS-2	G10, G18, S1, T1	07
28	62.5	...	1000	NP	1000	NP	CS-2	G10, G18, S1, T1	07
29	62.5	...	1000	NP	1000	NP	CS-2	G10, G18, S1, T1	07
30	62.5	32	850	NP	1000	NP	CS-2	G10, S1, T2	A08
31	64	34	850	NP	1000	NP	CS-2	G10, S1, T2	A08
32	65	32.5	850	650 (Cl. 3 only)	1000	650	CS-2	G10, G15, G22, G35, S1, T2	
33	65	35	NP	700	650	650	CS-2	G1, G17	
34	65	35	1000	700	1000	650	CS-2	G10, S1, T2	
35	65	35	850	700	1000	650	CS-2	G10, S1, T2	
36	65	35	NP	700	NP	NP	CS-2	S6, W10, W12	
37	65	35	NP	700	NP	NP	CS-2	S6, W10, W12	
38	65	35	NP	700	NP	NP	CS-2	S6, W10, W12	
39	65	35	NP	700	NP	NP	CS-2	S6, W10, W12	
40	65	38	NP	NP	900	650	CS-2	G10, G35, T1	
41	65	40	NP	NP	700	650	CS-2	T1	
42	65	40	NP	NP	500	NP	CS-2	...	A08
43	65	45	NP	700	650	650	CS-2	T1	
44	65	45	NP	700	NP	NP	CS-2	G26, T1, W10, W12	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	17.1	*15.6*	*13.0*	*10.8*	*8.7*	*5.9*
	2	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*
	3	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	*13.0*	*10.8*	*8.7*	*5.9*
	4	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*
	5	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*
	6	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*
	7	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*
07	8	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*
07	9	14.6	14.6	14.6	...	14.6	14.6	14.6	14.6	14.6	*13.3*	...	...	...	...
	10	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	...	...	...	...
	11	14.6	14.6	14.6	...	14.6	14.6	14.6	14.6	14.6	...	...	...	...	...
	12	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	*15.6*	*13.0*	*10.8*	*8.7*	*5.9*
	13	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	...	...	...	...	...
	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*	...
	16	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*
	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	*15.6*	...	...	...	...
	19	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*
	20	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	15.6	*13.0*	*10.8*	*8.7*	*5.0*
	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	14.6	...	14.6	...	14.6	14.6	14.6	14.6	14.6	13.3	*11.1*	*9.2*	*7.4*	*5.0*
	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*	*5.9*
	25	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*
	26	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	...	...	...	...	...
07	27	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	*16.9*	*13.9*	*11.4*	*8.7*	*5.9*
07	28	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	*16.9*	*13.9*	*11.4*	*8.7*	*5.9*
07	29	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	*16.9*	*13.9*	*11.4*	*8.7*	*5.9*
A08	30	17.9	17.9	17.9	17.9	17.9	17.9	17.4	16.4	15.8	15.3	*13.9*	*11.4*	*8.7*	*5.9*
A08	31	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*
	32	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*
	33	18.6	18.6	18.6	...	18.6	18.6	18.6	17.9	17.3	16.7	...	...	...	...
	34	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*
	35	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*
	36	18.6	...	18.6	...	18.6	18.6	18.6	17.9	17.3	16.7	...	...	...	...
	37	18.6	...	18.6	...	18.6	18.6	18.6	17.9	17.3	16.7	...	...	...	...
	38	18.6	...	18.6	...	18.6	18.6	18.6	17.9	17.3	16.7	...	...	...	...
	39	18.6	...	18.6	...	18.6	18.6	18.6	17.9	17.3	16.7	...	...	...	...
	40	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*
	41	18.6	18.6	18.6	...	18.6	18.6	18.6	18.6	18.6	*16.9*	...	...	...	...
A08	42	18.6	18.6	18.6	18.6	18.6	18.6	18.6	...	...	...	...	...	...	...
	43	18.6	...	18.6	...	18.6	18.6	18.6	18.6	18.6	*16.9*	...	...	...	...
	44	18.6	...	18.6	...	18.6	18.6	18.6	18.6	18.6	*16.9*	...	...	...	...

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	07
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	*3.4*	*2.1*	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	*3.4*	*2.1*	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	*3.4*	*2.1*	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	07
28	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	07
29	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	07
30	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
31	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
32	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
41	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
42	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
43	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
44	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
07	1	Carbon steel	Plate	SA/AS 1548	7-460A	...	Annealed	≤ 6	1	2
07	2	Carbon steel	Plate	SA/AS 1548	7-460N	...	Normalized	≤ 6	1	2
07	3	Carbon steel	Plate	SA/AS 1548	7-460R	...	As rolled	≤ 1½	1	2
A08	4	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...	2¼ < *t* ≤ 4	1	1
A08	5	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...	≤ 2¼	1	1
A08	6	Carbon steel	Plate	SA/GB 6654	16MnR	...	...	2.4 < *t* ≤ 4	1	1
A08	7	Carbon steel	Plate	SA/GB 6654	16MnR	...	...	1.5 < *t* ≤ 2.4	1	1
	8	Carbon steel	Plate	SA-455	...	K03300	...	0.58 < *t* ≤ ¾	1	2
	9	Carbon steel	Bar	SA-675	70	...	...	...	1	2
	10	Carbon steel	Forgings	SA-105	...	K03504	...	...	1	2
	11	Carbon steel	Forgings	SA-181	...	K03502	70	...	1	2
	12	Carbon steel	Castings	SA-216	WCB	J03002	...	...	1	2
	13	Carbon steel	Forgings	SA-266	2	K03506	...	...	1	2
	14	Carbon steel	Forgings	SA-266	4	K03017	...	...	1	2
	15	Carbon steel	Forgings	SA-350	LF2	K03011	1	...	1	2
	16	Carbon steel	Forgings	SA-350	LF2	K03011	2	...	1	2
	17	Carbon steel	Forgings	SA-508	1	K13502	...	...	1	2
	18	Carbon steel	Forgings	SA-508	1A	K13502	...	...	1	2
	19	Carbon steel	Forgings	SA-541	1	K03506	...	...	1	2
	20	Carbon steel	Forgings	SA-541	1A	K03020	...	...	1	2
	21	Carbon steel	Cast pipe	SA-660	WCB	J03003	...	...	1	2
	22	Carbon steel	Forgings	SA-765	II	K03047	...	...	1	2
	23	Carbon steel	Plate	SA-515	70	K03101	...	...	1	2
	24	Carbon steel	Plate	SA-516	70	K02700	...	...	1	2
	25	Carbon steel	Plate	SA/JIS G3118	SGV480	...	...	...	1	2
	26	Carbon steel	Wld. pipe	SA-671	CB70	K03101	...	...	1	2
	27	Carbon steel	Wld. pipe	SA-671	CC70	K02700	...	...	1	2
	28	Carbon steel	Wld. pipe	SA-672	B70	K03101	...	...	1	2
	29	Carbon steel	Wld. pipe	SA-672	C70	K02700	...	...	1	2
	30	Carbon steel	Smls. pipe	SA-106	C	K03501	...	...	1	2
	31	Carbon steel	Wld. tube	SA-178	D	...	...	...	1	2
	32	Carbon steel	Wld. tube	SA-178	D	...	...	...	1	2
	33	Carbon steel	Wld. tube	SA-178	D	...	...	...	1	2
	34	Carbon steel	Smls. tube	SA-210	C	K03501	...	...	1	2
	35	Carbon steel	Castings	SA-216	WCC	J02503	...	...	1	2
	36	Carbon steel	Smls. & wld. fittings	SA-234	WPC	K03501	...	...	1	2
	37	Carbon steel	Castings	SA-352	LCC	J02505	...	...	1	2
	38	Carbon steel	Castings	SA-487	16	...	A	...	1	2
	39	Carbon steel	Plate	SA-537	...	K12437	3	4 < *t* ≤ 6	1	3
	40	Carbon steel	Smls. tube	SA-556	C2	K03006	...	...	1	2
	41	Carbon steel	Wld. tube	SA-557	C2	K03505	...	...	1	2
	42	Carbon steel	Cast pipe	SA-660	WCC	J02505	...	...	1	2
	43	Carbon steel	Bar	SA-695	B/40	K03504	...	...	1	2
	44	Carbon steel	Bar	SA-696	C	K03200	...	...	1	2

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	66.5	...	1000	NP	1000	NP	CS-2	G10, G18, S1, T1	07
2	66.5	...	1000	NP	1000	NP	CS-2	G10, G18, S1, T1	07
3	66.5	...	1000	NP	1000	NP	CS-2	G10, G18, S1, T1	07
4	66.5	37.5	850	NP	1000	NP	CS-2	G10, S1, T1	A08
5	66.5	...	850	NP	1000	650	CS-2	G10, G18, S1, T1	A08
6	67	41	NP	NP	482	NP	CS-2	...	A08
7	68	44	NP	NP	482	NP	CS-2	...	A08
8	70	35	NP	400 (Cl. 3 only)	650	650	CS-2	...	
9	70	35	850	650 (Cl. 3 only)	1000	650	CS-2	G10, G15, G22, G35, S1, T2	
10	70	36	1000	700	1000	650	CS-2	G10, G35, S1, T2	
11	70	36	1000	700	1000	650	CS-2	G10, G35, S1, T2	
12	70	36	1000	700	1000	650	CS-2	G1, G10, G17, S1, T2	
13	70	36	1000	700	1000	650	CS-2	G10, S1, T2	
14	70	36	NP	NP	1000	650	CS-2	G10, T2	
15	70	36	NP	700	1000	650	CS-2	G10, T2	
16	70	36	NP	700	1000	650	CS-2	G10, T2	
17	70	36	NP	700	1000	650	CS-2	G10, T2	
18	70	36	NP	700	1000	650	CS-2	G10, T2	
19	70	36	NP	700	1000	650	CS-2	G10, T2	
20	70	36	NP	700	1000	650	CS-2	G10, T2	
21	70	36	1000	700	NP	NP	CS-2	G1, G10, G17, S1, T2	
22	70	36	NP	NP	1000	650	CS-2	G10, T2	
23	70	38	1000	700	1000	650	CS-2	G10, S1, T2	
24	70	38	850	700	1000	650	CS-2	G10, S1, T2	
25	70	38	850	NP	NP	NP	CS-2	G10, S1, T2	
26	70	38	NP	700	NP	NP	CS-2	S5, W10, W12	
27	70	38	NP	700	NP	NP	CS-2	S6, W10, W12	
28	70	38	NP	700	NP	NP	CS-2	S5, W10, W12	
29	70	38	NP	700	NP	NP	CS-2	S6, W10, W12	
30	70	40	1000	700	1000	650	CS-2	G10, S1, T1	
31	70	40	1000	NP	NP	NP	CS-2	G10, S1, T1, W13	
32	70	40	1000	NP	NP	NP	CS-2	G4, G10, S1, T4	
33	70	40	1000	NP	NP	NP	CS-2	G3, G10, S1, T2	
34	70	40	1000	NP	1000	650	CS-2	G10, S1, T1	
35	70	40	1000	700	1000	650	CS-2	G1, G10, G17, S1, T1	
36	70	40	800	700	800	650	CS-2	G10, T1, W14	
37	70	40	NP	700	NP	NP	CS-2	G17, T1	
38	70	40	NP	700	NP	NP	CS-2	...	
39	70	40	NP	NP	700	650	CS-2	G21, G23, W11	
40	70	40	NP	NP	800	650	CS-2	G10, T1	
41	70	40	NP	NP	1000	650	CS-2	G24, G35, T2, W6	
42	70	40	1000	700	NP	NP	CS-2	G1, G10, G17, S1, T1	
43	70	40	NP	700	800	650	CS-2	G10, T1	
44	70	40	NP	700	NP	NP	CS-2	T1	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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
07	1	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*
07	2	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*
07	3	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*
A08	4	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	18.5	*16.7*	*13.9*	*11.4*	*8.7*	*5.9*
A08	5	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	*16.7*	*13.9*	*11.4*	*8.7*	*5.9*
A08	6	19.1	19.1	19.1	19.1	19.1	19.1	19.1	...	...	...	...	...	...	...
A08	7	19.5	19.5	19.5	19.5	19.5	19.5	19.5	...	...	...	...	...	...	...
	8	20.0	20.0	20.0	...	20.0	19.9	19.0	17.9	17.3	...	...	...	...	...
	9	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*
	10	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*
	11	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*
	12	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*
	13	20.0	...	20.0	...	20.0	20.0	19.6	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
	14	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*
	15	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*
	16	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*
	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*
	20	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*
	21	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	20.0	19.4	18.8	18.1	*14.8*	*12.0*	*9.3*	*6.7*
	24	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*
	25	20.0	20.0	20.0	...	20.0	20.0	20.0	19.4	18.8	18.1	*14.8*	*12.0*	*9.3*	...
	26	20.0	...	20.0	...	20.0	20.0	20.0	19.4	18.8	18.1	...	...	...	...
	27	20.0	...	20.0	...	20.0	20.0	20.0	19.4	18.8	18.1	...	...	...	...
	28	20.0	...	20.0	...	20.0	20.0	20.0	19.4	18.8	18.1	...	...	...	...
	29	20.0	...	20.0	...	20.0	20.0	20.0	19.4	18.8	18.1	...	...	...	...
	30	20.0	...	20.0	...	20.0	20.0	20.0	20.0	19.8	*18.3*	*14.8*	*12.0*	*9.3*	*6.7*
	31	20.0	...	20.0	...	20.0	20.0	20.0	20.0	19.8	*18.3*	*14.8*	*12.0*	*9.3*	*6.7*
	32	20.0	...	20.0	...	20.0	20.0	20.0	20.0	19.8	18.3	14.8	12.0	9.3	*5.7*
	33	17.0	...	17.0	...	17.0	17.0	17.0	17.0	16.8	15.5	*12.6*	*10.2*	*7.9*	*5.7*
	34	20.0	...	20.0	...	20.0	20.0	20.0	20.0	19.8	*18.3*	*14.8*	*12.0*	*9.3*	*6.7*
	35	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*
	36	20.0	...	20.0	...	20.0	20.0	20.0	20.0	19.8	*18.3*	*14.8*	*12.0*	...	...
	37	20.0	...	20.0	...	20.0	20.0	20.0	20.0	19.8	*18.3*	...	...	...	...
	38	20.0	...	19.9	...	18.8	18.1	17.9	17.9	17.9	17.9	...	...	...	...
	39	20.0	20.0	20.0	...	19.7	19.5	18.9	18.0	17.6	17.2	...	...	...	...
	40	20.0	20.0	20.0	...	20.0	20.0	20.0	20.0	19.8	*18.3*	*14.8*	*12.0*	...	...
	41	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*
	42	20.0	...	20.0	...	20.0	20.0	20.0	20.0	19.8	*18.3*	*14.8*	*12.0*	*9.3*	*6.7*
	43	20.0	20.0	20.0	...	20.0	20.0	20.0	20.0	19.8	*18.3*	*14.8*	*12.0*	...	...
	44	20.0	...	20.0	...	20.0	20.0	20.0	20.0	19.8	*18.3*	...	...	...	...

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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*	...	...	...	...	...	...	...	...	...	...	...	...	...	07
2	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	07
3	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	07
4	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
5	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
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*	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	*3.4*	*2.1*	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	*3.4*	*2.1*	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
41	*3.4*	*2.1*	...	...	...	...	...	...	...	...	...	...	...	...	...	
42	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
43	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
44	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	Carbon steel	Sheet	SA-414	F	K03102	...	...	1	2
	2	Carbon steel	Plate	SA-662	C	K02007	...	...	1	2
	3	Carbon steel	Plate	SA-537	...	K12437	2	$4 < t \le 6$	1	3
07	4	Carbon steel	Plate	SA-738	C	K02008	...	$4 < t \le 6$	1	3
	5	Carbon steel	Plate	SA-537	...	K12437	1	$\le 2\frac{1}{2}$	1	2
	6	Carbon steel	Wld. pipe	SA-671	CD70	K12437	...	$\le 2\frac{1}{2}$	1	2
	7	Carbon steel	Wld. pipe	SA-672	D70	K12437	...	$\le 2\frac{1}{2}$	1	2
	8	Carbon steel	Wld. pipe	SA-691	CMSH-70	K12437	...	$\le 2\frac{1}{2}$	1	2
07	9	Carbon steel	Plate	SA/AS 1548	7-490A	...	Annealed	≤ 6	1	2
07	10	Carbon steel	Plate	SA/AS 1548	7-490N	...	Normalized	≤ 6	1	2
07	11	Carbon steel	Plate	SA/AS 1548	7-490R	...	As rolled	$\le 1\frac{1}{2}$	1	2
A08	12	Carbon steel	Plate	SA/GB 6654	16MnR	...	...	$0.65 < t \le 1.5$	1	2
	13	Carbon steel	Plate	SA-455	...	K03300	...	$\frac{3}{8} < t \le 0.58$	1	2
A08	14	Carbon steel	Plate	SA/GB 6654	16MnR	...	...	$0.25 < t \le 0.65$	1	2
	15	Carbon steel	Forgings	SA-266	3	K05001	...	...	1	2
	16	Carbon steel	Plate	SA-455	...	K03300	...	$\le \frac{3}{8}$	1	2
	17	Carbon steel	Plate	SA-299	...	K02803	...	> 1	1	2
	18	Carbon steel	Wld. pipe	SA-671	CK75	K02803	...	> 1	1	2
	19	Carbon steel	Wld. pipe	SA-672	N75	K02803	...	> 1	1	2
	20	Carbon steel	Wld. pipe	SA-691	CMS-75	K02803	...	> 1	1	2
	21	Carbon steel	Plate	SA-299	...	K02803	...	≤ 1	1	2
	22	Carbon steel	Wld. pipe	SA-691	CMS-75	K02803	...	≤ 1	1	2
	23	Carbon steel	Forgings	SA-372	B	K04001	...	...	1	2
	24	Carbon steel	Sheet	SA-414	G	K03103	...	...	1	2
	25	Carbon steel	Plate	SA-738	A	K12447	...	...	1	2
	26	Carbon steel	Plate	SA-537	...	K12437	3	$2\frac{1}{2} < t \le 4$	1	3
	27	Carbon steel	Plate	SA-537	...	K12437	2	$2\frac{1}{2} < t \le 4$	1	3
	28	Carbon steel	Wld. pipe	SA-691	CMSH-80	K12437	...	$2\frac{1}{2} < t \le 4$	1	3
07	29	Carbon steel	Plate	SA-738	C	K02008	...	$2\frac{1}{2} < t \le 4$	1	3
	30	Carbon steel	Forgings	SA-765	IV	K02009	...	...	1	3
	31	Carbon steel	Plate	SA-537	...	K12437	3	$\le 2\frac{1}{2}$	1	3
	32	Carbon steel	Plate	SA-537	...	K12437	2	$\le 2\frac{1}{2}$	1	3
	33	Carbon steel	Wld. pipe	SA-671	CD80	K12437	...	$\le 2\frac{1}{2}$	1	3
	34	Carbon steel	Wld. pipe	SA-672	D80	K12437	...	$\le 2\frac{1}{2}$	1	3
	35	Carbon steel	Wld. pipe	SA-691	CMSH-80	K12437	...	$\le 2\frac{1}{2}$	1	3
07	36	Carbon steel	Plate	SA-738	C	K02008	...	$\le 2\frac{1}{2}$	1	3
07	37	Carbon steel	Plate	SA-612	...	K02900	...	$\frac{1}{2} < t \le 1$	10C	1
	38	Carbon steel	Plate	SA-612	...	K02900	...	$\le \frac{1}{2}$	10C	1
07	39	Carbon steel	Plate	SA-738	B	K12007	...	...	1	3
	40	Carbon steel	Forgings	SA-372	C	K04801	...	...	...	...
	41	Carbon steel	Plate	SA-724	A	K11831	...	...	1	4
	42	Carbon steel	Plate	SA-724	C	K12037	...	...	1	4
	43	Carbon steel	Plate	SA-724	B	K12031	...	...	1	4

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	70	42	NP	NP	900	650	CS-2	G10, G35, T1	
2	70	43	NP	NP	700	650	CS-3	T1	
3	70	46	NP	700	700	650	CS-3	G21, G23, T1, W11	
4	70	46	NP	650	650	650	CS-3	G21, G23, W11	07
5	70	50	NP	700	650	650	CS-3	G23, T1	
6	70	50	NP	700	NP	NP	CS-3	S6, T1, W10, W12	
7	70	50	NP	700	NP	NP	CS-3	S6, T1, W10, W12	
8	70	50	NP	700	NP	NP	CS-3	S6, T1, W10, W12	
9	71	...	1000	NP	1000	NP	CS-2	G10, G18, S1, T1	07
10	71	...	1000	NP	1000	NP	CS-2	G10, G18, S1, T1	07
11	71	...	1000	NP	1000	NP	CS-2	G10, G18, S1, T1	07
12	71	47	NP	NP	482	NP	CS-2	...	A08
13	73	37	NP	400 (Cl. 3 only)	650	650	CS-2	...	
14	74	50	NP	NP	482	NP	CS-2	...	A08
15	75	37.5	1000	700	1000	NP	CS-2	G10, S1, T2, W8, W11	
16	75	38	NP	400 (Cl. 3 only)	650	650	CS-2	...	
17	75	40	1000	700	1000	650	CS-2	G10, S1, T2	
18	75	40	NP	700	NP	NP	CS-2	S6, W10, W12	
19	75	40	NP	700	NP	NP	CS-2	S6, W10, W12	
20	75	40	NP	700	NP	NP	CS-2	S6, W10, W12	
21	75	42	1000	700	1000	650	CS-2	G10, S1, T1	
22	75	42	NP	700	NP	NP	CS-2	T1, W10, W12	
23	75	45	NP	NP	650	650	CS-3	W11	
24	75	45	NP	NP	900	650	CS-3	G10, G35, T1	
25	75	45	NP	NP	700	650	CS-2	T1	
26	75	50	NP	NP	700	650	CS-5	G23, T1, W11	
27	75	55	NP	700	650	650	CS-5	G23, T1, W11	
28	75	55	NP	700	NP	NP	CS-5	G26, T1, W10, W12	
29	75	55	NP	650	650	650	CS-5	G21, G23, W11	07
30	80	50	NP	NP	700	NP	CS-3	...	
31	80	55	NP	NP	700	650	CS-5	G23, T1, W11	
32	80	60	NP	700	650	650	CS-5	G23, S6, T1, W10, W11, W12	
33	80	60	NP	700	NP	NP	CS-5	S6, T1, W10, W12	
34	80	60	NP	700	NP	NP	CS-5	S6, T1, W10, W12	
35	80	60	NP	700	NP	NP	CS-5	S6, T1, W10, W12	
36	80	60	NP	650	650	650	CS-5	G23, W11	07
37	81	50	NP	700	650	650	CS-3	T1	07
38	83	50	NP	650	650	650	CS-3	...	
39	85	60	NP	650	650	650	CS-5	G20	07
40	90	55	NP	NP	650	650	CS-3	W11	
41	90	70	NP	NP	700	650	CS-5	...	
42	90	70	NP	NP	700	650	CS-5	...	
43	95	75	NP	NP	700	650	CS-5	...	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	*18.3*	*14.8*	*12.0*	*9.3*	*6.7*
	2	20.0	20.0	20.0	...	20.0	20.0	20.0	20.0	20.0	*18.3*	...	...	...	...
	3	20.0	...	20.0	...	19.7	19.5	19.5	19.5	19.5	*18.3*	...	...	...	...
07	4	20.0	...	20.0	...	19.7	19.5	19.5	19.5	19.5	...	...	...	...	...
	5	20.0	...	20.0	...	19.7	19.5	19.5	19.5	19.5	*18.3*	...	...	...	...
	6	20.0	...	20.0	...	19.7	19.5	19.5	19.5	19.5	*18.3*	...	...	...	...
	7	20.0	...	20.0	...	19.7	19.5	19.5	19.5	19.5	*18.3*	...	...	...	...
	8	20.0	...	20.0	...	19.7	19.5	19.5	19.5	19.5	*18.3*	...	...	...	...
07	9	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	*18.3*	*14.8*	*12.0*	*9.3*	*6.7*
07	10	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	*18.3*	*14.8*	*12.0*	*9.3*	*6.7*
07	11	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	*18.3*	*14.8*	*12.0*	*9.3*	*6.7*
A08	12	20.3	20.3	20.3	20.3	20.3	20.3	20.3	...	...	...	...	...	...	...
	13	20.9	20.9	20.9	...	20.9	20.9	20.1	18.9	18.3	...	...	...	...	...
A08	14	21.1	21.1	21.1	21.1	21.1	21.1	21.1	...	...	...	...	...	...	...
	15	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*
	16	21.4	21.4	21.4	...	21.4	21.4	20.6	19.4	18.8	...	...	...	...	...
	17	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*
	18	21.4	...	21.4	...	21.4	21.4	21.4	20.4	19.8	19.1	...	...	...	...
	19	21.4	...	21.4	...	21.4	21.4	21.4	20.4	19.8	19.1	...	...	...	...
	20	21.4	...	21.4	...	21.4	21.4	21.4	20.4	19.8	19.1	...	...	...	...
	21	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*
	22	21.4	...	21.4	...	21.4	21.4	21.4	21.4	20.8	*19.6*	...	...	...	...
	23	21.4	...	21.4	...	21.4	21.4	21.4	21.4	21.4	...	...	...	...	...
	24	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*
	25	21.4	...	21.4	...	21.4	21.4	21.4	21.4	21.4	*19.6*	...	...	...	...
	26	21.4	...	21.4	...	21.1	20.9	20.9	20.9	20.9	*18.3*	...	...	...	...
	27	21.4	...	21.4	...	21.1	20.9	20.9	20.9	20.9	*19.6*	...	...	...	...
	28	21.4	...	21.4	...	21.1	20.9	20.9	20.9	20.9	*19.6*	...	...	...	...
07	29	21.4	...	21.4	...	21.1	20.9	20.9	20.9	20.9	...	...	...	...	...
	30	22.9	...	22.9	...	22.9	22.6	22.6	22.6	22.5	22.2	...	...	...	...
	31	22.9	...	22.9	...	22.6	22.3	22.3	22.3	22.3	*19.6*	...	...	...	...
	32	22.9	...	22.9	...	22.6	22.3	22.3	22.3	22.3	*19.6*	...	...	...	...
	33	22.9	...	22.9	...	22.6	22.3	22.3	22.3	22.3	*19.6*	...	...	...	...
	34	22.9	...	22.9	...	22.6	22.3	22.3	22.3	22.3	*19.6*	...	...	...	...
	35	22.9	...	22.9	...	22.6	22.3	22.3	22.3	22.3	*19.6*	...	...	...	...
07	36	22.9	...	22.9	...	22.6	22.3	22.3	22.3	22.3	...	...	...	...	...
07	37	23.1	...	23.1	...	22.8	22.6	22.6	22.5	22.0	*19.6*	...	...	...	...
	38	23.7	...	23.7	...	23.4	23.2	23.2	22.5	22.0	...	...	...	...	...
07	39	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.1	23.7	...	...	...	...	...
	40	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	24.4	...	...	...	...	...
	41	25.7	25.7	25.7	25.6	25.4	25.1	25.1	25.1	24.4	21.9	...	...	...	...
	42	25.7	25.7	25.7	25.6	25.4	25.1	25.1	25.1	24.4	21.9	...	...	...	...
	43	27.1	27.1	27.1	27.0	26.8	26.5	26.5	26.5	24.4	23.1	...	...	...	...

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	07
10	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	07
11	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	07
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
15	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
41	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
42	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
43	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	C–Mn–Si–Cb	Plate	SA-737	B	K12001	...	...	1	2
07	2	C–Mn–Si–Cb	Plate	SA/AS 1548	5-490A	...	Annealed	≤ 6	1	2
07	3	C–Mn–Si–Cb	Plate	SA/AS 1548	5-490N	...	Normalized	≤ 6	1	2
	4	C–Mn–Si–V	Plate	SA-737	C	K12202	...	...	1	3
A08	5	C–Mn–Si–V–Cb	Plate	SA-656	T3	...	...	≤ 2	1	1
A08	6	C–Mn–Si–V–Cb	Plate	SA-656	T7	...	...	≤ 2	1	1
A08	7	C–Mn–Si–V–Cb	Plate	SA-656	T3	...	...	≤ 1½	1	2
A08	8	C–Mn–Si–V–Cb	Plate	SA-656	T7	...	...	≤ 1½	1	2
A08	9	C–Mn–Si–V–Cb	Plate	SA-656	T3	...	...	≤ 1	1	3
A08	10	C–Mn–Si–V–Cb	Plate	SA-656	T7	...	...	≤ 1	1	3
A08	11	C–Mn–Si–V–Cb	Plate	SA-656	T3	...	...	≤ ¾	1	4
A08	12	C–Mn–Si–V–Cb	Plate	SA-656	T7	...	...	≤ ¾	1	4
07	13	C–Mn–Ti	Plate, sheet	SA-562	...	K11224	...	...	1	1
	14	C–Si–Ti	Forgings	SA-836	...	...	1	...	1	1
	15	C–½Mo	Smls. tube	SA-209	T1b	K11422	...	...	3	1
	16	C–½Mo	Wld. tube	SA-250	T1b	K11422	...	...	3	1
	17	C–½Mo	Wld. tube	SA-250	T1b	K11422	...	...	3	1
	18	C–½Mo	Smls. tube	SA-209	T1	K11522	...	...	3	1
	19	C–½Mo	Smls. & wld. fittings	SA-234	WP1	K12821	...	...	3	1
	20	C–½Mo	Wld. tube	SA-250	T1	K11522	...	...	3	1
	21	C–½Mo	Wld. tube	SA-250	T1	K11522	...	...	3	1
	22	C–½Mo	Smls. pipe	SA-335	P1	K11522	...	...	3	1
	23	C–½Mo	Forged pipe	SA-369	FP1	K11522	...	...	3	1
	24	C–½Mo	Smls. tube	SA-209	T1a	K12023	...	...	3	1
	25	C–½Mo	Wld. tube	SA-250	T1a	K12023	...	...	3	1
	26	C–½Mo	Wld. tube	SA-250	T1a	K12023	...	...	3	1
	27	C–½Mo	Castings	SA-217	WC1	J12524	...	...	3	1
	28	C–½Mo	Castings	SA-352	LC1	J12522	...	...	3	1
	29	C–½Mo	Cast pipe	SA-426	CP1	J12521	...	...	3	1
	30	C–½Mo	Plate	SA-204	A	K11820	...	...	3	1
	31	C–½Mo	Wld. pipe	SA-672	L65	K11820	...	...	3	1
	32	C–½Mo	Wld. pipe	SA-691	CM-65	K11820	...	...	3	1
	33	C–½Mo	Wld. pipe	SA-691	CM-65	K11820	...	...	3	1
	34	C–½Mo	Forgings	SA-182	F1	K12822	...	...	3	2
	35	C–½Mo	Plate	SA-204	B	K12020	...	...	3	2
	36	C–½Mo	Forgings	SA-336	F1	K12520	...	...	3	2
	37	C–½Mo	Wld. pipe	SA-672	L70	K12020	...	...	3	2
	38	C–½Mo	Wld. pipe	SA-691	CM-70	K12020	...	...	3	2
	39	C–½Mo	Wld. pipe	SA-691	CM-70	K12020	...	...	3	2

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	70	50	NP	700	700	650	CS-3	G19, T1	
2	71	...	1000	NP	NP	NP	CS-2	G10, G18, S1, T1	07
3	71	...	1000	NP	NP	NP	CS-2	G10, G18, S1, T1	07
4	80	60	NP	700	700	650	CS-3	G20	
5	60	50	NP	NP	NP	650	...	...	A08
6	60	50	NP	NP	NP	650	...	...	A08
7	70	60	NP	NP	NP	650	...	...	A08
8	70	60	NP	NP	NP	650	...	...	A08
9	80	70	NP	NP	NP	650	...	...	A08
10	80	70	NP	NP	NP	650	...	...	A08
11	90	80	NP	NP	NP	650	...	...	A08
12	90	80	NP	NP	NP	650	...	...	A08
13	71	30	NP	NP	650	NP	CS-6	G30	07
14	55	25	NP	NP	650	650	CS-1	...	
15	53	28	1000	NP	1000	650	CS-1	G11, S3, T5	
16	53	28	1000	NP	NP	NP	CS-1	G11, S2, T5, W13	
17	53	28	1000	NP	1000	650	CS-1	G3, G11, G24, S2, T5	
18	55	30	1000	NP	1000	650	CS-2	G11, S3, T4	
19	55	30	1000	700	1000	650	CS-2	G11, T4, W14	
20	55	30	1000	NP	NP	NP	CS-2	G11, S2, T4, W13	
21	55	30	1000	NP	1000	650	CS-2	G3, G11, G24, S2, T4	
22	55	30	1000	700	1000	650	CS-2	G11, S2, T4	
23	55	30	1000	700	1000	650	CS-2	G11, S2, T4	
24	60	32	1000	NP	1000	650	CS-2	G11, S3, T4	
25	60	32	1000	NP	NP	NP	CS-2	G11, S2, T4, W13	
26	60	32	1000	NP	1000	650	CS-2	G3, G11, G24, S2, T4	
27	65	35	1000	700	1000	650	CS-2	G1, G11, G17, S2, T4	
28	65	35	NP	700	650	650	CS-2	G1, G17	
29	65	35	NP	700	NP	NP	CS-2	G17	
30	65	37	1000	700	1000	650	CS-2	G11, S2, T4	
31	65	37	NP	700	NP	NP	CS-2	G26, W10, W12	
32	65	37	NP	700	NP	NP	CS-2	G26, W10, W12	
33	65	37	NP	300 (Cl. 3 only)	NP	NP	CS-2	G27, W10, W12	
34	70	40	1000	700	1000	650	CS-2	G11, S2, T4	
35	70	40	1000	700	1000	650	CS-2	G11, S2, T4	
36	70	40	1000	700	1000	650	CS-2	G11, S2, T4	
37	70	40	NP	700	NP	NP	CS-2	G26, W10, W12	
38	70	40	NP	700	NP	NP	CS-2	G26, W10, W12	
39	70	40	NP	300 (Cl. 3 only)	NP	NP	CS-2	G27, W10, W12	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	*19.6*	...	...	...	...
07	2	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	*18.3*	*14.8*	*12.0*	*9.3*	*6.7*
07	3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	*18.3*	*14.8*	*12.0*	*9.3*	*6.7*
	4	22.9	...	22.9	...	22.9	22.9	22.9	22.9	22.9	20.0	...	...	...	...
A08	5	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	...	...	...	...	...
A08	6	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	...	...	...	...	...
A08	7	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	...	...	...	...	...
A08	8	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	...	...	...	...	...
A08	9	22.9	...	22.9	...	22.9	22.9	22.9	22.9	22.9	...	...	...	...	...
A08	10	22.9	...	22.9	...	22.9	22.9	22.9	22.9	22.9	...	...	...	...	...
A08	11	25.7	...	25.7	...	25.7	25.7	25.7	25.7	25.7	...	...	...	...	...
A08	12	25.7	...	25.7	...	25.7	25.7	25.7	25.7	25.7	...	...	...	...	...
07	13	12.9	...	11.5	...	10.6	10.4	10.4	10.4	10.4	...	...	...	...	...
	14	15.7	...	14.3	...	13.3	13.0	13.0	12.9	12.7	...	...	...	...	...
	15	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
	16	15.1	...	15.1	...	15.1	15.1	15.1	15.1	15.0	14.7	14.3	14.0	13.5	13.0
	17	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
	18	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*
	19	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*
	20	15.7	...	15.7	...	15.7	15.7	15.7	15.7	15.7	15.7	15.4	14.9	14.5	*13.7*
	21	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*
	22	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*
	23	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*
	24	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	16.8	16.4	15.9	15.4	*13.7*
	25	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	16.8	16.4	15.9	15.4	*13.7*
	26	14.6	...	14.6	...	14.6	14.6	14.6	14.6	14.6	14.3	13.9	13.6	13.1	*11.6*
	27	18.6	...	18.6	...	18.6	18.6	18.6	18.6	18.6	18.4	17.9	17.4	16.9	*13.7*
	28	18.6	...	18.6	...	18.6	18.6	18.6	18.6	18.6	18.4	...	...	...	...
	29	18.6	...	18.6	...	18.6	18.6	18.6	18.6	18.6	18.4	...	...	...	...
	30	18.6	...	18.6	...	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.4	17.9	*13.7*
	31	18.6	...	18.6	...	18.6	18.6	18.6	18.6	18.6	18.6	...	...	...	...
	32	18.6	...	18.6	...	18.6	18.6	18.6	18.6	18.6	18.6	...	...	...	...
	33	18.6	...	18.6	...	18.6	...	...	...	...	...	...	...	...	...
	34	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.9	19.3	*13.7*
	35	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.9	19.3	*13.7*
	36	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.9	19.3	*13.7*
	37	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	...	...	...	...
	38	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	...	...	...	...
	39	20.0	...	20.0	...	20.0	...	...	...	...	...	...	...	...	...

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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*	...	...	...	...	...	...	...	...	...	...	...	...	...	07
3	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	07
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	*7.0*	*4.1*	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	*7.0*	*4.1*	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	*7.0*	*4.1*	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ 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	Wld. pipe	SA-691	CM-75	K12320	...	...	3	2
5	C–½Mo	Plate	SA-517	J	K11625	...	≤ 1¼	11B	6
6	½Cr–⅕Mo	Forgings	SA-372	G	K13049	70	...	...	...
7	½Cr–⅕Mo	Forgings	SA-372	H	K13547	70	...	...	...
8	½Cr–⅕Mo–V	Plate	SA-517	B	K11630	...	≤ 1¼	11B	4
9	½Cr–¼Mo–Si	Plate	SA-517	A	K11856	...	≤ 1¼	11B	1
10	½Cr–¼Mo–Si	Forgings	SA-592	A	K11856	...	≤ 2½	11B	1

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only)				External Pressure Chart No.	Notes
			I	III	VIII-1	XII		
1	75	43	1000	700	1000	650	CS-2	G11, S2, T4, W12
2	75	43	NP	700	NP	NP	CS-2	G26, W10, W12
3	75	43	NP	700	NP	NP	CS-2	G26, W10, W12
4	75	43	NP	300 (Cl. 3 only)	NP	NP	CS-2	G27, W10, W12
5	115	100	NP	650 (SPT)	650	650	HT-1	...
6	120	70	NP	NP	200	200	CS-3	W11
7	120	70	NP	NP	200	200	CS-3	W11
8	115	100	NP	650 (SPT)	650	650	HT-1	...
9	115	100	NP	650 (SPT)	650	650	HT-1	...
10	115	100	NP	650 (SPT)	650	650	HT-1	...

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	21.4	...	21.4	...	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	20.7	*13.7*
2	21.4	...	21.4	...	21.4	21.4	21.4	21.4	21.4	21.4	...	...	...	...
3	21.4	...	21.4	...	21.4	21.4	21.4	21.4	21.4	21.4	...	...	...	...
4	21.4	...	21.4	...	21.4	...	...	...	...	...	...	...	...	...
5	32.9	...	32.9	...	32.9	32.9	32.9	32.9	32.9	...	...	...	...	...
6	34.3	...	34.3	...	...	...	...	...	...	...	...	...	...	...
7	34.3	...	34.3	...	...	...	...	...	...	...	...	...	...	...
8	32.9	...	32.9	32.9	32.9	32.9	32.9	32.9	32.8	...	...	...	...	...
9	32.9	...	32.9	32.9	32.9	32.9	32.9	32.9	32.8	...	...	...	...	...
10	32.9	...	32.9	...	32.9	32.9	32.9	32.9	32.8	...	...	...	...	...

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	½Cr–½Mo	Smls. pipe	SA-335	P2	K11547	...	...	3	1
	2	½Cr–½Mo	Forged pipe	SA-369	FP2	K11547	...	...	3	1
	3	½Cr–½Mo	Plate	SA-387	2	K12143	1	...	3	1
	4	½Cr–½Mo	Wld. pipe	SA-691	½CR	K12143	...	...	3	1
	5	½Cr–½Mo	Wld. pipe	SA-691	½CR	K12143	...	...	3	1
	6	½Cr–½Mo	Smls. tube	SA-213	T2	K11547	...	...	3	1
	7	½Cr–½Mo	Wld. tube	SA-250	T2	K11547	...	...	3	1
	8	½Cr–½Mo	Wld. tube	SA-250	T2S1	K11547	...	...	3	1
	9	½Cr–½Mo	Cast pipe	SA-426	CP2	J11547	...	...	3	1
	10	½Cr–½Mo	Forgings	SA-182	F2	K12122	...	...	3	2
	11	½Cr–½Mo	Plate	SA-387	2	K12143	2	...	3	2
	12	½Cr–½Mo	Wld. pipe	SA-691	½CR	K12143	...	...	3	2
	13	½Cr–1¼Mn–Si	Plate	SA-202	A	K11742	...	...	4	1
	14	½Cr–1¼Mn–Si	Plate	SA-202	B	K12542	...	...	4	1
	15	¾Cr–½Ni–Cu	Smls. & wld. tube	SA-423	1	K11535	...	...	4	2
	16	¾Cr–½Ni–Cu	Wld. tube	SA-423	1	K11535	...	...	4	2
A08	17	¾Cr–¾Ni–Cu–Al	Pipe	SA-333	4	K11267	...	...	4	2
	18	1Cr–⅕Mo	Forgings	SA-372	E	K13047	65	...	...	...
	19	1Cr–⅕Mo	Forgings	SA-372	J	K13548	65	...	...	...
	20	1Cr–⅕Mo	Forgings	SA-372	E	K13047	70	...	...	...
	21	1Cr–⅕Mo	Forgings	SA-372	F	G41350	70	...	...	...
	22	1Cr–⅕Mo	Forgings	SA-372	J	K13548	70	...	...	...
	23	1Cr–⅕Mo	Forgings	SA-372	J	G41370	110	...	...	...
	24	1Cr–½Mo	Plate	SA-387	12	K11757	1	...	4	1
	25	1Cr–½Mo	Wld. pipe	SA-691	1CR	K11757	...	...	4	1
	26	1Cr–½Mo	Cast pipe	SA-426	CP12	J11562	...	...	4	1
	27	1Cr–½Mo	Forgings	SA-182	F12	K11562	1	...	4	1
	28	1Cr–½Mo	Smls. tube	SA-213	T12	K11562	...	...	4	1
	29	1Cr–½Mo	Smls. & wld. fittings	SA-234	WP12	K12062	1	...	4	1
	30	1Cr–½Mo	Wld. tube	SA-250	T12	K11562	...	...	4	1
	31	1Cr–½Mo	Wld. tube	SA-250	T12S1	K11562	...	...	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	...	...	4	1
	36	1Cr–½Mo	Forgings	SA-182	F12	K11564	2	...	4	1
	37	1Cr–½Mo	Forgings	SA-336	F12	K11564	...	...	4	1
	38	1Cr–V	Smls. tube	SA-213	T17	K12047	...	...	10B	1

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	55	30	1000	700	1000	650	CS-2	T5	
2	55	30	1000	700	1000	650	CS-2	T5	
3	55	33	1000	700	1000	650	CS-2	T5	
4	55	33	NP	700	NP	NP	CS-2	G26, W10, W12	
5	55	33	NP	300 (Cl. 3 only)	NP	NP	CS-2	G27, W10, W12	
6	60	30	1000	700	1000	650	CS-2	T5	
7	60	30	1000	NP	NP	NP	CS-2	G3, T5	
8	60	30	1000	NP	NP	NP	CS-2	T5, W13	
9	60	30	NP	700	NP	NP	CS-2	G17	
10	70	40	1000	NP	1000	650	CS-2	T5	
11	70	45	NP	700	1000	650	CS-3	T5	
12	70	45	NP	700	NP	NP	CS-3	G26, W10, W12	
13	75	45	1000	NP	1000	NP	CS-3	S1, T2	
14	85	47	1000	NP	1000	NP	CS-3	S1, T2	
15	60	37	700	NP	650	NP	CS-2	W13, W14	
16	60	37	700	NP	650	NP	CS-2	G3, G24	
17	60	35	NP	700	650	NP	CS-2	...	A08
18	105	65	NP	NP	650	650	CS-2	W11	
19	105	65	NP	NP	650	650	CS-2	W11	
20	120	70	NP	NP	650	650	CS-5	W11	
21	120	70	NP	NP	650	650	CS-5	W11	
22	120	70	NP	NP	650	650	CS-5	W11	
23	135	110	NP	NP	650	650	HT-1	W11	
24	55	33	1200	700	1200	NP	CS-2	S4, T5	
25	55	33	NP	700	NP	NP	CS-2	G26, W10, W12	
26	60	30	NP	700	NP	NP	CS-2	G17	
27	60	32	1200	NP	1200	NP	CS-2	T5	
28	60	32	1200	700	1200	NP	CS-2	S4, T5	
29	60	32	1200	700	1200	NP	CS-2	S4, T5, W14	
30	60	32	1200	NP	NP	NP	CS-2	G3, S4, T5	
31	60	32	1200	NP	NP	NP	CS-2	S4, T5, W13	
32	60	32	1200	700	1200	NP	CS-2	S4, T5	
33	60	32	1200	700	1200	NP	CS-2	S4, T5	
34	65	40	1200	700	1200	NP	CS-2	S4, T5	
35	65	40	NP	700	NP	NP	CS-2	G26, W10, W12	
36	70	40	1200	700	1200	NP	CS-2	S4, T4	
37	70	40	1200	700	1200	NP	CS-2	S4, T4	
38	60	30	NP	NP	650	650	CS-2	...	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	...	15.7	15.7	15.7	15.7	15.7	15.7	15.4	14.9	14.5	13.9
2	15.7	...	15.7	...	15.7	15.7	15.7	15.7	15.7	15.7	15.4	14.9	14.5	13.9
3	15.7	...	15.7	...	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.3	14.3
4	15.7	...	15.7	...	15.7	15.7	15.7	15.7	15.7	15.7	...	...	...	...
5	15.7	...	15.7	...	15.7	...	...	...	...	...	...	...	...	...
6	17.1	...	17.1	...	17.1	17.1	16.9	16.4	16.1	15.7	15.4	14.9	14.5	13.9
7	14.5	...	14.5	...	14.5	14.5	14.4	13.9	13.7	13.3	13.1	12.7	12.3	11.8
8	17.1	...	17.1	...	17.1	17.1	16.9	16.4	16.1	15.7	15.4	14.9	14.5	13.9
9	17.1	...	17.1	...	17.1	17.1	16.9	16.4	16.1	15.7	...	...	...	...
10	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.9	19.3	18.6
11	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
12	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	...	...	...	...
13	21.4	...	21.4	...	21.4	21.4	21.4	21.4	21.4	20.2	*15.7*	*12.0*	*7.8*	*5.0*
14	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*
15	17.1	...	17.1	...	17.1	17.1	17.1	17.1	17.1	17.1	...	...	...	...
16	14.6	...	14.6	...	14.6	14.6	14.6	14.6	14.6	14.6	...	...	...	...
A08 17	17.1	17.1	17.1	...	17.1	17.1	17.1	17.1	17.1	17.1	...	...	...	...
18	30.0	...	30.0	...	30.0	30.0	30.0	30.0	29.8	...	...	...	...	...
19	30.0	...	30.0	...	30.0	30.0	30.0	30.0	29.8	...	...	...	...	...
20	34.3	34.3	34.3	...	34.3	34.3	34.3	34.3	34.1	...	...	...	...	...
21	34.3	...	33.3	...	32.6	32.3	32.2	31.8	30.6	...	...	...	...	...
22	34.3	...	34.3	...	34.3	34.3	34.3	34.3	34.1	...	...	...	...	...
23	38.5	...	36.9	...	36.7	36.5	36.1	35.9	34.3	...	...	...	...	...
24	15.7	...	15.4	...	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	14.7
25	15.7	...	15.4	...	15.1	15.1	15.1	15.1	15.1	15.1	...	...	...	...
26	17.1	...	16.8	...	16.5	16.2	15.7	15.2	15.0	14.8	...	...	...	...
27	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
28	17.1	...	16.8	...	16.5	16.5	16.5	16.3	16.0	15.8	15.5	15.3	14.9	14.5
29	17.1	...	16.8	...	16.5	16.5	16.5	16.3	16.0	15.8	15.5	15.3	14.9	14.5
30	14.5	14.5	14.3	...	14.0	14.0	14.0	13.8	13.6	13.4	13.2	13.0	12.7	12.3
31	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
32	17.1	...	16.8	...	16.5	16.5	16.5	16.3	16.0	15.8	15.5	15.3	14.9	14.5
33	17.1	...	16.8	...	16.5	16.5	16.5	16.3	16.0	15.8	15.5	15.3	14.9	14.5
34	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
35	18.6	...	18.2	...	17.9	17.9	17.9	17.9	17.9	17.9	...	...	...	...
36	20.0	...	19.6	...	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.1	18.6	*18.0*
37	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*
38	17.1	17.1	17.1	...	17.1	16.8	16.2	15.7	15.4	...	...	...	...	...

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	9.2	5.9	...	...	...	...	...	...	...	...	...	...	...	...	...
2	9.2	5.9	...	...	...	...	...	...	...	...	...	...	...	...	...
3	9.2	5.9	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	9.2	5.9	...	...	...	...	...	...	...	...	...	...	...	...	...
7	7.8	5.0	...	...	...	...	...	...	...	...	...	...	...	...	...
8	9.2	5.9	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	9.2	5.9	...	...	...	...	...	...	...	...	...	...	...	...	...
11	9.2	5.9	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	3.0	1.5	...	...	...	...	...	...	...	...	...	...	...	...	...
14	3.0	1.5	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	... A08
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	11.3	7.2	4.5	2.8	1.8	1.1	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	11.3	7.2	4.5	2.8	1.8	1.1	...	...	...	...	...	...	...	...	...
28	11.3	7.2	4.5	2.8	1.8	1.1	...	...	...	...	...	...	...	...	...
29	11.3	7.2	4.5	2.8	1.8	1.1	...	...	...	...	...	...	...	...	...
30	9.6	6.1	3.8	2.4	1.5	0.94	...	...	...	...	...	...	...	...	...
31	11.3	7.2	4.5	2.8	1.8	1.1	...	...	...	...	...	...	...	...	...
32	11.3	7.2	4.5	2.8	1.8	1.1	...	...	...	...	...	...	...	...	...
33	11.3	7.2	4.5	2.8	1.8	1.1	...	...	...	...	...	...	...	...	...
34	11.3	7.2	4.5	2.8	1.8	1.1	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	11.3	7.2	4.5	2.8	1.8	1.1	...	...	...	...	...	...	...	...	...
37	11.3	7.2	4.5	2.8	1.8	1.1	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ 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	Forgings	SA-182	F11	K11597	1	...	4	1
5	1¼Cr–½Mo–Si	Smls. tube	SA-213	T11	K11597	...	...	4	1
6	1¼Cr–½Mo–Si	Smls. & wld. fittings	SA-234	WP11	...	1	...	4	1
7	1¼Cr–½Mo–Si	Wld. tube	SA-250	T11	K11597	...	...	4	1
8	1¼Cr–½Mo–Si	Wld. tube	SA-250	T11S1	K11597	...	...	4	1
9	1¼Cr–½Mo–Si	Smls. pipe	SA-335	P11	K11597	...	...	4	1
10	1¼Cr–½Mo–Si	Forgings	SA-336	F11	K11597	1	...	4	1
11	1¼Cr–½Mo–Si	Forged pipe	SA-369	FP11	K11597	...	...	4	1
12	1¼Cr–½Mo–Si	Plate	SA-387	11	K11789	1	...	4	1
13	1¼Cr–½Mo–Si	Wld. pipe	SA-691	1¼CR	K11789	...	...	4	1
14	1¼Cr–½Mo–Si	Wld. pipe	SA-691	1¼CR	K11789	...	...	4	1
15	1¼Cr–½Mo–Si	Forgings	SA-182	F11	K11572	2	...	4	1
16	1¼Cr–½Mo–Si	Forgings	SA-336	F11	K11572	2	...	4	1
17	1¼Cr–½Mo–Si	Forgings	SA-336	F11	K11572	3	...	4	1
18	1¼Cr–½Mo–Si	Plate	SA-387	11	K11789	2	...	4	1
19	1¼Cr–½Mo–Si	Wld. pipe	SA-691	1¼CR	K11789	...	...	4	1
20	1¾Cr–½Mo–Cu	Forgings	SA-592	E	K11695	...	$2\frac{1}{2} < t \le 4$	11B	2
21	1¾Cr–½Mo–Cu	Forgings	SA-592	E	K11695	...	$\le 2\frac{1}{2}$	11B	2
22	1¾Cr–½Mo–Ti	Plate	SA-517	E	K21604	...	$2\frac{1}{2} < t \le 6$	11B	2
23	1¾Cr–½Mo–Ti	Plate	SA-517	E	K21604	...	$\le 2\frac{1}{2}$	11B	2
24	2¼Cr–1Mo	Forgings	SA-182	F22	K21590	1	...	5A	1
25	2¼Cr–1Mo	Smls. tube	SA-213	T22	K21590	...	...	5A	1
26	2¼Cr–1Mo	Smls. & wld. fittings	SA-234	WP22	K21590	1	...	5A	1
27	2¼Cr–1Mo	Wld. tube	SA-250	T22	K21590	...	...	5A	1
28	2¼Cr–1Mo	Wld. tube	SA-250	T22S1	K21590	...	...	5A	1
29	2¼Cr–1Mo	Smls. pipe	SA-335	P22	K21590	...	...	5A	1
30	2¼Cr–1Mo	Forgings	SA-336	F22	K21590	1	...	5A	1
31	2¼Cr–1Mo	Forged pipe	SA-369	FP22	K21590	...	...	5A	1
32	2¼Cr–1Mo	Plate	SA-387	22	K21590	1	...	5A	1
33	2¼Cr–1Mo	Wld. pipe	SA-691	2¼CR	K21590	...	...	5A	1
34	2¼Cr–1Mo	Castings	SA-217	WC9	J21890	...	...	5A	1
35	2¼Cr–1Mo	Cast pipe	SA-426	CP22	J21890	...	...	5A	1
36	2¼Cr–1Mo	Forgings	SA-182	F22	K21590	3	...	5A	1
37	2¼Cr–1Mo	Forgings	SA-336	F22	K21590	3	...	5A	1
38	2¼Cr–1Mo	Plate	SA-387	22	K21590	2	...	5A	1
39	2¼Cr–1Mo	Wld. pipe	SA-691	2¼CR	K21590	...	...	5A	1
40	2¼Cr–1Mo	Bar	SA-739	B22	K21390	...	...	5A	1

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	11.4	7.8	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	9.0	7.0	5.5	4.0	2.7	1.5	...	...	...	...	...	...	...	...	...	
11	9.0	7.0	5.5	4.0	2.7	1.5	...	...	...	...	...	...	...	...	...	
12	9.0	7.0	5.5	4.0	2.7	1.5	...	...	...	...	...	...	...	...	...	
13	9.0	7.0	5.5	4.0	2.7	1.5	...	...	...	...	...	...	...	...	...	
14	9.0	7.0	5.5	4.0	2.7	1.5	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	9.5	6.8	4.9	3.2	2.4	1.3	...	...	...	...	...	...	...	...	...	
17	9.5	6.8	4.9	3.2	2.4	1.3	...	...	...	...	...	...	...	...	...	
18	9.5	6.8	4.9	3.2	2.4	1.3	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
31	8.0	5.8	4.2	2.9	1.8	1.0	...	...	...	...	...	...	...	...	...	
32	8.0	5.8	4.2	2.9	1.8	1.0	...	...	...	...	...	...	...	...	...	
33	8.0	5.8	4.2	2.9	1.8	1.0	...	...	...	...	...	...	...	...	...	
34	8.0	5.8	4.2	2.9	1.8	1.0	...	...	...	...	...	...	...	...	...	
35	8.0	5.8	4.2	2.9	1.8	1.0	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	8.0	5.8	4.2	2.9	1.8	1.0	...	...	...	...	...	...	...	...	...	
38	8.0	5.8	4.2	2.9	1.8	1.0	...	...	...	...	...	...	...	...	...	
39	8.0	5.8	4.2	2.9	1.8	1.0	...	...	...	...	...	...	...	...	...	
40	8.0	5.8	4.2	2.9	1.8	1.0	...	...	...	...	...	...	...	...	...	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ 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-213	T9	K90941	...	...	5B	1
	9	9Cr–1Mo	Fittings	SA-234	WP9	K90941	...	...	5B	1
	10	9Cr–1Mo	Smls. pipe	SA-335	P9	K90941	...	...	5B	1
	11	9Cr–1Mo	Forged pipe	SA-369	FP9	K90941	...	...	5B	1
	12	9Cr–1Mo	Forgings	SA-182	F9	K90941	...	...	5B	1
	13	9Cr–1Mo	Forgings	SA-336	F9	K90941	...	...	5B	1
	14	9Cr–1Mo	Castings	SA-217	C12	J82090	...	...	5B	1
	15	9Cr–1Mo	Cast pipe	SA-426	CP9	J82090	...	...	5B	1
	16	9Cr–1Mo–V	Forgings	SA-182	F91	K90901	...	$t \le 3$	5B	2
	17	9Cr–1Mo–V	Forgings	SA-182	F91	K90901	...	$t > 3$	5B	2
	18	9Cr–1Mo–V	Smls. tube	SA-213	T91	K90901	...	$t \le 3$	5B	2
	19	9Cr–1Mo–V	Smls. tube	SA-213	T91	K90901	...	$t > 3$	5B	2
	20	9Cr–1Mo–V	Fittings	SA-234	WP91	K90901	...	$t \le 3$	5B	2
	21	9Cr–1Mo–V	Fittings	SA-234	WP91	K90901	...	$t > 3$	5B	2
	22	9Cr–1Mo–V	Smls. pipe	SA-335	P91	K90901	...	$t \le 3$	5B	2
	23	9Cr–1Mo–V	Smls. pipe	SA-335	P91	K90901	...	$t > 3$	5B	2
	24	9Cr–1Mo–V	Forgings	SA-336	F91	K90901	...	$t \le 3$	5B	2
	25	9Cr–1Mo–V	Forgings	SA-336	F91	K90901	...	$t > 3$	5B	2
	26	9Cr–1Mo–V	Forged pipe	SA-369	FP91	K90901	...	$t \le 3$	5B	2
	27	9Cr–1Mo–V	Forged pipe	SA-369	FP91	K90901	...	$t > 3$	5B	2
	28	9Cr–1Mo–V	Plate	SA-387	91	K90901	2	$t \le 3$	5B	2
	29	9Cr–1Mo–V	Plate	SA-387	91	K90901	2	$t > 3$	5B	2
	30	11Cr–Ti	Plate	SA-240	...	S40910	...	...	7	1
	31	11Cr–Ti	Plate	SA-240	...	S40920	...	...	7	1
	32	11Cr–Ti	Plate	SA-240	...	S40930	...	...	7	1
07	33	11Cr–Ti	Wld. tube	SA-268	TP409	S40900	...	...	7	1
07	34	11Cr–Ti	Smls. tube	SA-268	TP409	S40900	...	...	7	1
	35	12Cr	Bar	SA-479	403	S40300	A	...	6	1
	36	12Cr	Bar	SA-479	403	S40300	1	...	6	1
	37	12Cr–Al	Plate	SA-240	405	S40500	...	...	7	1
	38	12Cr–Al	Plate	SA-240	405	S40500	...	...	7	1
	39	12Cr–Al	Bar	SA-479	405	S40500	...	...	7	1
A08	40	12Cr–Al	Bar	SA/JIS G4303	SUS405	...	...	...	7	1

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	90	60	1200	700	1200	NP	CS-3	G1, G17, T3	
2	90	60	NP	700	NP	NP	CS-3	G17	
3	90	65	1200	NP	1200	NP	CS-5	T3	
4	60	30	1200	NP	1200	NP	CS-2	T4	
5	60	30	1200	NP	1200	NP	CS-2	T4	
6	60	30	1200	NP	1200	NP	CS-2	T4	
7	60	30	1200	NP	1200	NP	CS-2	T4	
8	60	30	1200	700	1200	NP	CS-2	T5	
9	60	30	1200	NP	1200	NP	CS-2	T5	
10	60	30	1200	700	1200	NP	CS-2	T5	
11	60	30	1200	700	1200	NP	CS-2	T5	
12	85	55	1200	NP	1200	NP	CS-3	T4	
13	85	55	NP	NP	1200	NP	CS-3	T4	
14	90	60	1200	700 (SPT)	1200	NP	CS-3	G1, T4	
15	90	60	NP	700	NP	NP	CS-3	G17	
16	85	60	1200	700	1200	NP	CS-3	H3, T7	
17	85	60	1200	NP	1200	NP	CS-3	H3, T7	
18	85	60	1200	700	1200	NP	CS-3	T7	
19	85	60	1200	700	1200	NP	CS-3	T7	
20	85	60	1200	NP	NP	NP	CS-3	T7	
21	85	60	1200	NP	NP	NP	CS-3	T7	
22	85	60	1200	700	1200	NP	CS-3	T7	
23	85	60	1200	NP	1200	NP	CS-3	H3, T7	
24	85	60	1200	NP	1200	NP	CS-3	H3, T7	
25	85	60	1200	NP	1200	NP	CS-3	H3, T7	
26	85	60	1200	NP	NP	NP	CS-3	T7	
27	85	60	1200	NP	NP	NP	CS-3	T7	
28	85	60	1200	700	1200	NP	CS-3	H3, T7	
29	85	60	1200	NP	1200	NP	CS-3	H3, T7	
30	55	25	NP	NP	800	NP	CS-1	...	
31	55	25	NP	NP	800	NP	CS-1	...	
32	55	25	NP	NP	800	NP	CS-1	...	
33	55	25	NP	NP	800	650	CS-1	G24	07
34	55	25	NP	NP	800	650	CS-1	...	07
35	70	40	NP	700	NP	NP	...	...	
36	70	40	NP	700	NP	NP	...	...	
37	60	25	700	NP	1000	650	CS-1	G32, T5	
38	60	25	NP	700	NP	NP	CS-1	G32	
39	60	25	NP	700	1000	650	CS-1	G32, T5	
40	60	25	NP	700	NP	NP	CS-1	G32	A08

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	25.7	...	25.7	...	24.9	24.7	24.6	24.3	23.9	23.4	22.7	19.1	*14.3*	*10.9*
2	25.7	...	25.7	...	24.9	24.7	24.6	24.3	23.9	23.4	...	...	...	...
3	25.7	...	25.7	...	24.9	24.7	24.6	24.3	23.9	23.4	22.7	19.1	*14.3*	*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	15.1	14.5	13.8	*10.9*
8	17.1	...	17.1	...	16.6	16.5	16.4	16.2	15.9	15.6	15.1	14.5	13.8	13.0
9	17.1	...	17.1	...	16.6	16.5	16.4	16.2	15.9	15.6	15.1	14.5	13.8	13.0
10	17.1	...	17.1	...	16.6	16.5	16.4	16.2	15.9	15.6	15.1	14.5	13.8	13.0
11	17.1	...	17.1	...	16.6	16.5	16.4	16.2	15.9	15.6	15.1	14.5	13.8	13.0
12	24.3	...	24.2	...	23.5	23.4	23.3	22.9	22.6	22.1	21.4	20.6	19.6	*16.4*
13	24.3	...	24.2	...	23.5	23.4	23.3	22.9	22.6	22.1	21.4	20.6	19.6	*16.4*
14	25.7	...	25.7	...	24.9	24.7	24.6	24.3	23.9	23.4	22.7	21.8	20.8	*16.4*
15	25.7	...	25.7	...	24.9	24.7	24.6	24.3	23.9	23.4	...	...	...	...
16	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
17	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
18	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
19	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
20	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
21	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
22	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
23	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
24	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
25	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
26	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
27	24.3	...	24.3	...	24.3	24.2	24.1	23.7	23.4	22.9	22.2	21.3	20.3	19.1
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	15.7	...	14.5	...	13.1	12.1	11.6	11.3	11.3	11.3	11.2	11.1	...	...
31	15.7	...	14.5	...	13.1	12.1	11.6	11.3	11.3	11.3	11.2	11.1	...	...
32	15.7	...	14.5	...	13.1	12.1	11.6	11.3	11.3	11.3	11.2	11.1	...	...
07 33	13.4	...	12.3	...	11.1	10.3	9.9	9.6	9.6	9.6	9.5	9.4	...	...
07 34	15.7	...	14.5	...	13.1	12.1	11.6	11.3	11.3	11.3	11.2	11.1	...	...
35	20.0	...	20.0	...	19.6	19.3	19.0	18.5	18.1	17.7	...	...	...	...
36	20.0	...	20.0	...	19.6	19.3	19.0	18.5	18.1	17.7	...	...	...	...
37	16.7	...	15.3	...	14.8	14.5	14.3	14.0	13.8	13.5	13.1	12.6	12.0	11.3
38	16.7	...	15.3	...	14.8	14.5	14.3	14.0	13.8	13.5	...	...	...	...
39	16.7	...	15.3	...	14.8	14.5	14.3	14.0	13.8	13.5	13.1	12.6	12.0	11.3
A08 40	16.7	...	15.3	...	14.8	14.5	14.3	14.0	13.8	13.5	...	...	...	...

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	1.8	1.0	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
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	8.0	5.8	4.2	2.9	1.8	1.0	...	...	...	...	...	...	...	...	...	
8	10.6	7.4	5.0	3.3	2.2	1.5	...	...	...	...	...	...	...	...	...	
9	10.6	7.4	5.0	3.3	2.2	1.5	...	...	...	...	...	...	...	...	...	
10	10.6	7.4	5.0	3.3	2.2	1.5	...	...	...	...	...	...	...	...	...	
11	10.6	7.4	5.0	3.3	2.2	1.5	...	...	...	...	...	...	...	...	...	
12	11.0	7.4	5.0	3.3	2.2	1.5	...	...	...	...	...	...	...	...	...	
13	11.0	7.4	5.0	3.3	2.2	1.5	...	...	...	...	...	...	...	...	...	
14	11.0	7.4	5.0	3.3	2.2	1.5	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	17.8	16.3	14.0	10.3	7.0	4.3	...	...	...	...	...	...	...	...	...	
17	17.8	16.3	12.9	9.6	7.0	4.3	...	...	...	...	...	...	...	...	...	
18	17.8	16.3	14.0	10.3	7.0	4.3	...	...	...	...	...	...	...	...	...	
19	17.8	16.3	12.9	9.6	7.0	4.3	...	...	...	...	...	...	...	...	...	
20	17.8	16.3	14.0	10.3	7.0	4.3	...	...	...	...	...	...	...	...	...	
21	17.8	16.3	12.9	9.6	7.0	4.3	...	...	...	...	...	...	...	...	...	
22	17.8	16.3	14.0	10.3	7.0	4.3	...	...	...	...	...	...	...	...	...	
23	17.8	16.3	12.9	9.6	7.0	4.3	...	...	...	...	...	...	...	...	...	
24	17.8	16.3	14.0	10.3	7.0	4.3	...	...	...	...	...	...	...	...	...	
25	17.8	16.3	12.9	9.6	7.0	4.3	...	...	...	...	...	...	...	...	...	
26	17.8	16.3	14.0	10.3	7.0	4.3	...	...	...	...	...	...	...	...	...	
27	17.8	16.3	12.9	9.6	7.0	4.3	...	...	...	...	...	...	...	...	...	
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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	8.4	4.0	...	...	...	...	...	...	...	...	...	...	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
39	8.4	4.0	...	...	...	...	...	...	...	...	...	...	...	...	...	
40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	12Cr–Al	Smls. & wld. tube	SA-268	TP405	S40500	...	...	7	1
	2	12Cr–Al	Wld. tube	SA-268	TP405	S40500	...	...	7	1
	3	12Cr–Ti	Wld. tube	SA-268	...	S40800	...	...	7	1
	4	12Cr–Ti	Smls. tube	SA-268	...	S40800	...	...	7	1
	5	13Cr	Plate	SA-240	410S	S41008	...	...	7	1
	6	13Cr	Smls. & wld. tube	SA-268	TP410	S41000	...	...	6	1
	7	13Cr	Wld. tube	SA-268	TP410	S41000	...	...	6	1
	8	13Cr	Plate	SA-240	410	S41000	...	...	6	1
	9	13Cr	Forgings	SA-182	F6a	S41000	1	...	6	1
	10	13Cr	Bar	SA-479	410	S41000	...	...	6	1
	11	13Cr	Bar	SA-479	410	S41000	A	...	6	1
	12	13Cr	Bar	SA-479	410	S41000	1	...	6	1
	13	13Cr	Forgings	SA-182	F6a	S41000	2	...	6	3
	14	13Cr	Castings	SA-217	CA15	J91150	...	...	6	3
	15	13Cr	Cast pipe	SA-426	CPCA15	J91150	...	...	6	3
	16	13Cr–4Ni	Castings	SA-487	CA6NM	J91540	A	...	6	4
	17	13Cr–4Ni	Forgings	SA-182	F6NM	S41500	...	...	6	4
	18	15Cr	Wld. tube	SA-268	TP429	S42900	...	...	6	2
	19	15Cr	Smls. & wld. tube	SA-268	TP429	S42900	...	...	6	2
	20	15Cr	Plate	SA-240	429	S42900	...	...	6	2
	21	17Cr	Wld. tube	SA-268	TP430	S43000	...	...	7	2
	22	17Cr	Smls. & wld. tube	SA-268	TP430	S43000	...	...	7	2
	23	17Cr	Plate	SA-240	430	S43000	...	...	7	2
	24	17Cr	Bar	SA-479	430	S43000	...	...	7	2
	25	17Cr–4Ni–3Cu	Castings	SA-747	CB7Cu-1	J92180	...	...	...	...
	26	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1150	...	...	...
	27	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1150	...	...	...
	28	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1150	...	...	...
	29	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1100	...	...	...
	30	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1100	...	...	...
	31	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1100	...	...	...
	32	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1075	...	...	...
	33	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1075	...	...	...
	34	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1075	...	...	...
07	35	17Cr–4Ni–6Mn	Plate	SA-240	201-1	S20100	...	...	8	3
07	36	17Cr–4Ni–6Mn	Plate	SA-240	201-1	S20100	...	...	8	3
07	37	17Cr–4Ni–6Mn	Plate	SA-666	201-1	S20100	...	...	8	3
07	38	17Cr–4Ni–6Mn	Plate	SA-666	201-1	S20100	...	...	8	3
	39	17Cr–4Ni–6Mn	Plate	SA-240	201-2	S20100	...	...	8	3
	40	17Cr–4Ni–6Mn	Plate	SA-666	201-2	S20100	...	...	8	3

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	*11.0*	*6.9*	*4.6*	*2.8*	...	...	...	...	...	...	...	...	...	...	...
18	*9.2*	*5.9*	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ 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	...	3	3
	5	2¾Ni–1½Cr–½Mo	Plate	SA-543	C	...	1	...	11A	5
	6	2¾Ni–1½Cr–½Mo	Plate	SA-543	C	...	2	...	11B	10
	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	...	3	3
	13	3Ni–1¾Cr–½Mo	Plate	SA-543	B	K42339	1	...	11A	5
A08	14	3Ni–1¾Cr–½Mo	Forgings	SA-372	M	...	85	...	...	...
	15	3Ni–1¾Cr–½Mo	Plate	SA-543	B	K42339	2	...	11B	10
A08	16	3Ni–1¾Cr–½Mo	Forgings	SA-372	M	...	100	...	...	...
	17	3½Ni	Pipe	SA-333	3	K31918	...	...	9B	1
	18	3½Ni	Wld. pipe	SA-333	3	K31918	...	...	9B	1
	19	3½Ni	Tube	SA-334	3	K31918	...	...	9B	1
	20	3½Ni	Wld. tube	SA-334	3	K31918	...	...	9B	1
	21	3½Ni	Fittings	SA-420	WPL3	...	...	...	9B	1
	22	3½Ni	Plate	SA-203	D	K31718	...	...	9B	1
	23	3½Ni	Forgings	SA-350	LF3	K32025	1	...	9B	1
	24	3½Ni	Forgings	SA-350	LF3	K32025	2	...	9B	1
	25	3½Ni	Forgings	SA-765	III	K32026	...	...	9B	1
	26	3½Ni	Plate	SA-203	E	K32018	...	...	9B	1
	27	3½Ni	Plate	SA-203	E	K32018	...	...	9B	1
	28	3½Ni	Castings	SA-352	LC3	J31550	...	...	9B	1
	29	3½Ni	Plate	SA-203	F	...	...	> 2	9B	1
	30	3½Ni	Plate	SA-203	F	...	...	≤ 2	9B	1
	31	3½Ni–1¾Cr–½Mo–V	Forgings	SA-508	4N	K22375	3	...	3	3
	32	3½Ni–1¾Cr–½Mo–V	Forgings	SA-508	4N	K22375	1	...	11A	5
	33	3½Ni–1¾Cr–½Mo–V	Forgings	SA-508	4N	K22375	2	...	11B	10
	34	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	1	...	...	...
	35	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	2	...	...	...
	36	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	3	...	...	...
	37	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	4	...	...	...
	38	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	5	...	...	...

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only)				External Pressure Chart No.	Notes	
			I	III	VIII-1	XII			
1	65	37	NP	700	1000	650	CS-2	T2	
2	70	40	NP	650	1000	650	CS-2	S1, T2	
3	70	40	NP	100	650	650	CS-2	G1	
4	90	70	NP	NP	650	NP	CS-5	...	
5	105	85	NP	NP	650	NP	CS-5	...	
6	115	100	NP	NP	650	NP	HT-1	...	
7	115	100	NP	700 (SPT)	NP	NP	HT-1	W1	
8	135	120	NP	700 (SPT)	NP	NP	HT-1	W1	
9	155	140	NP	700 (SPT)	NP	NP	HT-1	W1	
10	175	160	NP	700 (SPT)	NP	NP	HT-1	W1	
11	190	180	NP	700 (SPT)	NP	NP	HT-1	W1	
12	90	70	NP	NP	650	NP	CS-5	...	
13	105	85	NP	NP	650	NP	CS-5	...	
14	105	85	NP	NP	650	650	...	W11	A08
15	115	100	NP	NP	650	NP	HT-1	...	
16	120	100	NP	NP	650	650	...	W11	A08
17	65	35	NP	NP	650	650	CS-2	...	
18	65	35	NP	NP	650	650	CS-2	G24	
19	65	35	NP	NP	650	650	CS-2	...	
20	65	35	NP	NP	650	650	CS-2	G24	
21	65	35	NP	NP	650	650	CS-2	...	
22	65	37	NP	700	1000	650	CS-2	T2	
23	70	37.5	NP	650	650	650	CS-2	...	
24	70	37.5	NP	650	650	650	CS-2	...	
25	70	37.5	NP	NP	650	650	CS-2	...	
26	70	40	NP	300 (SPT)	NP	NP	CS-2	S1	
27	70	40	NP	650	1000	650	CS-2	T2	
28	70	40	NP	100	650	650	CS-2	G1	
29	75	50	NP	NP	650	650	CS-3	...	
30	80	55	NP	NP	650	650	CS-3	...	
31	90	70	NP	NP	650	650	CS-5	...	
32	105	85	NP	600 (SPT)	650	NP	CS-5	...	
33	115	100	NP	NP	650	NP	HT-1	...	
34	115	100	NP	700 (SPT)	NP	NP	HT-1	W1	
35	135	120	NP	700 (SPT)	NP	NP	HT-1	W1	
36	155	140	NP	700 (SPT)	NP	NP	HT-1	W1	
37	175	160	NP	700 (SPT)	NP	NP	HT-1	W1	
38	190	180	NP	700 (SPT)	NP	NP	HT-1	W1	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	18.5	17.6	16.6	*13.9*	*11.4*	*9.0*	*6.5*
	2	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*
	3	20.0	20.0	20.0	...	20.0	20.0	20.0	20.0	19.0	...	...	...	...	...
	4	25.7	...	25.7	25.7	25.7	25.5	25.3	25.0	24.6	...	...	...	...	...
	5	30.0	...	30.0	30.0	30.0	29.7	29.5	29.1	28.7	...	...	...	...	...
	6	32.9	...	32.9	32.9	32.9	32.5	32.3	31.9	31.5	...	...	...	...	...
	7	32.9	...	32.9	...	32.9	32.9	32.9	32.9	32.4	31.6	...	...	...	...
	8	38.6	...	38.6	...	38.6	38.6	38.6	38.6	38.0	37.1	...	...	...	...
	9	44.3	...	44.3	...	44.3	44.3	44.3	44.3	43.6	42.6	...	...	...	...
	10	50.0	...	50.0	...	50.0	50.0	50.0	50.0	49.2	48.0	...	...	...	...
	11	54.3	...	54.3	...	54.3	54.3	54.3	54.3	53.5	52.2	...	...	...	...
	12	25.7	...	25.7	25.7	25.7	25.5	25.3	25.0	24.6	...	...	...	...	...
	13	30.0	...	30.0	30.0	30.0	29.7	29.5	29.1	28.7	...	...	...	...	...
A08	14	30.0	...	30.0	30.0	30.0	29.7	29.5	29.1	28.7	...	...	...	...	...
	15	32.9	...	32.9	32.9	32.9	32.5	32.3	31.9	31.5	...	...	...	...	...
A08	16	34.3	...	34.3	34.3	34.3	33.9	33.7	33.3	32.9	...	...	...	...	...
	17	18.6	18.6	18.6	...	18.6	18.6	18.6	17.5	16.7	...	...	...	...	...
	18	15.8	...	15.8	...	15.8	15.8	15.8	14.9	14.2	...	...	...	...	...
	19	18.6	18.6	18.6	...	18.6	18.6	18.6	17.5	16.7	...	...	...	...	...
	20	15.8	15.8	15.8	...	15.8	15.8	15.8	14.9	14.2	...	...	...	...	...
	21	18.6	18.6	18.6	...	18.6	18.6	18.6	17.5	16.7	...	...	...	...	...
	22	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*
	23	20.0	...	20.0	...	20.0	20.0	20.0	18.8	17.9	...	...	...	...	...
	24	20.0	...	20.0	...	20.0	20.0	20.0	18.8	17.9	...	...	...	...	...
	25	20.0	20.0	20.0	...	20.0	20.0	20.0	18.8	17.9	...	...	...	...	...
	26	20.0	...	20.0	...	20.0	...	...	...	...	...	...	...	...	...
	27	20.0	...	20.0	...	20.0	20.0	20.0	20.0	19.0	18.0	*14.8*	*12.0*	*9.3*	*6.5*
	28	20.0	20.0	20.0	...	20.0	20.0	20.0	20.0	19.0	...	...	...	...	...
	29	21.4	21.4	21.4	...	21.4	21.4	21.4	21.4	20.5	...	...	...	...	...
	30	22.9	22.9	22.9	...	22.9	22.9	22.9	22.9	20.5	...	...	...	...	...
	31	25.7	...	25.7	25.7	25.7	25.5	25.3	25.0	24.6	...	...	...	...	...
	32	30.0	...	30.0	30.0	30.0	29.7	29.5	29.1	28.7	...	...	...	...	...
	33	32.9	...	32.9	32.9	32.9	32.5	32.3	31.9	31.5	...	...	...	...	...
	34	32.9	...	32.9	...	32.9	32.9	32.9	32.9	32.4	31.6	...	...	...	...
	35	38.6	...	38.6	...	38.6	38.6	38.6	38.6	38.0	37.1	...	...	...	...
	36	44.3	...	44.3	...	44.3	44.3	44.3	44.3	43.6	42.6	...	...	...	...
	37	50.0	...	50.0	...	50.0	50.0	50.0	50.0	49.2	48.0	...	...	...	...
	38	54.3	...	54.3	...	54.3	54.3	54.3	54.3	53.5	52.2	...	...	...	...

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	*4.5*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	*4.5*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	*4.5*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	*4.5*	*2.5*	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	5Ni–¼Mo	Plate	SA-645	...	K41583	...	...	11A	2
	2	8Ni	Forgings	SA-522	II	K71340	...	...	11A	1
	3	8Ni	Plate	SA-553	II	K71340	...	...	11A	1
	4	8Ni	Plate	SA-553	II	K71340	...	...	11A	1
	5	9Ni	Smls. & wld. pipe	SA-333	8	K81340	...	...	11A	1
	6	9Ni	Smls. & wld. pipe	SA-333	8	K81340	...	...	11A	1
	7	9Ni	Smls. pipe	SA-333	8	K81340	...	...	11A	1
	8	9Ni	Smls. pipe	SA-333	8	K81340	...	...	11A	1
	9	9Ni	Wld. pipe	SA-333	8	K81340	...	...	11A	1
	10	9Ni	Wld. tube	SA-334	8	K81340	...	...	11A	1
	11	9Ni	Smls. & wld. tube	SA-334	8	K81340	...	...	11A	1
	12	9Ni	Smls. tube	SA-334	8	K81340	...	...	11A	1
	13	9Ni	Smls. tube	SA-334	8	K81340	...	...	11A	1
	14	9Ni	Wld. tube	SA-334	8	K81340	...	...	11A	1
	15	9Ni	Plate	SA-353	...	K81340	...	...	11A	1
	16	9Ni	Plate	SA-353	...	K81340	...	...	11A	1
	17	9Ni	Plate	SA-353	...	K81340	...	...	11A	1
	18	9Ni	Smls. & wld. fittings	SA-420	WPL8	K81340	...	...	11A	1
	19	9Ni	Smls. & wld. fittings	SA-420	WPL8	K81340	...	...	11A	1
	20	9Ni	Forgings	SA-522	I	K81340	...	...	11A	1
	21	9Ni	Forgings	SA-522	I	K81340	...	...	11A	1
	22	9Ni	Plate	SA-553	I	K81340	...	...	11A	1
	23	9Ni	Plate	SA-553	I	K81340	...	...	11A	1
	24	25Ni–15Cr–2Ti	Bar	SA-638	660	S66286	...	...	...	...
07	25	...	...	...	...	...	...	...	...	...
07	26	...	...	...	...	...	...	...	...	...
	27	27Ni–22Cr–7Mo–Mn–Cu–N	Smls. tube	SA-213	...	S31277	...	...	45	...
	28	27Ni–22Cr–7Mo–Mn–Cu–N	Smls. tube	SA-213	...	S31277	...	...	45	...
	29	27Ni–22Cr–7Mo–Mn–Cu–N	Plate	SA-240	...	S31277	...	...	45	...
	30	27Ni–22Cr–7Mo–Mn–Cu–N	Plate	SA-240	...	S31277	...	...	45	...
	31	27Ni–22Cr–7Mo–Mn–Cu–N	Wld. tube	SA-249	...	S31277	...	...	45	...
	32	27Ni–22Cr–7Mo–Mn–Cu–N	Wld. tube	SA-249	...	S31277	...	...	45	...
	33	27Ni–22Cr–7Mo–Mn–Cu–N	Smls. pipe	SA-312	...	S31277	...	...	45	...
	34	27Ni–22Cr–7Mo–Mn–Cu–N	Smls. pipe	SA-312	...	S31277	...	...	45	...
	35	27Ni–22Cr–7Mo–Mn–Cu–N	Wld. pipe	SA-312	...	S31277	...	...	45	...
	36	27Ni–22Cr–7Mo–Mn–Cu–N	Wld. pipe	SA-312	...	S31277	...	...	45	...
	37	27Ni–22Cr–7Mo–Mn–Cu–N	Bar	SA-479	...	S31277	...	...	45	...
	38	27Ni–22Cr–7Mo–Mn–Cu–N	Bar	SA-479	...	S31277	...	...	45	...
	39	29Ni–20Cr–3Cu–2Mo	Castings	SA-351	CN7M	J95150	...	...	45	...
	40	29Ni–20Cr–3Cu–2Mo	Castings	SA-351	CN7M	J95150	...	...	45	...

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
A08	1	16Cr–4Ni–6Mn	Plate	SA-240	201LN	S20153	...	...	8	3
A08	2	16Cr–4Ni–6Mn	Plate	SA-240	201LN	S20153	...	...	8	3
	3	16Cr–9Mn–2Ni–N	Plate	SA-240	204	S20400	...	...	8	3
	4	16Cr–9Mn–2Ni–N	Plate	SA-240	204	S20400	...	...	8	3
	5	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...	> 5	8	1
	6	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...	> 5	8	1
07	7	16Cr–12Ni–2Mo	Forgings	SA-965	F316L	S31603	...	...	8	1
07	8	16Cr–12Ni–2Mo	Forgings	SA-965	F316L	S31603	...	...	8	1
	9	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...	≤ 5	8	1
	10	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...	≤ 5	8	1
	11	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316L	S31603	...	...	8	1
	12	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316L	S31603	...	...	8	1
	13	16Cr–12Ni–2Mo	Plate	SA-240	316L	S31603	...	...	8	1
	14	16Cr–12Ni–2Mo	Plate	SA-240	316L	S31603	...	...	8	1
	15	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316L	S31603	...	...	8	1
	16	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316L	S31603	...	...	8	1
	17	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316L	S31603	...	...	8	1
	18	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316L	S31603	...	...	8	1
	19	16Cr–12Ni–2Mo	Smls. pipe	SA-312	TP316L	S31603	...	...	8	1
	20	16Cr–12Ni–2Mo	Wld. pipe	SA-312	TP316L	S31603	...	...	8	1
	21	16Cr–12Ni–2Mo	Wld. pipe	SA-312	TP316L	S31603	...	...	8	1
	22	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316L	S31603	1	...	8	1
	23	16Cr–12Ni–2Mo	Smls. & wld. fittings	SA-403	316L	S31603	...	...	8	1
	24	16Cr–12Ni–2Mo	Wld. pipe	SA-409	TP316L	S31603	...	...	8	1
	25	16Cr–12Ni–2Mo	Bar	SA-479	316L	S31603	...	...	8	1
	26	16Cr–12Ni–2Mo	Bar	SA-479	316L	S31603	...	...	8	1
	27	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316L	S31603	...	...	8	1
	28	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316L	S31603	...	...	8	1
	29	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316L	S31603	...	...	8	1
	30	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316L	S31603	...	...	8	1
	31	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316L	S31603	...	...	8	1
A08	32	16Cr–12Ni–2Mo	Bar	SA/JIS G4303	SUS316L	...	...	...	8	1
	33	16Cr–12Ni–2Mo	Castings	SA-351	CF3M	J92800	...	...	8	1
	34	16Cr–12Ni–2Mo	Castings	SA-351	CF3M	J92800	...	...	8	1
	35	16Cr–12Ni–2Mo	Cast pipe	SA-451	CPF3M	J92800	...	...	8	1
	36	16Cr–12Ni–2Mo	Castings	SA-351	CF8M	J92900	...	...	8	1
	37	16Cr–12Ni–2Mo	Castings	SA-351	CF8M	J92900	...	...	8	1
	38	16Cr–12Ni–2Mo	Cast pipe	SA-451	CPF8M	J92900	...	...	8	1
	39	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...	> 5	8	1
	40	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...	> 5	8	1
07	41	16Cr–12Ni–2Mo	Forgings	SA-965	F316	S31600	...	...	8	1
07	42	16Cr–12Ni–2Mo	Forgings	SA-965	F316	S31600	...	...	8	1

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	95	45	NP	NP	800	650	HA-6	G5	A08
2	95	45	NP	NP	800	650	HA-6	...	A08
3	95	48	NP	NP	900	650	HA-6	G5	
4	95	48	NP	NP	900	650	HA-6	...	
5	65	25	850	800	850	650	HA-4	G5, G34	
6	65	25	850	NP	850	650	HA-4	G34	
7	65	25	850	800	850	650	HA-4	G5, G34	07
8	65	25	850	NP	850	650	HA-4	G34	07
9	70	25	850	800	850	650	HA-4	G5, G34	
10	70	25	850	NP	850	650	HA-4	G34	
11	70	25	850	800	850	NP	HA-4	G5, G34	
12	70	25	850	NP	850	NP	HA-4	G34	
13	70	25	850	800	850	650	HA-4	G5, G34	
14	70	25	850	NP	850	650	HA-4	G34	
15	70	25	NP	800	NP	NP	HA-4	G5, W12	
16	70	25	850	NP	850	650	HA-4	G5, G24, G34	
17	70	25	850	NP	850	650	HA-4	G24, G34	
18	70	25	850	800	850	650	HA-4	G5, G34, W12, W14	
19	70	25	850	NP	850	650	HA-4	G34	
20	70	25	850	NP	850	650	HA-4	G5, G24, G34	
21	70	25	850	NP	850	650	HA-4	G24, G34	
22	70	25	NP	800	NP	NP	HA-4	G5	
23	70	25	NP	800	850	650	HA-4	G5, W12, W14	
24	70	25	NP	800	NP	NP	HA-4	G5	
25	70	25	850	800	850	650	HA-4	G5, G22, G34	
26	70	25	850	NP	850	650	HA-4	G22, G34	
27	70	25	NP	800	NP	NP	HA-4	G5, W12	
28	70	25	NP	NP	850	650	HA-4	G5, G24	
29	70	25	NP	NP	850	650	HA-4	G24	
30	70	25	NP	800	NP	NP	HA-4	G5, W12	
31	70	25	NP	800	NP	NP	HA-4	G5, W12	
32	70	25	NP	800	NP	NP	HA-4	G5, G22, G34	A08
33	70	30	NP	800	850	650	HA-4	G1, G5, G16, G17, G32	
34	70	30	NP	NP	850	650	HA-4	G1, G32	
35	70	30	NP	800	NP	NP	HA-4	G5, G16, G17, G32	
36	70	30	1500	800	1500	650	HA-2	G1, G5, G12, G16, G17, G32, H1, T6	
37	70	30	1500	NP	1500	650	HA-2	G1, G12, G32, H1, T8	
38	70	30	NP	800	NP	NP	HA-2	G5, G16, G17, G32	
39	70	30	1500	800	1500	650	HA-2	G5, G12, T8	
40	70	30	1500	NP	1500	650	HA-2	G12, T9	
41	70	30	1500	800	1500	650	HA-2	G5, G12, T8	07
42	70	30	1500	NP	1500	650	HA-2	G12, T9	07

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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
A08	1	27.1	...	23.7	...	21.2	20.1	20.0	19.6	19.6	19.4	19.2	18.8	...	...
A08	2	27.1	...	23.7	...	21.2	20.1	19.7	19.2	18.6	18.0	17.4	16.7	...	...
	3	27.1	...	23.6	...	20.6	18.9	18.1	17.9	17.9	17.9	17.8	17.7	17.4	16.9
	4	27.1	...	23.6	...	20.3	17.9	16.5	15.8	15.6	15.5	15.3	15.1	14.8	14.3
	5	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	12.7	...
	6	16.7	...	14.2	...	12.7	11.7	10.9	10.4	10.2	10.0	9.8	9.6	9.4	...
07	7	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	12.7	...
07	8	16.7	...	14.2	...	12.7	11.7	10.9	10.4	10.2	10.0	9.8	9.6	9.4	...
	9	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	12.7	...
	10	16.7	...	14.2	...	12.7	11.7	10.9	10.4	10.2	10.0	9.8	9.6	9.4	...
	11	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	12.7	...
	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	12.7	...
	14	16.7	...	14.2	...	12.7	11.7	10.9	10.4	10.2	10.0	9.8	9.6	9.4	...
	15	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
	16	14.2	...	14.2	...	14.2	13.4	12.5	11.9	11.7	11.4	11.2	11.0	10.8	...
	17	14.2	...	12.1	...	10.8	9.9	9.3	8.8	8.7	8.5	8.3	8.1	8.0	...
	18	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	12.7	...
	19	16.7	...	14.2	...	12.7	11.7	10.9	10.4	10.2	10.0	9.8	9.6	9.4	...
	20	14.2	...	14.2	...	14.2	13.4	12.5	11.9	11.7	11.4	11.2	11.0	10.8	...
	21	14.2	...	12.1	...	10.8	9.9	9.3	8.8	8.7	8.5	8.3	8.1	8.0	...
	22	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
	23	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	12.7	...
	24	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
	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	...	...
	28	14.2	...	14.2	...	14.2	13.4	12.5	11.9	11.7	11.4	11.2	11.0	10.8	...
	29	14.2	...	12.1	...	10.8	9.9	9.3	8.8	8.7	8.5	8.3	8.1	8.0	...
	30	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
	31	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
A08	32	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
	33	20.0	...	20.0	...	19.4	19.2	17.9	17.0	16.6	16.3	16.0	15.8	15.7	...
	34	20.0	...	17.2	...	15.5	14.2	13.3	12.6	12.3	12.1	11.9	11.7	11.6	...
	35	20.0	...	20.0	...	19.4	19.2	17.9	17.0	16.6	16.3	16.1	15.8	...	...
	36	20.0	...	20.0	...	19.4	19.2	17.9	17.0	16.6	16.3	16.0	15.8	15.7	15.5
	37	20.0	...	17.2	...	15.5	14.2	13.3	12.6	12.3	12.1	11.9	11.7	11.6	11.5
	38	20.0	...	20.0	...	19.4	19.2	17.9	17.0	16.6	16.3	16.0	15.8	...	...
	39	20.0	...	20.0	...	19.4	19.2	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	40	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
07	41	20.0	...	20.0	...	19.4	19.2	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
07	42	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	15.4	*14.9*	*11.5*	*8.9*	*6.9*	*5.4*	*4.3*	*3.4*	*2.8*	*2.3*	*1.9*	*1.6*	...	...	...	
37	11.4	11.3	11.2	*8.9*	*6.9*	*5.4*	*4.3*	*3.4*	*2.8*	*2.3*	*1.9*	*1.6*	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
39	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
40	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
41	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	07
42	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	07

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ 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-182	F316	S31600	...	≤ 5	8	1
	3	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316	S31600	...	...	8	1
	4	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316	S31600	...	...	8	1
	5	16Cr–12Ni–2Mo	Plate	SA-240	316	S31600	...	...	8	1
	6	16Cr–12Ni–2Mo	Plate	SA-240	316	S31600	...	...	8	1
	7	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316	S31600	...	...	8	1
	8	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316	S31600	...	...	8	1
	9	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316	S31600	...	...	8	1
	10	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316	S31600	...	...	8	1
	11	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316	S31600	...	...	8	1
	12	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316	S31600	...	...	8	1
	13	16Cr–12Ni–2Mo	Wld. 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	Smls. pipe	SA-376	TP316	S31600	...	...	8	1
	18	16Cr–12Ni–2Mo	Smls. & wld. fittings	SA-403	316	S31600	...	...	8	1
	19	16Cr–12Ni–2Mo	Wld. pipe	SA-409	TP316	S31600	...	...	8	1
	20	16Cr–12Ni–2Mo	Bar	SA-479	316	S31600	...	...	8	1
	21	16Cr–12Ni–2Mo	Bar	SA-479	316	S31600	...	...	8	1
	22	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316	S31600	...	...	8	1
	23	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316	S31600	...	...	8	1
	24	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316	S31600	...	...	8	1
	25	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316	S31600	...	...	8	1
	26	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316	S31600	...	...	8	1
A08	27	16Cr–12Ni–2Mo	Bar	SA/JIS G4303	SUS316	...	...	...	8	1
	28	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...	> 5	8	1
	29	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...	> 5	8	1
07	30	16Cr–12Ni–2Mo	Forgings	SA-965	F316H	S31609	...	...	8	1
07	31	16Cr–12Ni–2Mo	Forgings	SA-965	F316H	S31609	...	...	8	1
	32	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...	≤ 5	8	1
	33	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...	≤ 5	8	1
	34	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316H	S31609	...	...	8	1
	35	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316H	S31609	...	...	8	1
	36	16Cr–12Ni–2Mo	Plate	SA-240	316H	S31609	...	...	8	1
	37	16Cr–12Ni–2Mo	Plate	SA-240	316H	S31609	...	...	8	1
	38	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316H	S31609	...	...	8	1
	39	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316H	S31609	...	...	8	1
	40	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316H	S31609	...	...	8	1
	41	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316H	S31609	...	...	8	1

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	75	30	1500	800	1500	NP	HA-2	G5, G12, T8	
2	75	30	1500	NP	1500	NP	HA-2	G12, T9	
3	75	30	1500	800	1500	NP	HA-2	G5, G12, T8	
4	75	30	1500	NP	1500	NP	HA-2	G12, T9	
5	75	30	1500	800	1500	650	HA-2	G5, G12, T8	
6	75	30	1500	NP	1500	650	HA-2	G12, T9	
7	75	30	1500	NP	NP	NP	HA-2	G12, T9, W13	
8	75	30	1500	800	NP	NP	HA-2	G5, G12, T8, W12, W13	
9	75	30	1500	NP	1500	650	HA-2	G3, G5, G12, G24, T7	
10	75	30	1500	NP	1500	650	HA-2	G3, G12, G24, T9	
11	75	30	1500	800	1500	650	HA-2	G5, G12, T8, W12, W13, W14	
12	75	30	1500	NP	1500	650	HA-2	G12, T9, W13, W14	
13	75	30	1500	NP	1500	650	HA-2	G3, G5, G12, G24, T7	
14	75	30	1500	NP	1500	650	HA-2	G3, G12, G24, T9	
15	75	30	NP	800	NP	NP	HA-2	G5, W12	
16	75	30	1500	800	1500	650	HA-2	G5, G12, H1, T8, W12	
17	75	30	1500	NP	1500	650	HA-2	G12, H1, T9	
18	75	30	NP	800	1500	650	HA-2	G5, G12, T8, W12, W14	
19	75	30	NP	800	NP	NP	HA-2	G5, W12	
20	75	30	1500	800	1500	650	HA-2	G5, G12, G22, H1, T8	
21	75	30	1500	NP	1500	650	HA-2	G12, G22, H1, T9	
22	75	30	NP	800	NP	NP	HA-2	G5, W12	
23	75	30	NP	NP	1500	650	HA-2	G5, G12, G24, T7	
24	75	30	NP	NP	1500	650	HA-2	G12, G24, T9	
25	75	30	NP	800	NP	NP	HA-2	G5, W12	
26	75	30	NP	800	NP	NP	HA-2	G5, W12	
27	75	30	NP	800	NP	NP	HA-2	G5, G12, G22, H1	**A08**
28	70	30	1500	800	1500	NP	HA-2	G5, G12, T8	
29	70	30	1500	NP	1500	NP	HA-2	T9	
30	70	30	NP	800	1500	NP	HA-2	G5, T8	**07**
31	70	30	NP	NP	1500	NP	HA-2	T9	**07**
32	75	30	1500	800	1500	NP	HA-2	G5, T8	
33	75	30	1500	NP	1500	NP	HA-2	T9	
34	75	30	1500	800	1500	NP	HA-2	G5, T8	
35	75	30	1500	NP	1500	NP	HA-2	T9	
36	75	30	1500	800	1500	NP	HA-2	G5, T8	
37	75	30	1500	NP	1500	NP	HA-2	T9	
38	75	30	1500	NP	1500	NP	HA-2	G3, G5, G24, T7	
39	75	30	1500	NP	1500	NP	HA-2	G3, G24, T9	
40	75	30	1500	NP	NP	NP	HA-2	T9, W13	
41	75	30	1500	800	NP	NP	HA-2	G5, T8, W12, W13	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	20.0	...	20.0	...	20.0	19.3	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	...	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	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
	8	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	9	17.0	...	17.0	...	17.0	16.4	15.3	14.5	14.1	13.9	13.7	13.5	13.4	13.2
	10	17.0	...	14.7	...	13.2	12.1	11.3	10.7	10.5	10.3	10.1	10.0	9.9	9.8
	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	17.0	...	17.0	...	17.0	16.4	15.3	14.5	14.1	13.9	13.7	13.5	13.4	13.2
	14	17.0	...	14.7	...	13.2	12.1	11.3	10.7	10.5	10.3	10.1	10.0	9.9	9.8
	15	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	16	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	17	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
	18	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	19	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	20	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	21	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
	22	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	23	17.0	...	17.0	...	17.0	16.4	15.3	14.5	14.1	13.9	13.7	13.5	13.4	13.2
	24	17.0	...	14.7	...	13.2	12.1	11.3	10.7	10.5	10.3	10.1	10.0	9.9	9.8
	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	...	...
A08	27	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	28	20.0	...	20.0	...	19.4	19.2	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	29	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
07	30	20.0	...	20.0	...	19.4	19.2	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
07	31	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
	32	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	33	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
	34	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	35	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
	36	20.0	...	20.0	...	20.0	19.3	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	17.0	...	17.0	...	17.0	16.4	15.3	14.5	14.1	13.9	13.7	13.5	13.4	13.2
	39	17.0	...	14.7	...	13.2	12.1	11.3	10.7	10.5	10.3	10.1	10.0	9.9	9.8
	40	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
	41	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	11.4	11.3	11.2	11.1	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...	
8	15.4	15.3	15.1	12.4	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...	
9	13.1	13.0	12.9	10.5	8.3	6.3	4.7	3.5	2.6	1.9	1.4	1.1	...	...	...	
10	9.7	9.6	9.5	9.4	8.3	6.3	4.7	3.5	2.6	1.9	1.4	1.1	...	...	...	
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	13.1	13.0	12.9	10.5	8.3	6.3	4.7	3.5	2.6	1.9	1.4	1.1	...	...	...	
14	9.7	9.6	9.5	9.4	8.3	6.3	4.7	3.5	2.6	1.9	1.4	1.1	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	15.4	15.3	15.1	12.4	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...	
17	11.4	11.3	11.2	11.1	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...	
18	15.4	15.3	15.1	12.4	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	15.4	15.3	15.1	12.4	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...	
21	11.4	11.3	11.2	11.1	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	13.1	13.0	12.9	10.5	8.3	6.3	4.7	3.5	2.6	1.9	1.4	1.1	...	...	...	
24	9.7	9.6	9.5	9.4	8.3	6.3	4.7	3.5	2.6	1.9	1.4	1.1	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
28	15.4	15.3	15.1	12.4	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...	
29	11.4	11.3	11.2	11.1	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...	
30	15.4	15.3	15.1	12.4	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...	07
31	11.4	11.3	11.2	11.1	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...	07
32	15.4	15.3	15.1	12.4	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...	
33	11.4	11.3	11.2	11.1	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...	
34	15.4	15.3	15.1	12.4	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...	
35	11.4	11.3	11.2	11.1	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...	
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	13.1	13.0	12.9	10.5	8.3	6.3	4.7	3.5	2.6	1.9	1.4	1.1	...	...	...	
39	9.7	9.6	9.5	9.4	8.3	6.3	4.7	3.5	2.6	1.9	1.4	1.1	...	...	...	
40	11.4	11.3	11.2	11.1	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...	
41	15.4	15.3	15.1	12.4	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316H	S31609	...	...	8	1
	2	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316H	S31609	...	...	8	1
	3	16Cr–12Ni–2Mo	Wld. pipe	SA-312	TP316H	S31609	...	...	8	1
	4	16Cr–12Ni–2Mo	Wld. pipe	SA-312	TP316H	S31609	...	...	8	1
	5	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316H	S31609	1	...	8	1
	6	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316H	S31609	...	...	8	1
	7	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316H	S31609	...	...	8	1
	8	16Cr–12Ni–2Mo	Smls. & wld. fittings	SA-403	316H	S31609	...	...	8	1
	9	16Cr–12Ni–2Mo	Bar	SA-479	316H	S31609	...	...	8	1
	10	16Cr–12Ni–2Mo	Bar	SA-479	316H	S31609	...	...	8	1
	11	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316H	S31609	...	...	8	1
	12	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316H	S31609	...	...	8	1
A08	13	16Cr–12Ni–2Mo	Plate	SA/EN 10028-7	X5CrNiMo17-12-2	...	...	≤ 3	8	1
A08	14	16Cr–12Ni–2Mo	Plate	SA/EN 10028-7	X5CrNiMo17-12-2	...	...	≤ 3	8	1
	15	16Cr–12Ni–2Mo–Cb	Plate	SA-240	316Cb	S31640	...	...	8	1
	16	16Cr–12Ni–2Mo–Cb	Plate	SA-240	316Cb	S31640	...	...	8	1
	17	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316LN	S31653	...	> 5	8	1
07	18	16Cr–12Ni–2Mo–N	Forgings	SA-965	F316LN	S31653	...	...	8	1
	19	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316LN	S31653	...	≤ 5	8	1
	20	16Cr–12Ni–2Mo–N	Smls. tube	SA-213	TP316LN	S31653	...	...	8	1
	21	16Cr–12Ni–2Mo–N	Plate	SA-240	316LN	S31653	...	...	8	1
	22	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316LN	S31653	...	...	8	1
	23	16Cr–12Ni–2Mo–N	Smls. & wld. pipe	SA-312	TP316LN	S31653	...	...	8	1
	24	16Cr–12Ni–2Mo–N	Wld. pipe	SA-358	316LN	S31653	1	...	8	1
	25	16Cr–12Ni–2Mo–N	Smls. pipe	SA-376	TP316LN	S31653	...	...	8	1
	26	16Cr–12Ni–2Mo–N	Fittings	SA-403	316LN	S31653	...	...	8	1
	27	16Cr–12Ni–2Mo–N	Bar	SA-479	316LN	S31653	...	...	8	1
	28	16Cr–12Ni–2Mo–N	Wld. tube	SA-688	TP316LN	S31653	...	...	8	1
	29	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316N	S31651	...	...	8	1
	30	16Cr–12Ni–2Mo–N	Smls. tube	SA-213	TP316N	S31651	...	...	8	1
	31	16Cr–12Ni–2Mo–N	Smls. tube	SA-213	TP316N	S31651	...	...	8	1
	32	16Cr–12Ni–2Mo–N	Plate	SA-240	316N	S31651	...	...	8	1
	33	16Cr–12Ni–2Mo–N	Plate	SA-240	316N	S31651	...	...	8	1
	34	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316N	S31651	...	...	8	1
	35	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316N	S31651	...	...	8	1
	36	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316N	S31651	...	...	8	1
	37	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316N	S31651	...	...	8	1
	38	16Cr–12Ni–2Mo–N	Smls. & wld. pipe	SA-312	TP316N	S31651	...	...	8	1
	39	16Cr–12Ni–2Mo–N	Smls. & wld. pipe	SA-312	TP316N	S31651	...	...	8	1
	40	16Cr–12Ni–2Mo–N	Wld. pipe	SA-312	TP316N	S31651	...	...	8	1
	41	16Cr–12Ni–2Mo–N	Wld. pipe	SA-312	TP316N	S31651	...	...	8	1

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	75	30	1500	800	1500	NP	HA-2	G5, T8, W12, W13	
2	75	30	1500	NP	1500	NP	HA-2	T9, W13	
3	75	30	1500	NP	1500	NP	HA-2	G3, G5, G24, T7	
4	75	30	1500	NP	1500	NP	HA-2	G3, G24, T9	
5	75	30	NP	800	NP	NP	HA-2	G5, W12	
6	75	30	1500	800	1500	NP	HA-2	G5, H1, T8	
7	75	30	1500	NP	1500	NP	HA-2	H1, T9	
8	75	30	NP	800	1500	NP	HA-2	G5, G12, T8, W12, W14	
9	75	30	1500	800	NP	NP	HA-2	G5, H1, T8	
10	75	30	1500	NP	NP	NP	HA-2	H1, T9	
11	75	30	NP	800	NP	NP	HA-2	G5, W12	
12	75	30	NP	800	NP	NP	HA-2	G5, W12	
13	75	32	NP	NP	1022	NP	HA-2	G5	A08
14	75	32	NP	NP	1022	NP	HA-2	...	A08
15	75	30	NP	NP	1500	650	HA-2	G5, G12, T8	
16	75	30	NP	NP	1500	650	HA-2	G12, T9	
17	70	30	NP	800	NP	NP	HA-2	G5	
18	70	30	NP	800	NP	NP	HA-2	G5	07
19	75	30	NP	800	NP	NP	HA-2	G5	
20	75	30	NP	800	NP	NP	HA-2	G5	
21	75	30	NP	800	NP	NP	HA-2	G5	
22	75	30	NP	800	NP	NP	HA-2	G5, W12	
23	75	30	NP	800	NP	NP	HA-2	G5, W12	
24	75	30	NP	800	NP	NP	HA-2	G5, W12	
25	75	30	NP	800	NP	NP	HA-2	G5	
26	75	30	NP	800	NP	NP	HA-2	G5, W12	
27	75	30	NP	800	NP	NP	HA-2	G5	
28	75	30	NP	800	NP	NP	HA-2	G5, W12	
29	80	35	NP	800	NP	NP	HA-2	G5	
30	80	35	1200	800	1200	NP	HA-2	G5, G12, T7	
31	80	35	1200	NP	1200	NP	HA-2	G12, T8	
32	80	35	NP	800	1200	650	HA-2	G5, G12, T7	
33	80	35	NP	NP	1200	650	HA-2	G12, T8	
34	80	35	1200	NP	NP	NP	HA-2	G5, G12, T7, W13	
35	80	35	1200	NP	NP	NP	HA-2	G12, T8, W13	
36	80	35	1200	NP	1200	650	HA-2	G3, G12, G24, T8	
37	80	35	1200	NP	1200	650	HA-2	G3, G5, G12, G24, T7	
38	80	35	1200	800	1200	650	HA-2	G5, G12, T7, W12, W13, W14	
39	80	35	1200	NP	1200	650	HA-2	G12, T8, W13, W14	
40	80	35	1200	NP	1200	650	HA-2	G3, G12, G24, T8	
41	80	35	1200	NP	1200	650	HA-2	G3, G5, G12, G24, T7	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	6	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	7	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
	8	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	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	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	...	...
	12	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
A08	13	21.3	...	21.3	...	20.9	20.5	19.1	18.1	17.7	17.4	17.1	16.9	16.7	16.6
A08	14	21.3	...	18.4	...	15.6	15.2	14.2	13.4	13.1	12.9	12.7	12.5	12.4	12.3
	15	20.0	...	20.0	...	20.0	19.4	17.8	16.8	16.5	16.2	16.0	15.9	15.8	15.7
	16	20.0	...	17.7	...	15.8	14.3	13.2	12.4	12.2	12.0	11.9	11.8	11.7	11.6
	17	20.0	...	20.0	...	18.9	17.9	17.2	16.5	16.0	15.6	15.2	14.8	...	...
07	18	20.0	...	20.0	...	18.9	17.9	17.2	16.5	16.0	15.6	15.2	14.8	...	...
	19	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.8	...	...
	20	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.8	...	...
	21	20.0	...	20.0	...	20.0	18.9	17.5	16.5	16.0	15.6	15.2	14.8	...	...
	22	20.0	...	20.0	...	20.0	18.9	17.5	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	22.9	...	22.9	...	22.0	21.5	21.2	21.0	20.5	20.0	19.6	19.2	...	...
	30	22.9	...	22.9	...	22.0	21.5	21.2	21.0	20.5	20.0	19.6	19.2	18.8	18.5
	31	22.9	...	20.7	...	19.0	17.6	16.5	15.6	15.2	14.9	14.5	14.2	13.9	13.7
	32	22.9	...	22.9	...	22.0	21.5	21.2	21.0	20.5	20.0	19.6	19.2	18.8	18.5
	33	22.9	...	20.7	...	19.0	17.6	16.5	15.6	15.2	14.9	14.5	14.2	13.9	13.7
	34	22.9	...	22.9	...	22.0	21.5	21.2	21.0	20.5	20.0	19.6	19.2	18.8	18.5
	35	22.9	...	20.7	...	19.0	17.6	16.5	15.6	15.2	14.9	14.5	14.2	13.9	13.7
	36	19.4	...	17.6	...	16.1	15.0	14.0	13.3	12.9	12.6	12.3	12.1	11.9	11.6
	37	19.4	...	19.4	...	18.7	18.2	18.1	17.9	17.4	17.0	16.7	16.3	16.0	15.7
	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
	40	19.4	...	17.6	...	16.1	15.0	14.0	13.3	12.9	12.6	12.3	12.1	11.9	11.6
	41	19.4	...	19.4	...	18.7	18.2	18.1	17.9	17.4	17.0	16.7	16.3	16.0	15.7

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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*	*1.4*	*1.1*	...	...	...	
4	9.7	9.6	9.5	9.4	*8.3*	*6.3*	*4.7*	*3.5*	*2.6*	*1.9*	*1.4*	*1.1*	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
7	11.4	11.3	11.2	11.1	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
8	15.4	15.3	15.1	*12.4*	*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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	16.4	16.3	16.1	...	...	...	...	...	...	...	...	...	...	...	...	A08
14	12.2	12.0	11.9	...	...	...	...	...	...	...	...	...	...	...	...	A08
15	15.5	15.3	15.1	*12.3*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
16	11.5	11.4	11.2	11.0	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	18.1	17.8	*15.8*	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
31	13.4	13.2	12.9	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
32	18.1	17.8	*15.8*	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
33	13.4	13.2	12.9	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
34	18.1	17.8	*15.8*	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
35	13.4	13.2	12.9	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
36	11.4	11.2	11.0	*10.5*	*8.3*	*6.3*	...	...	...	...	...	...	...	...	...	
37	15.4	15.1	*13.4*	*10.5*	*8.3*	*6.3*	...	...	...	...	...	...	...	...	...	
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*	...	...	...	...	...	...	...	...	...	
40	11.4	11.2	11.0	*10.5*	*8.3*	*6.3*	...	...	...	...	...	...	...	...	...	
41	15.4	15.1	*13.4*	*10.5*	*8.3*	*6.3*	...	...	...	...	...	...	...	...	...	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	16Cr–12Ni–2Mo–N	Wld. pipe	SA-358	316N	S31651	1	...	8	1
	2	16Cr–12Ni–2Mo–N	Smls. pipe	SA-376	TP316N	S31651	...	...	8	1
	3	16Cr–12Ni–2Mo–N	Smls. pipe	SA-376	TP316N	S31651	...	...	8	1
	4	16Cr–12Ni–2Mo–N	Smls. & wld. fittings	SA-403	316N	S31651	...	...	8	1
	5	16Cr–12Ni–2Mo–N	Bar	SA-479	316N	S31651	...	...	8	1
	6	16Cr–12Ni–2Mo–N	Bar	SA-479	316N	S31651	...	...	8	1
	7	16Cr–12Ni–2Mo–N	Wld. tube	SA-688	TP316N	S31651	...	...	8	1
	8	16Cr–12Ni–2Mo–N	Wld. pipe	SA-813	TP316N	S31651	...	...	8	1
	9	16Cr–12Ni–2Mo–N	Wld. pipe	SA-814	TP316N	S31651	...	...	8	1
07	10	16Cr–12Ni–2Mo–N	Forgings	SA-965	F316N	S31651	...	...	8	1
07	11	16Cr–12Ni–2Mo–N	Forgings	SA-965	F316N	S31651	...	...	8	1
	12	16Cr–12Ni–2Mo–Ti	Plate	SA-240	316Ti	S31635	...	...	8	1
	13	16Cr–12Ni–2Mo–Ti	Plate	SA-240	316Ti	S31635	...	...	8	1
	14	17.5Cr–17.5Ni–5.3Si	Plate	SA-240	...	S30601	Sol. ann.	...	8	1
	15	17.5Cr–17.5Ni–5.3Si	Plate	SA-240	...	S30601	Sol. ann.	...	8	1
	16	18Cr–3Ni–12Mn	Plate	SA-240	XM-29	S24000	...	...	8	3
	17	18Cr–3Ni–12Mn	Plate	SA-240	XM-29	S24000	...	...	8	3
	18	18Cr–3Ni–12Mn	Wld. tube	SA-249	XM-29	S24000	...	...	8	3
	19	18Cr–3Ni–12Mn	Wld. tube	SA-249	XM-29	S24000	...	...	8	3
	20	18Cr–3Ni–12Mn	Wld. pipe	SA-312	XM-29	S24000	...	...	8	3
	21	18Cr–3Ni–12Mn	Wld. pipe	SA-312	XM-29	S24000	...	...	8	3
	22	18Cr–3Ni–12Mn	Bar	SA-479	XM-29	S24000	...	...	8	3
	23	18Cr–3Ni–12Mn	Bar	SA-479	XM-29	S24000	...	...	8	3
	24	18Cr–3Ni–12Mn	Wld. tube	SA-688	TPXM-29	S24000	...	...	8	3
	25	18Cr–3Ni–12Mn	Wld. tube	SA-688	TPXM-29	S24000	...	...	8	3
	26	18Cr–5Ni–3Mo	Smls. tube	SA-789	...	S31500	...	...	10H	1
	27	18Cr–5Ni–3Mo	Wld. tube	SA-789	...	S31500	...	...	10H	1
	28	18Cr–5Ni–3Mo	Smls. pipe	SA-790	...	S31500	...	...	10H	1
	29	18Cr–5Ni–3Mo	Wld. pipe	SA-790	...	S31500	...	...	10H	1
	30	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...	> 5	8	1
	31	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...	> 5	8	1
07	32	18Cr–8Ni	Forgings	SA-965	F304L	S30403	...	...	8	1
07	33	18Cr–8Ni	Forgings	SA-965	F304L	S30403	...	...	8	1
	34	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...	≤ 5	8	1
	35	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...	≤ 5	8	1
	36	18Cr–8Ni	Smls. tube	SA-213	TP304L	S30403	...	...	8	1
	37	18Cr–8Ni	Smls. tube	SA-213	TP304L	S30403	...	...	8	1
	38	18Cr–8Ni	Plate	SA-240	304L	S30403	...	...	8	1
	39	18Cr–8Ni	Plate	SA-240	304L	S30403	...	...	8	1
	40	18Cr–8Ni	Wld. tube	SA-249	TP304L	S30403	...	...	8	1
	41	18Cr–8Ni	Wld. tube	SA-249	TP304L	S30403	...	...	8	1
	42	18Cr–8Ni	Wld. tube	SA-249	TP304L	S30403	...	...	8	1

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	18.1	17.8	*15.8*	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
3	13.4	13.2	12.9	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
4	18.1	17.8	*15.8*	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	
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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	18.1	17.8	*15.8*	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	07
11	13.4	13.2	12.9	*12.3*	*9.8*	*7.4*	...	...	...	...	...	...	...	...	...	07
12	15.5	15.3	15.1	*12.3*	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
13	11.5	11.4	11.2	11.0	*9.8*	*7.4*	*5.5*	*4.1*	*3.1*	*2.3*	*1.7*	*1.3*	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	*9.9*	*7.8*	*6.3*	*5.1*	*4.0*	*3.2*	...	...	...	...	...	...	...	...	...	
31	9.1	*7.8*	*6.3*	*5.1*	*4.0*	*3.2*	...	...	...	...	...	...	...	...	...	
32	*9.9*	*7.8*	*6.3*	*5.1*	*4.0*	*3.2*	...	...	...	...	...	...	...	...	...	07
33	9.1	*7.8*	*6.3*	*5.1*	*4.0*	*3.2*	...	...	...	...	...	...	...	...	...	07
34	*9.9*	*7.8*	*6.3*	*5.1*	*4.0*	*3.2*	...	...	...	...	...	...	...	...	...	
35	9.1	*7.8*	*6.3*	*5.1*	*4.0*	*3.2*	...	...	...	...	...	...	...	...	...	
36	*9.9*	*7.8*	*6.3*	*5.1*	*4.0*	*3.2*	...	...	...	...	...	...	...	...	...	
37	9.1	*7.8*	*6.3*	*5.1*	*4.0*	*3.2*	...	...	...	...	...	...	...	...	...	
38	*9.9*	*7.8*	*6.3*	*5.1*	*4.0*	*3.2*	...	...	...	...	...	...	...	...	...	
39	9.1	*7.8*	*6.3*	*5.1*	*4.0*	*3.2*	...	...	...	...	...	...	...	...	...	
40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
41	*8.4*	*6.6*	*5.4*	*4.3*	*3.4*	*2.7*	...	...	...	...	...	...	...	...	...	
42	7.7	*6.6*	*5.4*	*4.3*	*3.4*	*2.7*	...	...	...	...	...	...	...	...	...	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304L	S30403	...	...	8	1
	2	18Cr–8Ni	Smls. pipe	SA-312	TP304L	S30403	...	...	8	1
	3	18Cr–8Ni	Wld. pipe	SA-312	TP304L	S30403	...	...	8	1
	4	18Cr–8Ni	Wld. pipe	SA-312	TP304L	S30403	...	...	8	1
	5	18Cr–8Ni	Wld. pipe	SA-358	304L	S30403	1	...	8	1
	6	18Cr–8Ni	Smls. & wld. fittings	SA-403	304L	S30403	...	...	8	1
	7	18Cr–8Ni	Wld. pipe	SA-409	TP304L	S30403	...	...	8	1
	8	18Cr–8Ni	Bar	SA-479	304L	S30403	...	...	8	1
	9	18Cr–8Ni	Bar	SA-479	304L	S30403	...	...	8	1
	10	18Cr–8Ni	Wld. tube	SA-688	TP304L	S30403	...	...	8	1
	11	18Cr–8Ni	Wld. tube	SA-688	TP304L	S30403	...	...	8	1
	12	18Cr–8Ni	Wld. tube	SA-688	TP304L	S30403	...	...	8	1
	13	18Cr–8Ni	Wld. pipe	SA-813	TP304L	S30403	...	...	8	1
	14	18Cr–8Ni	Wld. pipe	SA-814	TP304L	S30403	...	...	8	1
A08	15	18Cr–8Ni	Bar	SA/JIS G4303	SUS304L	...	...	...	8	1
	16	18Cr–8Ni	Forgings	SA-182	F304	S30400	...	> 5	8	1
	17	18Cr–8Ni	Forgings	SA-182	F304	S30400	...	> 5	8	1
	18	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...	> 5	8	1
	19	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...	> 5	8	1
	20	18Cr–8Ni	Castings	SA-351	CF3	J92500	...	...	8	1
	21	18Cr–8Ni	Castings	SA-351	CF3	J92500	...	...	8	1
	22	18Cr–8Ni	Castings	SA-351	CF8	J92600	...	...	8	1
	23	18Cr–8Ni	Castings	SA-351	CF8	J92600	...	...	8	1
	24	18Cr–8Ni	Castings	SA-351	CF8	J92600	...	...	8	1
	25	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...	...	8	1
	26	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...	...	8	1
	27	18Cr–8Ni	Cast pipe	SA-451	CPF3	J92500	...	...	8	1
	28	18Cr–8Ni	Cast pipe	SA-451	CPF8	J92600	...	...	8	1
07	29	18Cr–8Ni	Forgings	SA-965	F304	S30400	...	...	8	1
07	30	18Cr–8Ni	Forgings	SA-965	F304	S30400	...	...	8	1
07	31	18Cr–8Ni	Forgings	SA-965	F304H	S30409	...	...	8	1
07	32	18Cr–8Ni	Forgings	SA-965	F304H	S30409	...	...	8	1
	33	18Cr–8Ni	Forgings	SA-182	F304	S30400	...	≤ 5	8	1
	34	18Cr–8Ni	Forgings	SA-182	F304	S30400	...	≤ 5	8	1
	35	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...	≤ 5	8	1
	36	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...	≤ 5	8	1
	37	18Cr–8Ni	Smls. tube	SA-213	TP304	S30400	...	...	8	1
	38	18Cr–8Ni	Smls. tube	SA-213	TP304	S30400	...	...	8	1
	39	18Cr–8Ni	Smls. tube	SA-213	TP304H	S30409	...	...	8	1
	40	18Cr–8Ni	Smls. tube	SA-213	TP304H	S30409	...	...	8	1

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	70	25	800	800	1200	650	HA-3	G5, G34, T4, W12, W14	
2	70	25	800	NP	1200	650	HA-3	G34, T6	
3	70	25	800	NP	1200	650	HA-3	G5, G24, G34, T4	
4	70	25	800	NP	1200	650	HA-3	G24, G34, T6	
5	70	25	NP	800	NP	NP	HA-3	G5, W12	
6	70	25	NP	800	1200	650	HA-3	G5, T4, W12, W14	
7	70	25	NP	800	NP	NP	HA-3	G5, W12	
8	70	25	800	800	1200	650	HA-3	G5, G22, G34, T4	
9	70	25	800	NP	1200	650	HA-3	G22, G34, T6	
10	70	25	NP	800	NP	NP	HA-3	G5, W12	
11	70	25	NP	NP	1200	650	HA-3	G5, G24, T4	
12	70	25	NP	NP	1200	650	HA-3	G24, T6	
13	70	25	NP	800	NP	NP	HA-3	G5, W12	
14	70	25	NP	800	NP	NP	HA-3	G5, W12	
15	70	25	NP	800	NP	NP	HA-3	G5, G22, G34	A08
16	70	30	1500	800	1500	650	HA-1	G5, G12, T7	
17	70	30	1500	NP	1500	650	HA-1	G12, T8	
18	70	30	1500	800	1500	NP	HA-1	G5, T7	
19	70	30	1500	NP	1500	NP	HA-1	T8	
20	70	30	NP	800	800	650	HA-3	G1, G5, G16, G17, G32	
21	70	30	NP	NP	800	650	HA-3	G1, G32	
22	70	30	1500	800	NP	NP	HA-1	G1, G5, G12, G16, G17, G32, H1, T6	
23	70	30	1500	NP	1500	650	HA-1	G1, G12, G32, H1, T7	
24	70	30	NP	NP	1500	650	HA-1	G1, G5, G12, G32, T6	
25	70	30	NP	800	1500	650	HA-1	G5, G12, S9, T7	
26	70	30	NP	NP	1500	650	HA-1	G12, S9, T8	
27	70	30	NP	800	NP	NP	HA-3	G5, G16, G17, G32	
28	70	30	NP	800	NP	NP	HA-1	G5, G16, G17, G32	
29	70	30	1500	800	1500	650	HA-1	G5, G12, T7	07
30	70	30	1500	NP	1500	650	HA-1	G12, T8	07
31	70	30	NP	800	1500	NP	HA-1	G5, T7	07
32	70	30	NP	NP	1500	NP	HA-1	T8	07
33	75	30	1500	NP	1500	NP	HA-1	G12, T8	
34	75	30	1500	800	1500	NP	HA-1	G5, G12, T7	
35	75	30	1500	NP	1500	NP	HA-1	T8	
36	75	30	1500	800	1500	NP	HA-1	G5, T7	
37	75	30	1500	NP	1500	NP	HA-1	G12, T8	
38	75	30	1500	800	1500	NP	HA-1	G5, G12, T7	
39	75	30	1500	NP	1500	NP	HA-1	T8	
40	75	30	1500	800	1500	NP	HA-1	G5, T7	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	12.8	*11.9*
	2	16.7	...	14.3	...	12.8	11.7	10.9	10.4	10.2	10.0	9.8	9.7	9.5	9.3
	3	14.2	...	14.2	...	14.2	13.4	12.5	11.9	11.7	11.4	11.3	11.1	10.9	*10.1*
	4	14.2	...	12.1	...	10.9	9.9	9.3	8.8	8.6	8.5	8.3	8.2	8.1	7.9
	5	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
	6	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	12.8	*11.9*
	7	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
	8	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	12.8	*11.9*
	9	16.7	...	14.3	...	12.8	11.7	10.9	10.4	10.2	10.0	9.8	9.7	9.5	9.3
	10	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
	11	14.2	...	14.2	...	14.2	13.4	12.5	11.9	11.7	11.4	11.3	11.1	10.9	*10.1*
	12	14.2	...	12.1	...	10.9	9.9	9.3	8.8	8.6	8.5	8.3	8.2	8.1	7.9
	13	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
	14	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
A08	15	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
	16	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	14.9	14.6
	17	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
	18	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	14.9	14.6
	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	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	...	...
	21	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	...	...
	22	20.0	...	18.9	...	17.7	17.1	16.9	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	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	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	14.9	14.6
	26	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
	27	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	...	...
	28	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	...	...
07	29	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	14.9	14.6
07	30	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
07	31	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	14.9	14.6
07	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	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
	34	20.0	...	20.0	...	18.9	18.3	17.5	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	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
	37	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
	38	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6
	39	20.0	...	16.7	...	15.0	13.8	12.9	12.3	12.0	11.7	11.5	11.2	11.0	10.8
	40	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	14.9	14.6

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	9.9	7.8	6.3	5.1	4.0	3.2	...	...	...	...	...	...	...	...	...	
2	9.1	7.8	6.3	5.1	4.0	3.2	...	...	...	...	...	...	...	...	...	
3	8.4	6.6	5.4	4.3	3.4	2.7	...	...	...	...	...	...	...	...	...	
4	7.7	6.6	5.4	4.3	3.4	2.7	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	9.9	7.8	6.3	5.1	4.0	3.2	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	9.9	7.8	6.3	5.1	4.0	3.2	...	...	...	...	...	...	...	...	...	
9	9.1	7.8	6.3	5.1	4.0	3.2	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	8.4	6.6	5.4	4.3	3.4	2.7	...	...	...	...	...	...	...	...	...	
12	7.7	6.6	5.4	4.3	3.4	2.7	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
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	10.6	10.4	10.1	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...	
18	14.3	14.0	12.4	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...	
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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	14.3	12.2	9.5	7.5	6.0	4.8	3.9	3.3	2.7	2.3	2.0	1.7	...	...	...	
23	10.6	10.4	9.5	7.5	6.0	4.8	3.9	3.3	2.7	2.3	2.0	1.7	...	...	...	
24	14.3	12.2	9.5	7.5	6.0	4.8	3.9	3.3	2.7	2.3	2.0	1.7	...	...	...	
25	14.3	14.0	12.4	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...	
26	10.6	10.4	10.1	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	14.3	14.0	12.4	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...	07
30	10.6	10.4	10.1	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...	07
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	...	...	...	07
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	...	...	...	07
33	10.6	10.4	10.1	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...	
34	14.3	14.0	12.4	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...	
35	10.6	10.4	10.1	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...	
36	14.3	14.0	12.4	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...	
37	10.6	10.4	10.1	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...	
38	14.3	14.0	12.4	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...	
39	10.6	10.4	10.1	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...	
40	14.3	14.0	12.4	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
1	18Cr–8Ni	Plate	SA-240	302	S30200	...	...	8	1
2	18Cr–8Ni	Plate	SA-240	302	S30200	...	...	8	1
3	18Cr–8Ni	Plate	SA-240	304	S30400	...	...	8	1
4	18Cr–8Ni	Plate	SA-240	304	S30400	...	...	8	1
5	18Cr–8Ni	Plate	SA-240	304H	S30409	...	...	8	1
6	18Cr–8Ni	Plate	SA-240	304H	S30409	...	...	8	1
7	18Cr–8Ni	Wld. tube	SA-249	TP304	S30400	...	...	8	1
8	18Cr–8Ni	Wld. tube	SA-249	TP304	S30400	...	...	8	1
9	18Cr–8Ni	Wld. tube	SA-249	TP304	S30400	...	...	8	1
10	18Cr–8Ni	Wld. tube	SA-249	TP304	S30400	...	...	8	1
11	18Cr–8Ni	Wld. tube	SA-249	TP304H	S30409	...	...	8	1
12	18Cr–8Ni	Wld. tube	SA-249	TP304H	S30409	...	...	8	1
13	18Cr–8Ni	Wld. tube	SA-249	TP304H	S30409	...	...	8	1
14	18Cr–8Ni	Wld. tube	SA-249	TP304H	S30409	...	...	8	1
15	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304	S30400	...	...	8	1
16	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304	S30400	...	...	8	1
17	18Cr–8Ni	Wld. pipe	SA-312	TP304	S30400	...	...	8	1
18	18Cr–8Ni	Wld. pipe	SA-312	TP304	S30400	...	...	8	1
19	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304H	S30409	...	...	8	1
20	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304H	S30409	...	...	8	1
21	18Cr–8Ni	Wld. pipe	SA-312	TP304H	S30409	...	...	8	1
22	18Cr–8Ni	Wld. pipe	SA-312	TP304H	S30409	...	...	8	1
23	18Cr–8Ni	Wld. pipe	SA-358	304	S30400	1	...	8	1
24	18Cr–8Ni	Wld. pipe	SA-358	304H	S30409	1	...	8	1
25	18Cr–8Ni	Wld. pipe	SA-358	304LN	S30453	1	...	8	1
26	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...	...	8	1
27	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...	...	8	1
28	18Cr–8Ni	Smls. pipe	SA-376	TP304H	S30409	...	...	8	1
29	18Cr–8Ni	Smls. pipe	SA-376	TP304H	S30409	...	...	8	1
30	18Cr–8Ni	Smls. & wld. fittings	SA-403	304	S30400	...	...	8	1
31	18Cr–8Ni	Smls. & wld. fittings	SA-403	304H	S30409	...	...	8	1
32	18Cr–8Ni	Wld. pipe	SA-409	TP304	S30400	...	...	8	1
33	18Cr–8Ni	Bar	SA-479	302	S30200	...	...	8	1
34	18Cr–8Ni	Bar	SA-479	302	S30200	...	...	8	1
35	18Cr–8Ni	Bar	SA-479	304	S30400	...	...	8	1
36	18Cr–8Ni	Bar	SA-479	304	S30400	...	...	8	1
37	18Cr–8Ni	Bar	SA-479	304H	S30409	...	...	8	1
38	18Cr–8Ni	Bar	SA-479	304H	S30409	...	...	8	1

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	10.6	10.4	10.1	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...
4	14.3	14.0	12.4	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	10.6	10.4	10.1	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	12.1	11.9	10.5	8.3	6.6	5.2	4.0	3.1	2.5	2.0	1.6	1.2	...	...	...
10	9.0	8.8	8.6	8.3	6.6	5.2	4.0	3.1	2.5	2.0	1.6	1.2	...	...	...
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	12.1	11.9	10.5	8.3	6.6	5.2	4.0	3.1	2.5	2.0	1.6	1.2	...	...	...
14	9.0	8.8	8.6	8.3	6.6	5.2	4.0	3.1	2.5	2.0	1.6	1.2	...	...	...
15	14.3	14.0	12.4	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...
16	10.6	10.4	10.1	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...
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	14.3	14.0	12.4	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...
20	10.6	10.4	10.1	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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
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	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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	14.3	14.0	12.4	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...
36	10.6	10.4	10.1	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	...	...	...
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	...	...	...

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	18Cr–8Ni	Wld. tube	SA-688	TP304	S30400	...	...	8	1
	2	18Cr–8Ni	Wld. tube	SA-688	TP304	S30400	...	...	8	1
	3	18Cr–8Ni	Wld. tube	SA-688	TP304	S30400	...	...	8	1
	4	18Cr–8Ni	Wld. pipe	SA-813	TP304	S30400	...	...	8	1
	5	18Cr–8Ni	Wld. pipe	SA-813	TP304H	S30409	...	...	8	1
	6	18Cr–8Ni	Wld. pipe	SA-814	TP304	S30400	...	...	8	1
	7	18Cr–8Ni	Wld. pipe	SA-814	TP304H	S30409	...	...	8	1
A08	8	18Cr–8Ni	Bar	SA/JIS G4303	SUS302	...	...	...	8	1
A08	9	18Cr–8Ni	Bar	SA/JIS G4303	SUS304	...	...	...	8	1
A08	10	18Cr–8Ni	Plate	SA/EN 10028-7	X5CrNi18-10	...	...	≤ 3	8	1
A08	11	18Cr–8Ni	Plate	SA/EN 10028-7	X5CrNi18-10	...	...	≤ 3	8	1
	12	18Cr–8Ni	Castings	SA-351	CF3A	J92500	...	...	8	1
	13	18Cr–8Ni	Castings	SA-351	CF3A	J92500	...	...	8	1
	14	18Cr–8Ni	Castings	SA-351	CF8A	J92600	...	...	8	1
	15	18Cr–8Ni	Castings	SA-351	CF8A	J92600	...	...	8	1
	16	18Cr–8Ni	Cast pipe	SA-451	CPF3A	J92500	...	...	8	1
	17	18Cr–8Ni	Cast pipe	SA-451	CPF8A	J92600	...	...	8	1
	18	18Cr–8Ni–N	Forgings	SA-182	F304LN	S30453	...	> 5	8	1
07	19	18Cr–8Ni–N	Forgings	SA-965	F304LN	S30453	...	...	8	1
	20	18Cr–8Ni–N	Forgings	SA-182	F304LN	S30453	...	≤ 5	8	1
	21	18Cr–8Ni–N	Smls. tube	SA-213	TP304LN	S30453	...	...	8	1
	22	18Cr–8Ni–N	Plate	SA-240	304LN	S30453	...	...	8	1
	23	18Cr–8Ni–N	Wld. tube	SA-249	TP304LN	S30453	...	...	8	1
	24	18Cr–8Ni–N	Smls. & wld. pipe	SA-312	TP304LN	S30453	...	...	8	1
	25	18Cr–8Ni–N	Smls. pipe	SA-376	TP304LN	S30453	...	...	8	1
	26	18Cr–8Ni–N	Smls. & wld. fittings	SA-403	304LN	S30453	WP	...	8	1
	27	18Cr–8Ni–N	Bar	SA-479	304LN	S30453	...	...	8	1
	28	18Cr–8Ni–N	Wld. tube	SA-688	TP304LN	S30453	...	...	8	1
	29	18Cr–8Ni–N	Wld. pipe	SA-813	TP304LN	S30453	...	...	8	1
	30	18Cr–8Ni–N	Wld. pipe	SA-814	TP304LN	S30453	...	...	8	1
	31	18Cr–8Ni–N	Forgings	SA-182	F304N	S30451	...	...	8	1
	32	18Cr–8Ni–N	Smls. tube	SA-213	TP304N	S30451	...	...	8	1
	33	18Cr–8Ni–N	Smls. tube	SA-213	TP304N	S30451	...	...	8	1
	34	18Cr–8Ni–N	Plate	SA-240	304N	S30451	...	...	8	1
	35	18Cr–8Ni–N	Plate	SA-240	304N	S30451	...	...	8	1
	36	18Cr–8Ni–N	Wld. tube	SA-249	TP304N	S30451	...	...	8	1
	37	18Cr–8Ni–N	Wld. tube	SA-249	TP304N	S30451	...	...	8	1
	38	18Cr–8Ni–N	Wld. tube	SA-249	TP304N	S30451	...	...	8	1
	39	18Cr–8Ni–N	Wld. tube	SA-249	TP304N	S30451	...	...	8	1
	40	18Cr–8Ni–N	Wld. tube	SA-249	TP304N	S30451	...	...	8	1
	41	18Cr–8Ni–N	Smls. & wld. pipe	SA-312	TP304N	S30451	...	...	8	1
	42	18Cr–8Ni–N	Smls. & wld. pipe	SA-312	TP304N	S30451	...	...	8	1
	43	18Cr–8Ni–N	Wld. pipe	SA-312	TP304N	S30451	...	...	8	1
	44	18Cr–8Ni–N	Wld. pipe	SA-312	TP304N	S30451	...	...	8	1

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	75	30	NP	800	NP	NP	HA-1	G5, W12	
2	75	30	NP	NP	1500	650	HA-1	G5, G12, G24, T7	
3	75	30	NP	NP	1500	650	HA-1	G12, G24, T8	
4	75	30	NP	800	NP	NP	HA-1	G5, W12	
5	75	30	NP	800	NP	NP	HA-1	G5, W12	
6	75	30	NP	800	NP	NP	HA-1	G5, W12	
7	75	30	NP	800	NP	NP	HA-1	G5, W12	
8	75	30	NP	800	NP	NP	HA-1	G5, G24	A08
9	75	30	NP	800	NP	NP	HA-1	G5, G12, G22	A08
10	75	31	NP	NP	1022	NP	HA-1	G5	A08
11	75	31	NP	NP	1022	NP	HA-1	...	A08
12	77	35	NP	650	700	650	HA-3	G1, G5, G16, G17, G32	
13	77	35	NP	NP	700	650	HA-3	G1, G32	
14	77	35	NP	650	650	650	HA-1	G1, G5, G16, G17, G32	
15	77	35	NP	NP	650	650	HA-1	G1, G32	
16	77	35	NP	650	NP	NP	HA-3	G5, G16, G17, G32	
17	77	35	NP	650	NP	NP	HA-1	G5, G16, G17, G32	
18	70	30	NP	800	NP	NP	HA-1	G5	
19	70	30	NP	800	NP	NP	HA-1	G5	07
20	75	30	NP	800	NP	NP	HA-1	G5	
21	75	30	NP	800	NP	NP	HA-1	G5	
22	75	30	NP	800	NP	NP	HA-1	G5	
23	75	30	NP	800	NP	NP	HA-1	G5, W12	
24	75	30	NP	800	NP	NP	HA-1	G5, W12, W14	
25	75	30	NP	800	NP	NP	HA-1	G5	
26	75	30	NP	800	NP	NP	HA-1	G5, W12, W14	
27	75	30	NP	800	NP	NP	HA-1	G5	
28	75	30	NP	800	NP	NP	HA-1	G5, W12	
29	75	30	NP	800	NP	NP	HA-1	G5, W12	
30	75	30	NP	800	NP	NP	HA-1	G5, W12	
31	80	35	NP	800	NP	NP	HA-1	G5	
32	80	35	1200	800	1200	NP	HA-1	G5, G12, T7	
33	80	35	1200	NP	1200	NP	HA-1	G12, T8	
34	80	35	NP	800	1200	650	HA-1	G5, G12, T7	
35	80	35	NP	NP	1200	650	HA-1	G12, T8	
36	80	35	1200	NP	NP	NP	HA-1	G5, G12, T7, W13	
37	80	35	1200	NP	NP	NP	HA-1	G12, T8, W13	
38	80	35	1200	NP	NP	NP	HA-1	G3, G5, G12, T5	
39	80	35	1200	NP	1200	650	HA-1	G3, G12, G24, T8	
40	80	35	NP	NP	1200	650	HA-1	G5, G12, G24, T5	
41	80	35	1200	800	1200	650	HA-1	G5, G12, T7, W12, W13, W14	
42	80	35	1200	NP	1200	650	HA-1	G12, T8, W13, W14	
43	80	35	1200	NP	1200	650	HA-1	G3, G5, G12, G24, T5	
44	80	35	1200	NP	1200	650	HA-1	G3, G12, G24, T8	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	17.0	...	17.0	...	16.1	15.5	14.8	14.1	13.8	13.5	13.2	12.9	12.6	12.4
	3	17.0	...	14.2	...	12.7	11.7	11.0	10.4	10.2	10.0	9.8	9.6	9.4	9.2
	4	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	5	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	6	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	7	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
A08	8	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
A08	9	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
A08	10	20.3	...	20.3	...	19.0	18.4	17.7	16.8	16.4	16.1	15.7	15.4	15.1	14.8
A08	11	20.3	...	16.9	...	15.2	14.0	13.1	12.5	12.2	11.9	11.7	11.4	11.2	11.0
	12	22.0	...	20.8	...	19.4	18.8	18.6	18.6	18.6	18.5	...	...	...	...
	13	22.0	...	19.5	...	17.5	16.1	15.1	14.3	14.0	13.7	...	...	...	...
	14	22.0	...	20.8	...	19.4	18.8	18.6	18.6	18.6	...	...	...	...	...
	15	22.0	...	19.5	...	17.5	16.1	15.1	14.3	14.0	...	...	...	...	...
	16	22.0	...	20.8	...	19.4	18.8	18.6	18.6	18.6	...	...	...	...	...
	17	22.0	...	20.8	...	19.4	18.8	18.6	18.6	18.6	...	...	...	...	...
	18	20.0	...	18.9	...	17.7	17.1	16.9	16.6	16.2	15.8	15.5	15.2	...	...
07	19	20.0	...	18.9	...	17.7	17.1	16.9	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	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	24	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	25	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	26	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	27	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	28	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	29	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	30	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	31	22.9	...	22.9	...	21.7	20.3	18.9	17.9	17.5	17.2	16.9	16.6	...	...
	32	22.9	...	22.9	...	21.7	20.3	18.9	17.9	17.5	17.2	16.9	16.6	16.3	16.0
	33	22.9	...	19.1	...	16.7	15.1	14.0	13.3	13.0	12.8	12.5	12.3	12.1	11.8
	34	22.9	...	22.9	...	21.7	20.3	18.9	17.9	17.5	17.2	16.9	16.6	16.3	16.0
	35	22.9	...	19.1	...	16.7	15.1	14.0	13.3	13.0	12.8	12.5	12.3	12.1	11.8
	36	22.9	...	22.9	...	21.7	20.3	18.9	17.9	17.5	17.2	16.9	16.6	16.3	16.0
	37	22.9	...	19.1	...	16.7	15.1	14.0	13.3	13.0	12.8	12.5	12.3	12.1	11.8
	38	19.4	...	19.4	...	18.5	17.3	16.0	15.2	14.9	14.6	14.4	14.1	13.8	13.6
	39	19.4	...	16.2	...	14.2	12.8	11.9	11.3	11.0	10.8	10.6	10.5	10.3	10.0
	40	19.4	...	19.4	...	18.5	17.3	16.0	15.2	14.9	14.6	14.4	14.1	13.8	13.6
	41	22.9	...	22.9	...	21.7	20.3	18.9	17.9	17.5	17.2	16.9	16.6	16.3	16.0
	42	22.9	...	19.1	...	16.7	15.1	14.0	13.3	13.0	12.8	12.5	12.3	12.1	11.8
	43	19.4	...	19.4	...	18.5	17.3	16.0	15.2	14.9	14.6	14.4	14.1	13.8	13.6
	44	19.4	...	16.2	...	14.2	12.8	11.9	11.3	11.0	10.8	10.6	10.5	10.3	10.0

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	12.1	11.9	*10.5*	*8.3*	*6.6*	*5.2*	*4.0*	*3.1*	*2.5*	*2.0*	*1.6*	*1.2*	...	...	...	
3	9.0	8.8	8.6	*8.3*	*6.6*	*5.2*	*4.0*	*3.1*	*2.5*	*2.0*	*1.6*	*1.2*	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
10	14.5	14.2	12.4	...	...	...	...	...	...	...	...	...	...	...	...	A08
11	10.7	10.5	10.3	...	...	...	...	...	...	...	...	...	...	...	...	A08
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	15.6	15.2	*12.4*	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...	
33	11.6	11.3	11.0	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...	
34	15.6	15.2	*12.4*	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...	
35	11.6	11.3	11.0	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...	
36	15.6	15.2	*12.4*	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...	
37	11.6	11.3	11.0	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...	
38	*13.3*	*13.0*	*10.5*	*8.3*	*6.6*	*5.2*	...	...	...	...	...	...	...	...	...	
39	9.8	9.6	9.4	*8.3*	*6.6*	*5.2*	...	...	...	...	...	...	...	...	...	
40	*13.3*	*13.0*	*10.5*	*8.3*	*6.6*	*5.2*	...	...	...	...	...	...	...	...	...	
41	15.6	15.2	*12.4*	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...	
42	11.6	11.3	11.0	*9.8*	*7.7*	*6.1*	...	...	...	...	...	...	...	...	...	
43	*13.3*	*13.0*	*10.5*	*8.3*	*6.6*	*5.2*	...	...	...	...	...	...	...	...	...	
44	9.8	9.6	9.4	*8.3*	*6.6*	*5.2*	...	...	...	...	...	...	...	...	...	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	18Cr–8Ni–N	Wld. pipe	SA-358	304N	S30451	1	...	8	1
	2	18Cr–8Ni–N	Smls. pipe	SA-376	TP304N	S30451	...	...	8	1
	3	18Cr–8Ni–N	Smls. pipe	SA-376	TP304N	S30451	...	...	8	1
	4	18Cr–8Ni–N	Smls. & wld. fittings	SA-403	304N	S30451	...	...	8	1
	5	18Cr–8Ni–N	Bar	SA-479	304N	S30451	...	...	8	1
	6	18Cr–8Ni–N	Bar	SA-479	304N	S30451	...	...	8	1
	7	18Cr–8Ni–N	Wld. tube	SA-688	TP304N	S30451	...	...	8	1
	8	18Cr–8Ni–N	Wld. tube	SA-688	TP304N	S30451	...	...	8	1
	9	18Cr–8Ni–N	Wld. tube	SA-688	TP304N	S30451	...	...	8	1
	10	18Cr–8Ni–N	Wld. pipe	SA-813	TP304N	S30451	...	...	8	1
	11	18Cr–8Ni–N	Wld. pipe	SA-814	TP304N	S30451	...	...	8	1
07	12	18Cr–8Ni–N	Forgings	SA-965	F304N	S30451	...	...	8	1
07	13	18Cr–8Ni–N	Forgings	SA-965	F304N	S30451	...	...	8	1
	14	18Cr–8Ni–4Si–N	Bar	SA-479	...	S21800	...	...	8	3
07	15	18Cr–10Ni–Cb	Forgings	SA-965	F348H	S34809	...	...	8	1
07	16	18Cr–10Ni–Cb	Forgings	SA-965	F348H	S34809	...	...	8	1
	17	18Cr–10Ni–Cb	Castings	SA-351	CF8C	J92710	...	...	8	1
	18	18Cr–10Ni–Cb	Castings	SA-351	CF8C	J92710	...	...	8	1
	19	18Cr–10Ni–Cb	Castings	SA-351	CF8C	J92710	...	...	8	1
	20	18Cr–10Ni–Cb	Cast pipe	SA-451	CPF8C	J92710	...	...	8	1
	21	18Cr–10Ni–Cb	Forgings	SA-182	F347	S34700	...	>5	8	1
07	22	18Cr–10Ni–Cb	Forgings	SA-965	F347	S34700	...	...	8	1
07	23	18Cr–10Ni–Cb	Forgings	SA-965	F347	S34700	...	...	8	1
	24	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...	>5	8	1
	25	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...	>5	8	1
07	26	18Cr–10Ni–Cb	Forgings	SA-965	F347H	S34709	...	...	8	1
07	27	18Cr–10Ni–Cb	Forgings	SA-965	F347H	S34709	...	...	8	1
	28	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...	>5	8	1
	29	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...	>5	8	1
07	30	18Cr–10Ni–Cb	Forgings	SA-965	F348	S34800	...	...	8	1
07	31	18Cr–10Ni–Cb	Forgings	SA-965	F348	S34800	...	...	8	1
	32	18Cr–10Ni–Cb	Forgings	SA-182	F348H	S34809	...	>5	8	1
	33	18Cr–10Ni–Cb	Forgings	SA-182	F348H	S34809	...	>5	8	1
	34	18Cr–10Ni–Cb	Forgings	SA-182	F347	S34700	...	≤5	8	1
	35	18Cr–10Ni–Cb	Forgings	SA-182	F347	S34700	...	≤5	8	1
	36	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347	S34700	...	...	8	1
	37	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347	S34700	...	...	8	1
	38	18Cr–10Ni–Cb	Plate	SA-240	347	S34700	...	...	8	1
	39	18Cr–10Ni–Cb	Plate	SA-240	347	S34700	...	...	8	1

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	15.6	15.2	12.4	9.8	7.7	6.1	...	...	...	...	...	...	...	...	...	
3	11.6	11.3	11.0	9.8	7.7	6.1	...	...	...	...	...	...	...	...	...	
4	15.6	15.2	12.4	9.8	7.7	6.1	...	...	...	...	...	...	...	...	...	
5	11.6	11.3	11.0	9.8	7.7	6.1	...	...	...	...	...	...	...	...	...	
6	15.6	15.2	12.4	9.8	7.7	6.1	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	13.3	13.0	10.5	8.3	6.6	5.2	...	...	...	...	...	...	...	...	...	
9	9.8	9.6	9.4	8.3	6.6	5.2	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	15.6	15.2	12.4	9.8	7.7	6.1	...	...	...	...	...	...	...	...	...	07
13	11.6	11.3	11.0	9.8	7.7	6.1	...	...	...	...	...	...	...	...	...	07
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	14.4	14.2	14.0	13.7	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	...	...	...	07
16	11.2	11.2	11.1	11.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	...	...	...	07
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	15.5	15.3	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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	15.5	15.3	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	...	...	...	
22	15.5	15.3	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	...	...	...	07
23	13.4	13.4	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	...	...	...	07
24	13.4	13.4	13.4	13.3	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	...	...	...	
25	15.5	15.3	15.1	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	...	...	...	
26	13.4	13.4	13.4	13.3	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	...	...	...	07
27	15.5	15.3	15.1	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	...	...	...	07
28	13.4	13.4	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	...	...	...	
29	15.5	15.3	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	...	...	...	
30	15.5	15.3	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	...	...	...	07
31	13.4	13.4	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	...	...	...	07
32	13.4	13.4	13.4	13.3	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	...	...	...	
33	15.5	15.3	15.1	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	...	...	...	
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	16.6	16.0	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	16.6	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	...	...	...	
39	13.4	13.4	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	...	...	...	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347	S34700	...	...	8	1
	2	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347	S34700	...	...	8	1
	3	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347	S34700	...	...	8	1
	4	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347	S34700	...	...	8	1
	5	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP347	S34700	...	...	8	1
	6	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP347	S34700	...	...	8	1
	7	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP347	S34700	...	...	8	1
	8	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP347	S34700	...	...	8	1
	9	18Cr–10Ni–Cb	Wld. pipe	SA-358	347	S34700	1	...	8	1
	10	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347	S34700	...	...	8	1
	11	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347	S34700	...	...	8	1
	12	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	347	S34700	...	...	8	1
	13	18Cr–10Ni–Cb	Wld. pipe	SA-409	TP347	S34700	...	...	8	1
	14	18Cr–10Ni–Cb	Bar	SA-479	347	S34700	...	...	8	1
	15	18Cr–10Ni–Cb	Bar	SA-479	347	S34700	...	...	8	1
	16	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP347	S34700	...	...	8	1
A08	17	18Cr–10Ni–Cb	Bar	SA/JIS G4303	SUS347	...	...	...	8	1
	18	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...	≤ 5	8	1
	19	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...	≤ 5	8	1
	20	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347H	S34709	...	...	8	1
	21	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347H	S34709	...	...	8	1
	22	18Cr–10Ni–Cb	Plate	SA-240	347H	S34709	...	...	8	1
	23	18Cr–10Ni–Cb	Plate	SA-240	347H	S34709	...	...	8	1
	24	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347H	S34709	...	...	8	1
	25	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347H	S34709	...	...	8	1
	26	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347H	S34709	...	...	8	1
	27	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347H	S34709	...	...	8	1
	28	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP347H	S34709	...	...	8	1
	29	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP347H	S34709	...	...	8	1
	30	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP347H	S34709	...	...	8	1
	31	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP347H	S34709	...	...	8	1
	32	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347H	S34709	...	...	8	1
	33	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347H	S34709	...	...	8	1
	34	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	347H	S34709	...	...	8	1
	35	18Cr–10Ni–Cb	Bar	SA-479	347H	S34709	...	...	8	1
	36	18Cr–10Ni–Cb	Bar	SA-479	347H	S34709	...	...	8	1
	37	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP347H	S34709	...	...	8	1
	38	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP347H	S34709	...	...	8	1

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes
1	75	30	1500	NP	NP	NP	HA-2	G12, T7, W13
2	75	30	1500	800	NP	NP	HA-2	G5, G12, T6, W12, W13
3	75	30	1500	NP	1500	650	HA-2	G3, G5, G12, G24, T6
4	75	30	1500	NP	1500	650	HA-2	G3, G12, G24, T7
5	75	30	1500	800	1500	650	HA-2	G5, G12, T6, W12, W13, W14
6	75	30	1500	NP	1500	650	HA-2	G12, T7, W13, W14
7	75	30	1500	NP	1500	650	HA-2	G3, G5, G12, G24, T6
8	75	30	1500	NP	1500	650	HA-2	G3, G12, G24, T7
9	75	30	NP	800	NP	NP	HA-2	G5, H1, W12
10	75	30	1500	800	1500	650	HA-2	G5, G12, H1, T6
11	75	30	1500	NP	1500	650	HA-2	G12, H1, T7
12	75	30	NP	800	1500	650	HA-2	G5, G12, T6, W12, W14
13	75	30	NP	800	NP	NP	HA-2	G5, H1, W12
14	75	30	1500	800	1500	650	HA-2	G5, G12, G22, T6
15	75	30	1500	NP	1500	650	HA-2	G12, G22, T7
16	75	30	NP	800	NP	NP	HA-2	G5, H1, W12
17	75	30	NP	800	NP	NP	HA-2	G5, G12, G22 A08
18	75	30	1500	800	1500	NP	HA-2	G5, H2, T8
19	75	30	1500	NP	1500	NP	HA-2	H2, T9
20	75	30	1500	800	1500	NP	HA-2	G5, H2, T8
21	75	30	1500	NP	1500	NP	HA-2	H2, T9
22	75	30	1500	800	1500	NP	HA-2	G5, H2, T8
23	75	30	1500	NP	1500	NP	HA-2	H2, T9
24	75	30	1500	800	NP	NP	HA-2	G5, T8, W12, W13
25	75	30	1500	NP	NP	NP	HA-2	T9, W13
26	75	30	1500	NP	1500	NP	HA-2	G3, G5, G24, T8
27	75	30	1500	NP	1500	NP	HA-2	G3, G24, T9
28	75	30	1500	800	1500	NP	HA-2	G5, H2, T8, W12, W13, W14
29	75	30	1500	NP	1500	NP	HA-2	H2, T9, W13, W14
30	75	30	1500	NP	1500	NP	HA-2	G3, G5, G24, H2, T8
31	75	30	1500	NP	1500	NP	HA-2	G3, G24, H2, T9
32	75	30	1500	800	1500	NP	HA-2	G5, H2, T8
33	75	30	1500	NP	1500	NP	HA-2	H2, T9
34	75	30	NP	800	1500	NP	HA-2	G5, H2, T8, W12, W14
35	75	30	1500	800	NP	NP	HA-2	G5, H2, T8
36	75	30	1500	NP	NP	NP	HA-2	H2, T9
37	75	30	NP	800	NP	NP	HA-2	G5, H2, W12
38	75	30	NP	800	NP	NP	HA-2	G5, W12

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
	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	17.0	...	17.0	...	16.0	15.1	14.6	14.3	14.3	14.3	14.3	14.3	14.3	14.2
	4	17.0	...	15.6	...	14.6	13.6	12.8	12.2	11.9	11.8	11.6	11.5	11.5	11.4
	5	20.0	...	20.0	...	18.8	17.8	17.2	16.9	16.8	16.8	16.8	16.8	16.8	16.7
	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	17.0	...	17.0	...	16.0	15.1	14.6	14.3	14.3	14.3	14.3	14.3	14.3	14.2
	8	17.0	...	15.6	...	14.6	13.6	12.8	12.2	11.9	11.8	11.6	11.5	11.5	11.4
	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	17.2	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	17.2	16.9	16.8	16.8	16.8	16.8	16.8	16.7
	13	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	...	...
	14	20.0	...	20.0	...	18.8	17.8	17.2	16.9	16.8	16.8	16.8	16.8	16.8	16.7
	15	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
	16	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	...	...
A08	17	20.0	...	20.0	...	18.8	17.8	17.2	16.9	16.8	16.8	16.8	16.8	...	...
	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	16.8	16.7
	23	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
	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	17.0	...	17.0	...	16.0	15.1	14.6	14.3	14.3	14.3	14.3	14.3	14.3	14.2
	27	17.0	...	15.6	...	14.6	13.6	12.8	12.2	11.9	11.8	11.6	11.5	11.5	11.4
	28	20.0	...	20.0	...	18.8	17.8	17.1	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	17.0	...	17.0	...	16.0	15.1	14.6	14.3	14.3	14.3	14.3	14.3	14.3	14.2
	31	17.0	...	15.6	...	14.6	13.6	12.8	12.2	11.9	11.8	11.6	11.5	11.5	11.4
	32	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	16.8	16.7
	33	20.0	...	18.4	...	17.1	16.0	15.0	14.3	14.0	13.8	13.7	13.6	13.5	13.4
	34	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	16.8	16.7
	35	20.0	...	20.0	...	18.8	17.8	17.1	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	...	...
	38	20.0	...	20.0	...	18.8	17.8	17.1	16.9	16.8	16.8	16.8	16.8	...	...

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	13.4	13.4	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	...	...	...
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	14.1	13.6	10.3	7.8	5.2	3.8	2.8	1.9	1.3	1.0	0.77	0.68	...	...	...
4	11.4	11.4	10.3	7.8	5.2	3.8	2.8	1.9	1.3	1.0	0.77	0.68	...	...	...
5	16.6	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	...	...	...
6	13.4	13.4	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	...	...	...
7	14.1	13.6	10.3	7.8	5.2	3.8	2.8	1.9	1.3	1.0	0.77	0.68	...	...	...
8	11.4	11.4	10.3	7.8	5.2	3.8	2.8	1.9	1.3	1.0	0.77	0.68	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	16.6	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	...	...	...
11	13.4	13.4	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	...	...	...
12	16.6	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	16.6	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	...	...	...
15	13.4	13.4	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	16.6	16.4	16.2	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	...	...	...
19	13.4	13.4	13.4	13.3	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	...	...	...
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	16.6	16.4	16.2	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	...	...	...
23	13.4	13.4	13.4	13.3	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	14.1	14.0	13.7	12.0	8.9	6.7	5.0	3.7	2.7	2.1	1.6	1.1	...	...	...
27	11.4	11.4	11.4	11.3	8.9	6.7	5.0	3.7	2.7	2.1	1.6	1.1	...	...	...
28	16.6	16.4	16.2	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	...	...	...
29	13.4	13.4	13.4	13.3	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	...	...	...
30	14.1	14.0	13.7	12.0	8.9	6.7	5.0	3.7	2.7	2.1	1.6	1.1	...	...	...
31	11.4	11.4	11.4	11.3	8.9	6.7	5.0	3.7	2.7	2.1	1.6	1.1	...	...	...
32	16.6	16.4	16.2	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	...	...	...
33	13.4	13.4	13.4	13.3	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	...	...	...
34	16.6	16.4	16.2	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	...	...	...
35	16.6	16.4	16.2	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	...	...	...
36	13.4	13.4	13.4	13.3	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
1	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...	≤ 5	8	1
2	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...	≤ 5	8	1
3	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348	S34800	...	...	8	1
4	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348	S34800	...	...	8	1
5	18Cr–10Ni–Cb	Plate	SA-240	348	S34800	...	...	8	1
6	18Cr–10Ni–Cb	Plate	SA-240	348	S34800	...	...	8	1
7	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348	S34800	...	...	8	1
8	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348	S34800	...	...	8	1
9	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348	S34800	...	...	8	1
10	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348	S34800	...	...	8	1
11	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP348	S34800	...	...	8	1
12	18Cr–10Ni–Cb	Smls. pipe	SA-312	TP348	S34800	...	...	8	1
13	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP348	S34800	...	...	8	1
14	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP348	S34800	...	...	8	1
15	18Cr–10Ni–Cb	Wld. pipe	SA-358	348	S34800	1	...	8	1
16	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP348	S34800	...	...	8	1
17	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP348	S34800	...	...	8	1
18	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	348	S34800	...	...	8	1
19	18Cr–10Ni–Cb	Wld. pipe	SA-409	TP348	S34800	...	...	8	1
20	18Cr–10Ni–Cb	Bar	SA-479	348	S34800	...	...	8	1
21	18Cr–10Ni–Cb	Bar	SA-479	348	S34800	...	...	8	1
22	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP348	S34800	...	...	8	1
23	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP348	S34800	...	...	8	1
24	18Cr–10Ni–Cb	Forgings	SA-182	F348H	S34809	...	≤ 5	8	1
25	18Cr–10Ni–Cb	Forgings	SA-182	F348H	S34809	...	≤ 5	8	1
26	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348H	S34809	...	...	8	1
27	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348H	S34809	...	...	8	1
28	18Cr–10Ni–Cb	Plate	SA-240	348H	S34809	...	...	8	1
29	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348H	S34809	...	...	8	1
30	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348H	S34809	...	...	8	1
31	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348H	S34809	...	...	8	1
32	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348H	S34809	...	...	8	1
33	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP348H	S34809	...	...	8	1
34	18Cr–10Ni–Cb	Smls. pipe	SA-312	TP348H	S34809	...	...	8	1
35	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP348H	S34809	...	...	8	1
36	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP348H	S34809	...	...	8	1
37	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	348H	S34809	...	...	8	1
38	18Cr–10Ni–Cb	Bar	SA-479	348H	S34809	...	...	8	1
39	18Cr–10Ni–Cb	Bar	SA-479	348H	S34809	...	...	8	1
40	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP348H	S34809	...	...	8	1
41	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP348H	S34809	...	...	8	1

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	17.9	17.7	17.5	16.6	*12.8*	*9.7*	*7.3*	*5.4*	*4.0*	...	...	...	...	...	...	
2	13.3	13.1	13.0	12.8	*12.8*	*9.7*	*7.3*	*5.4*	*4.0*	...	...	...	...	...	...	
3	13.6	13.5	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	
4	10.1	10.0	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	
5	13.6	13.5	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	
6	10.1	10.0	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	
7	13.6	13.5	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	
8	10.1	10.0	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	
9	13.6	13.5	12.3	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
10	10.1	10.0	9.9	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
11	13.6	13.5	12.3	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
12	10.1	10.0	9.9	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
13	13.6	13.5	12.3	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
14	16.4	*14.9*	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	
15	12.1	12.0	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	
16	16.4	*14.9*	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	07
17	12.1	12.0	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	07
18	16.4	16.2	12.3	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
19	12.1	12.0	11.9	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	
20	16.4	16.2	12.3	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	07
21	12.1	12.0	11.9	*9.1*	*6.9*	*5.4*	*4.1*	*3.2*	*2.5*	*1.9*	*1.5*	*1.1*	...	...	...	07
22	16.4	16.2	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	
23	12.1	12.0	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	
24	16.4	*14.9*	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	
25	16.4	16.2	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	
26	12.1	12.0	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	
27	16.4	*14.9*	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	
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	12.1	12.0	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	
32	16.4	16.2	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	
33	13.9	13.8	*8.2*	*5.9*	*4.3*	*3.1*	*2.2*	*1.4*	*0.9*	*0.68*	*0.43*	*0.26*	...	...	...	
34	10.3	10.2	*8.2*	*5.9*	*4.3*	*3.1*	*2.2*	*1.4*	*0.9*	*0.68*	*0.43*	*0.26*	...	...	...	
35	16.4	16.2	*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*	...	...	...	
37	16.4	16.2	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	
38	12.1	12.0	*9.6*	*6.9*	*5.0*	*3.6*	*2.6*	*1.7*	*1.1*	*0.80*	*0.50*	*0.30*	...	...	...	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	18Cr–10Ni–Ti	Wld. pipe	SA-358	321	S32100	1	...	8	1
	2	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...	≤ 3/8	8	1
	3	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...	≤ 3/8	8	1
	4	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...	≤ 3/8	8	1
	5	18Cr–10Ni–Ti	Smls. & wld. fittings	SA-403	321	S32100	...	...	8	1
	6	18Cr–10Ni–Ti	Wld. pipe	SA-409	TP321	S32100	...	...	8	1
	7	18Cr–10Ni–Ti	Bar	SA-479	321	S32100	...	...	8	1
	8	18Cr–10Ni–Ti	Bar	SA-479	321	S32100	...	...	8	1
	9	18Cr–10Ni–Ti	Bar	SA-479	321	S32100	...	...	8	1
	10	18Cr–10Ni–Ti	Wld. pipe	SA-813	TP321	S32100	...	...	8	1
	11	18Cr–10Ni–Ti	Wld. pipe	SA-814	TP321	S32100	...	...	8	1
A08	12	18Cr–10Ni–Ti	Bar	SA/JIS G4303	SUS321	...	...	...	8	1
	13	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...	≤ 5	8	1
	14	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...	≤ 5	8	1
	15	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321H	S32109	...	...	8	1
	16	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321H	S32109	...	...	8	1
	17	18Cr–10Ni–Ti	Plate	SA-240	321H	S32109	...	...	8	1
	18	18Cr–10Ni–Ti	Plate	SA-240	321H	S32109	...	...	8	1
	19	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321H	S32109	...	...	8	1
	20	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321H	S32109	...	...	8	1
	21	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321H	S32109	...	...	8	1
	22	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321H	S32109	...	...	8	1
	23	18Cr–10Ni–Ti	Smls. pipe	SA-312	TP321H	S32109	...	≤ 3/16	8	1
	24	18Cr–10Ni–Ti	Smls. pipe	SA-312	TP321H	S32109	...	≤ 3/16	8	1
	25	18Cr–10Ni–Ti	Wld. pipe	SA-312	TP321H	S32109	...	≤ 3/16	8	1
	26	18Cr–10Ni–Ti	Wld. pipe	SA-312	TP321H	S32109	...	≤ 3/16	8	1
	27	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321H	S32109	...	≤ 3/8	8	1
	28	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321H	S32109	...	≤ 3/8	8	1
	29	18Cr–10Ni–Ti	Smls. & wld. fittings	SA-403	321H	S32109	...	...	8	1
	30	18Cr–10Ni–Ti	Bar	SA-479	321H	S32109	...	...	8	1
	31	18Cr–10Ni–Ti	Bar	SA-479	321H	S32109	...	...	8	1
	32	18Cr–10Ni–Ti	Wld. pipe	SA-813	TP321H	S32109	...	...	8	1
	33	18Cr–10Ni–Ti	Wld. pipe	SA-814	TP321H	S32109	...	...	8	1
	34	18Cr–11Ni	Plate	SA-240	305	S30500	...	...	8	1
	35	18Cr–13Ni–3Mo	Forgings	SA-182	F317L	S31703	...	> 5	8	1
	36	18Cr–13Ni–3Mo	Forgings	SA-182	F317L	S31703	...	> 5	8	1
	37	18Cr–13Ni–3Mo	Forgings	SA-182	F317L	S31703	...	≤ 5	8	1
	38	18Cr–13Ni–3Mo	Forgings	SA-182	F317L	S31703	...	≤ 5	8	1
	39	18Cr–13Ni–3Mo	Forgings	SA-182	F317	S31700	...	≤ 5	8	1
	40	18Cr–13Ni–3Mo	Forgings	SA-182	F317	S31700	...	≤ 5	8	1
	41	18Cr–13Ni–3Mo	Plate	SA-240	317	S31700	...	...	8	1
	42	18Cr–13Ni–3Mo	Plate	SA-240	317	S31700	...	...	8	1
	43	18Cr–13Ni–3Mo	Plate	SA-240	317L	S31703	...	...	8	1
	44	18Cr–13Ni–3Mo	Plate	SA-240	317L	S31703	...	...	8	1

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	75	30	NP	800	NP	NP	HA-2	G5, H1, W12	
2	75	30	1500	NP	NP	NP	HA-2	G5, G12, H1, T7	
3	75	30	1500	NP	1500	NP	HA-2	G12, H1, T7	
4	75	30	NP	800	1500	NP	HA-2	G5, G12, T6	
5	75	30	NP	800	1500	650	HA-2	G5, G12, T6, W12, W14	
6	75	30	NP	800	NP	NP	HA-2	G5, W12	
7	75	30	1500	NP	NP	NP	HA-2	G5, G12, H1, T7	
8	75	30	1500	NP	1500	650	HA-2	G12, G22, H1, T7	
9	75	30	NP	800	1500	650	HA-2	G5, G12, G22, H1, T6	
10	75	30	NP	800	NP	NP	HA-2	G5, H1, W12	
11	75	30	NP	800	NP	NP	HA-2	G5, W12	
12	75	30	NP	800	NP	NP	HA-2	G5, G12, G22, H1	A08
13	75	30	1500	800	1500	NP	HA-2	G5, H2, T8	
14	75	30	1500	NP	1500	NP	HA-2	H2, T8	
15	75	30	1500	800	1500	NP	HA-2	G5, H2, T8	
16	75	30	1500	NP	1500	NP	HA-2	H2, T8	
17	75	30	1500	800	1500	NP	HA-2	G5, H2, T8	
18	75	30	1500	NP	1500	NP	HA-2	H2, T8	
19	75	30	1500	NP	NP	NP	HA-2	T8, W13	
20	75	30	1500	800	NP	NP	HA-2	G5, T8, W12, W13	
21	75	30	1500	NP	1500	NP	HA-2	G3, G5, G24, T8	
22	75	30	1500	NP	1500	NP	HA-2	G3, G24, T8	
23	75	30	1500	800	1500	NP	HA-2	G5, T8	
24	75	30	1500	NP	1500	NP	HA-2	T8	
25	75	30	1500	800	1500	NP	HA-2	G5, T8, W12, W13, W14	
26	75	30	1500	NP	1500	NP	HA-2	T8, W13, W14	
27	75	30	1500	800	1500	NP	HA-2	G5, H2, T8	
28	75	30	1500	NP	1500	NP	HA-2	H2, T8	
29	75	30	NP	800	1500	NP	HA-2	G5, H2, T8, W12, W14	
30	75	30	1500	NP	1500	NP	HA-2	H2, T8	
31	75	30	1500	800	1500	NP	HA-2	G5, H2, T8	
32	75	30	NP	800	NP	NP	HA-2	G5, H2, W12	
33	75	30	NP	800	NP	NP	HA-2	G5, W12	
34	75	30	NP	800	NP	NP	HA-1	G5	
35	65	25	NP	NP	850	650	HA-4	G5	
36	65	25	NP	NP	850	650	HA-4	...	
37	70	25	NP	NP	850	650	HA-4	G5	
38	70	25	NP	NP	850	650	HA-4	...	
39	75	30	NP	NP	1500	650	HA-2	G5, G12, T8	
40	75	30	NP	NP	1500	650	HA-2	G12, T9	
41	75	30	NP	NP	1500	650	HA-2	G5, G12, T8	
42	75	30	NP	NP	1500	650	HA-2	G12, T9	
43	75	30	NP	NP	850	650	HA-4	G5	
44	75	30	NP	NP	850	650	HA-4	...	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	...	...
2	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
3	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
4	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
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
6	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	...	...
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	...	...
11	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	...	...
A08 12	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	...	...
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	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	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
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	17.0	...	17.0	...	16.2	15.9	15.9	15.5	15.2	14.9	14.6	14.4	14.2	14.1
22	17.0	...	15.3	...	14.1	13.0	12.2	11.5	11.2	11.0	10.8	10.7	10.5	10.4
23	20.0	20.0	20.0	19.6	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
24	20.0	18.7	18.0	17.2	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
25	20.0	20.0	20.0	19.6	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
26	20.0	18.7	18.0	17.2	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
27	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
28	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
29	20.0	...	20.0	...	19.1	18.7	18.7	18.3	17.9	17.5	17.2	16.9	16.7	16.5
30	20.0	...	18.0	...	16.5	15.3	14.3	13.5	13.2	13.0	12.7	12.6	12.4	12.3
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	...	...
34	20.0	...	20.0	...	18.9	18.3	17.5	16.6	16.2	15.8	15.5	15.2	...	...
35	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	12.7	...
36	16.7	...	14.2	...	12.7	11.7	10.9	10.4	10.2	10.0	9.8	9.6	9.4	...
37	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	12.7	...
38	16.7	...	14.2	...	12.7	11.7	10.9	10.4	10.2	10.0	9.8	9.6	9.4	...
39	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
40	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
41	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	15.7	15.6
42	20.0	...	17.3	...	15.6	14.3	13.3	12.6	12.3	12.1	11.9	11.8	11.6	11.5
43	20.0	...	20.0	...	19.6	18.9	17.7	16.9	16.5	16.2	15.8	15.5	15.2	...
44	20.0	...	17.0	...	15.2	14.0	13.1	12.5	12.2	12.0	11.7	11.5	11.3	...

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	16.4	16.2	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
3	12.1	12.0	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
4	16.4	14.9	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
5	16.4	14.9	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
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	16.4	16.2	12.3	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	...	...	...
16	12.1	12.0	11.9	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	...	...	...
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	12.1	12.0	11.9	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	...	...	...
20	16.4	16.2	12.3	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	...	...	...
21	13.9	13.8	10.5	7.7	5.9	4.6	3.5	2.7	2.1	1.6	1.3	0.94	...	...	...
22	10.3	10.2	10.1	7.7	5.9	4.6	3.5	2.7	2.1	1.6	1.3	0.94	...	...	...
23	16.4	16.2	12.3	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	...	...	...
24	12.1	12.0	11.9	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	...	...	...
25	16.4	16.2	12.3	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	...	...	...
26	12.1	12.0	11.9	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	...	...	...
27	16.4	16.2	12.3	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	...	...	...
28	12.1	12.0	11.9	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	...	...	...
29	16.4	16.2	12.3	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	...	...	...
30	12.1	12.0	11.9	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	...	...	...
31	16.4	16.2	12.3	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39	15.4	15.3	15.1	12.4	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...
40	11.4	11.3	11.2	11.1	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...
41	15.4	15.3	15.1	12.4	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...
42	11.4	11.3	11.2	11.1	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	...	...	...
43	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
44	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
1	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317	S31700	...	...	8	1
2	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317	S31700	...	...	8	1
3	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317	S31700	...	...	8	1
4	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317L	S31703	...	...	8	1
5	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317L	S31703	...	...	8	1
6	18Cr–13Ni–3Mo	Smls. & wld. pipe	SA-312	TP317	S31700	...	...	8	1
7	18Cr–13Ni–3Mo	Smls. pipe	SA-312	TP317	S31700	...	...	8	1
8	18Cr–13Ni–3Mo	Wld. pipe	SA-312	TP317	S31700	...	...	8	1
9	18Cr–13Ni–3Mo	Wld. pipe	SA-312	TP317	S31700	...	...	8	1
10	18Cr–13Ni–3Mo	Smls. pipe	SA-312	TP317L	S31703	...	...	8	1
11	18Cr–13Ni–3Mo	Smls. pipe	SA-312	TP317L	S31703	...	...	8	1
12	18Cr–13Ni–3Mo	Wld. pipe	SA-312	TP317L	S31703	...	...	8	1
13	18Cr–13Ni–3Mo	Wld. pipe	SA-312	TP317L	S31703	...	...	8	1
14	18Cr–13Ni–3Mo	Smls. & wld. fittings	SA-403	317	S31700	...	...	8	1
15	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	CR	...	8	1
16	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	CR	...	8	1
17	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	WP-S	...	8	1
18	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	WP-S	...	8	1
19	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	WP-W	...	8	1
20	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	WP-W	...	8	1
21	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	WP-WU	...	8	1
22	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	WP-WU	...	8	1
23	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	WP-WX	...	8	1
24	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	WP-WX	...	8	1
25	18Cr–15Ni–4Si	Forgings	SA-182	...	S30600	Sol. ann.	...	8	1
26	18Cr–15Ni–4Si	Forgings	SA-182	...	S30600	Sol. ann.	...	8	1
27	18Cr–15Ni–4Si	Plate	SA-240	...	S30600	Sol. ann.	≤2	8	1
28	18Cr–15Ni–4Si	Plate	SA-240	...	S30600	Sol. ann.	≤2	8	1
29	18Cr–15Ni–4Si	Smls. & wld. pipe	SA-312	...	S30600	Sol. ann.	...	8	1
30	18Cr–15Ni–4Si	Smls. & wld. pipe	SA-312	...	S30600	Sol. ann.	...	8	1
31	18Cr–15Ni–4Si	Wld. pipe	SA-312	...	S30600	Sol. ann.	...	8	1
32	18Cr–15Ni–4Si	Wld. pipe	SA-312	...	S30600	Sol. ann.	...	8	1
33	18Cr–15Ni–4Si	Bar	SA-479	...	S30600	Sol. ann.	≤4	8	1
34	18Cr–15Ni–4Si	Bar	SA-479	...	S30600	Sol. ann.	≤4	8	1
35	18Cr–18Ni–2Si	Smls. tube	SA-213	XM-15	S38100	...	...	8	1
36	18Cr–18Ni–2Si	Smls. tube	SA-213	XM-15	S38100	...	...	8	1
37	18Cr–18Ni–2Si	Plate	SA-240	XM-15	S38100	...	...	8	1
38	18Cr–18Ni–2Si	Plate	SA-240	XM-15	S38100	...	...	8	1
39	18Cr–18Ni–2Si	Wld. tube	SA-249	TPXM-15	S38100	...	...	8	1
40	18Cr–18Ni–2Si	Wld. tube	SA-249	TPXM-15	S38100	...	...	8	1
41	18Cr–18Ni–2Si	Wld. pipe	SA-312	TPXM-15	S38100	...	...	8	1
42	18Cr–18Ni–2Si	Wld. pipe	SA-312	TPXM-15	S38100	...	...	8	1

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	13.2	*11.1*	*8.5*	*6.5*	*5.0*	*3.8*	*2.9*	*2.3*	*1.8*	*1.3*	*0.90*	*0.80*	...	...	...	
23	10.3	9.9	*8.5*	*6.5*	*5.0*	*3.8*	*2.9*	*2.3*	*1.8*	*1.3*	*0.90*	*0.80*	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	14.3	*11.1*	*8.5*	*6.5*	*5.0*	*3.8*	*2.9*	*2.3*	*1.8*	*1.3*	*0.90*	*0.80*	...	...	...	
26	11.0	10.6	*8.5*	*6.5*	*5.0*	*3.8*	*2.9*	*2.3*	*1.8*	*1.3*	*0.90*	*0.80*	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	13.2	*11.3*	*9.8*	*8.5*	*7.3*	*6.0*	*4.8*	*3.5*	*2.4*	*1.6*	*1.1*	*0.80*	...	...	...	
29	10.3	9.9	9.5	*8.5*	*7.3*	*6.0*	*4.8*	*3.5*	*2.4*	*1.6*	*1.1*	*0.80*	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	*15.9*	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...	
33	*15.9*	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...	07
34	*15.9*	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...	
35	12.3	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...	
36	*15.9*	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...	
37	12.3	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*	...	...	...	
38	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...	
39	10.5	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*	...	...	...	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	25Cr–20Ni	Smls. & wld. pipe	SA-312	TP310S	S31008	...	...	8	2
	2	25Cr–20Ni	Smls. pipe	SA-312	TP310S	S31008	...	...	8	2
	3	25Cr–20Ni	Wld. pipe	SA-312	TP310S	S31008	...	...	8	2
	4	25Cr–20Ni	Wld. pipe	SA-312	TP310S	S31008	...	...	8	2
	5	25Cr–20Ni	Wld. pipe	SA-358	310S	S31008	1	...	8	2
	6	25Cr–20Ni	Smls. & wld. fittings	SA-403	310S	S31008	...	...	8	2
	7	25Cr–20Ni	Bar	SA-479	310S	S31008	...	...	8	2
	8	25Cr–20Ni	Bar	SA-479	310S	S31008	...	...	8	2
	9	25Cr–20Ni	Wld. pipe	SA-813	TP310S	S31008	...	...	8	2
	10	25Cr–20Ni	Wld. pipe	SA-813	TP310S	S31008	...	...	8	2
	11	25Cr–20Ni	Wld. pipe	SA-814	TP310S	S31008	...	...	8	2
	12	25Cr–20Ni	Wld. pipe	SA-814	TP310S	S31008	...	...	8	2
A08	13	25Cr–20Ni	Bar	SA/JIS G4303	SUS310S	...	...	...	8	2
	14	25Cr–20Ni	Smls. tube	SA-213	TP310H	S31009	...	...	8	2
	15	25Cr–20Ni	Plate	SA-240	310H	S31009	...	...	8	2
	16	25Cr–20Ni	Plate	SA-240	310H	S31009	...	...	8	2
	17	25Cr–20Ni	Wld. tube	SA-249	TP310H	S31009	...	...	8	2
	18	25Cr–20Ni	Wld. tube	SA-249	TP310H	S31009	...	...	8	2
	19	25Cr–20Ni	Wld. tube	SA-249	TP310H	S31009	...	...	8	2
	20	25Cr–20Ni	Smls. pipe	SA-312	TP310H	S31009	...	...	8	2
	21	25Cr–20Ni	Smls. pipe	SA-312	TP310H	S31009	...	...	8	2
	22	25Cr–20Ni	Wld. pipe	SA-312	TP310H	S31009	...	...	8	2
	23	25Cr–20Ni	Wld. pipe	SA-312	TP310H	S31009	...	...	8	2
	24	25Cr–20Ni	Bar	SA-479	310H	S31009	...	...	8	2
	25	25Cr–20Ni	Bar	SA-479	310H	S31009	...	...	8	2
	26	25Cr–20Ni–Cb	Smls. tube	SA-213	TP310Cb	S31040	...	...	8	2
	27	25Cr–20Ni–Cb	Smls. tube	SA-213	TP310Cb	S31040	...	...	8	2
	28	25Cr–20Ni–Cb	Plate	SA-240	310Cb	S31040	...	...	8	2
	29	25Cr–20Ni–Cb	Plate	SA-240	310Cb	S31040	...	...	8	2
	30	25Cr–20Ni–Cb	Wld. tube	SA-249	TP310Cb	S31040	...	...	8	2
	31	25Cr–20Ni–Cb	Wld. tube	SA-249	TP310Cb	S31040	...	...	8	2
	32	25Cr–20Ni–Cb	Smls. & wld. pipe	SA-312	TP310Cb	S31040	...	...	8	2
	33	25Cr–20Ni–Cb	Smls. pipe	SA-312	TP310Cb	S31040	...	...	8	2
	34	25Cr–20Ni–Cb	Wld. pipe	SA-312	TP310Cb	S31040	...	...	8	2
	35	25Cr–20Ni–Cb	Wld. pipe	SA-312	TP310Cb	S31040	...	...	8	2
	36	25Cr–20Ni–Cb	Bar	SA-479	310Cb	S31040	...	...	8	2
	37	25Cr–20Ni–Cb	Bar	SA-479	310Cb	S31040	...	...	8	2
	38	25Cr–20Ni–Cb	Wld. pipe	SA-813	TP310Cb	S31040	...	...	8	2
	39	25Cr–20Ni–Cb	Wld. pipe	SA-813	TP310Cb	S31040	...	...	8	2
	40	25Cr–20Ni–Cb	Wld. pipe	SA-814	TP310Cb	S31040	...	...	8	2
	41	25Cr–20Ni–Cb	Wld. pipe	SA-814	TP310Cb	S31040	...	...	8	2

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	75	30	1500	800	1500	650	HA-2	G5, G12, T5, W12, W14	
2	75	30	1500	NP	1500	650	HA-2	G12, T6	
3	75	30	1500	NP	1500	650	HA-2	G3, G5, G12, G14, G24, T5	
4	75	30	1500	NP	1500	650	HA-2	G3, G12, G14, G24, T6	
5	75	30	NP	800	NP	NP	HA-2	G5, W12	
6	75	30	NP	800	1500	650	HA-2	G5, G12, T5, W12, W14	
7	75	30	1000	NP	1000	650	HA-2	G12, G22, T6	
8	75	30	1000	800	1000	650	HA-2	G5, G12, G22, T5	
9	75	30	NP	NP	1500	650	HA-2	G5, G12, G24, T5	
10	75	30	NP	NP	1500	650	HA-2	G12, G24, T6	
11	75	30	NP	NP	1500	650	HA-2	G5, G12, G24, T5	
12	75	30	NP	NP	1500	650	HA-2	G12, G24, T6	
13	75	30	NP	800	NP	NP	HA-2	G5, G12, G22	A08
14	75	30	1500	800	1500	NP	HA-2	G5, T6	
15	75	30	1500	NP	1500	NP	HA-2	G5, T6	
16	75	30	1500	NP	1500	NP	HA-2	T7	
17	75	30	NP	800	NP	NP	HA-2	G5, W12	
18	75	30	NP	NP	1500	NP	HA-2	G5, G12, G24, T6	
19	75	30	NP	NP	1500	NP	HA-2	G12, G24, T7	
20	75	30	1500	NP	1500	NP	HA-2	G5, T6	
21	75	30	1500	NP	1500	NP	HA-2	T7	
22	75	30	1500	NP	1500	NP	HA-2	G3, G5, G24, T6	
23	75	30	1500	NP	1500	NP	HA-2	G3, G24, T7	
24	75	30	1500	NP	1500	NP	HA-2	G5, T6	
25	75	30	1500	NP	1500	NP	HA-2	T7	
26	75	30	NP	NP	1500	650	HA-2	G5, G12, T5	
27	75	30	NP	NP	1500	650	HA-2	G12, T6	
28	75	30	NP	NP	1500	650	HA-2	G5, G12, T5	
29	75	30	NP	NP	1500	650	HA-2	G12, T6	
30	75	30	NP	NP	1500	650	HA-2	G5, G12, G24, T5	
31	75	30	NP	NP	1500	650	HA-2	G12, G24, T6	
32	75	30	NP	800	1500	650	HA-2	G5, G12, T5, W12, W14	
33	75	30	NP	NP	1500	650	HA-2	G12, T6	
34	75	30	NP	NP	1500	650	HA-2	G5, G12, G24, T5	
35	75	30	NP	NP	1500	650	HA-2	G12, G14, G24, T6	
36	75	30	NP	NP	1000	650	HA-2	G5, G12, G22, T5	
37	75	30	NP	NP	1000	650	HA-2	G12, G22, T6	
38	75	30	NP	NP	1500	650	HA-2	G5, G12, G24, T5	
39	75	30	NP	NP	1500	650	HA-2	G12, G24, T6	
40	75	30	NP	NP	1500	650	HA-2	G5, G12, G24, T5	
41	75	30	NP	NP	1500	650	HA-2	G12, G24, T6	

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	17.0	...	17.0	...	17.0	16.9	16.4	15.7	15.5	15.2	15.0	14.8	14.6	14.4
	4	17.0	...	15.0	...	13.7	12.8	12.1	11.7	11.5	11.3	11.1	11.0	10.8	10.7
	5	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	...	...
	6	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
	7	20.0	...	17.6	...	16.1	15.1	14.3	13.7	13.5	13.3	13.1	12.9	12.7	12.5
	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	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	17.0	...	17.0	...	17.0	16.9	16.4	15.7	15.5	15.2	15.0	14.8	14.6	14.4
	12	17.0	...	15.0	...	13.7	12.8	12.1	11.7	11.5	11.3	11.1	11.0	10.8	10.7
A08	13	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	...	...
	14	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
	15	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
	16	20.0	...	17.6	...	16.1	15.1	14.3	13.7	13.5	13.3	13.1	12.9	12.7	12.5
	17	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	...	...
	18	17.0	...	17.0	...	17.0	16.9	16.4	15.7	15.5	15.2	15.0	14.8	14.6	14.4
	19	17.0	...	15.0	...	13.7	12.8	12.1	11.7	11.5	11.3	11.1	11.0	10.8	10.7
	20	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
	21	20.0	...	17.6	...	16.1	15.1	14.3	13.7	13.5	13.3	13.1	12.9	12.7	12.5
	22	17.0	...	17.0	...	17.0	16.9	16.4	15.7	15.5	15.2	15.0	14.8	14.6	14.4
	23	17.0	...	15.0	...	13.7	12.8	12.1	11.7	11.5	11.3	11.1	11.0	10.8	10.7
	24	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
	25	20.0	...	17.6	...	16.1	15.1	14.3	13.7	13.5	13.3	13.1	12.9	12.7	12.5
	26	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
	27	20.0	...	17.6	...	16.1	15.1	14.3	13.7	13.5	13.3	13.1	12.9	12.7	12.5
	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	...	17.6	...	16.1	15.1	14.3	13.7	13.5	13.3	13.1	12.9	12.7	12.5
	30	17.0	...	17.0	...	17.0	16.9	16.4	15.7	15.5	15.2	15.0	14.8	14.6	14.4
	31	17.0	...	15.0	...	13.7	12.8	12.1	11.7	11.5	11.3	11.1	11.0	10.8	10.7
	32	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
	33	20.0	...	17.6	...	16.1	15.1	14.3	13.7	13.5	13.3	13.1	12.9	12.7	12.5
	34	17.0	...	17.0	...	17.0	16.9	16.4	15.7	15.5	15.2	15.0	14.8	14.6	14.4
	35	17.0	...	15.0	...	13.7	12.8	12.1	11.7	11.5	11.3	11.1	11.0	10.8	10.7
	36	20.0	...	20.0	...	20.0	19.9	19.3	18.5	18.2	17.9	17.7	17.4	17.2	16.9
	37	20.0	...	17.6	...	16.1	15.1	14.3	13.7	13.5	13.3	13.1	12.9	12.7	12.5
	38	17.0	...	17.0	...	17.0	16.9	16.4	15.7	15.5	15.2	15.0	14.8	14.6	14.4
	39	17.0	...	15.0	...	13.7	12.8	12.1	11.7	11.5	11.3	11.1	11.0	10.8	10.7
	40	17.0	...	17.0	...	17.0	16.9	16.4	15.7	15.5	15.2	15.0	14.8	14.6	14.4
	41	17.0	...	15.0	...	13.7	12.8	12.1	11.7	11.5	11.3	11.1	11.0	10.8	10.7

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07

NOTES TO TABLE 1A

GENERAL NOTES

(a) The following abbreviations are used: Smls., Seamless; Sol. ann., Solution annealed; and Wld., Welded.

07 (b) The stress values in this Table may be interpolated to determine values for intermediate temperatures. The values at intermediate temperatures shall be rounded to the same number of decimal places as the value at the higher temperature between which values are being interpolated. The rounding rule is: when the next digit beyond the last place to be retained is less than 5, retain unchanged the digit in the last place retained; when the digit next beyond the last place to be retained is 5 or greater, increase by 1 the digit in the last place retained.

07 (c) For Section VIII and XII 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.

07 (d) For Section VIII and XII applications, stress values in bearing shall be 1.60 times the values in the above Table.

07 (e) Stress values for –20 to 100F are applicable for colder temperatures when the toughness requirements of Section III, VIII, or XII are met.

(f) An alternative typeface is used for stress values obtained from time-dependent properties (see Notes T1 through T10).

(g) Where specifications, grades, classes, and types are listed in this Table, and where the material specification in Section II, Part A or Part B is a dual-unit specification (e.g., SA-516/SA-516M), the values listed in this Table shall be applicable to either the customary U.S. version of the material specification or the SI units version of the material specification. For example, the values listed for SA-516 Grade 70 shall be used when SA-516M Grade 485 is used in construction.

NOTES — GENERAL REQUIREMENTS:

07 G1 To these stress values a casting quality factor as specified in PG-25 of Section I; UG-24 of Section VIII, Division 1; or TM-190 of Section XII 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 850F.

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. For Section III applications, Table Y-2 lists multiplying factors that, 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 Creep-fatigue, thermal ratcheting, and environmental effects are increasingly significant failure modes at temperatures in excess of 1500F and shall be considered in the design.

G7 At temperatures above 500F, 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 500F. See Appendix A, A-360.

07 G9 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).

A08 G10 Upon prolonged exposure to temperatures above 800F, the carbide phase of carbon steel may be converted to graphite. See Appendix A, A-240.

A08 G11 Upon prolonged exposure to temperatures above 875F, the carbide phase of carbon–molybdenum steel may be converted to graphite. See Appendix A, A-240.

G12 At temperatures above 1000F, these stress values apply only when the carbon is 0.04% or higher on heat analysis.

G13 These stress values at 1050F 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.

07 G18 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.

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.

TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	13.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...
4	10.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
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	12.3	9.9	...	...	...	...	...	...	...	...	...	...	...	...	...
8	15.9	9.9	...	...	...	...	...	...	...	...	...	...	...	...	...
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	13.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...
12	10.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	16.7	13.8	10.3	7.6	5.5	4.0	3.0	2.2	1.7	1.3	0.97	0.75	...	...	...
15	16.7	13.8	10.3	7.6	5.5	4.0	3.0	2.2	1.7	1.3	0.97	0.75	...	...	...
16	12.3	12.1	10.3	7.6	5.5	4.0	3.0	2.2	1.7	1.3	0.97	0.75	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	14.2	11.7	8.8	6.5	4.7	3.4	2.6	1.9	1.4	1.1	0.82	0.64	...	...	...
19	10.5	10.3	8.8	6.5	4.7	3.4	2.6	1.9	1.4	1.1	0.82	0.64	...	...	...
20	16.7	13.8	10.3	7.6	5.5	4.0	3.0	2.2	1.7	1.3	0.97	0.75	...	...	...
21	12.3	12.1	10.3	7.6	5.5	4.0	3.0	2.2	1.7	1.3	0.97	0.75	...	...	...
22	14.2	11.7	8.8	6.5	4.7	3.4	2.6	1.9	1.4	1.1	0.82	0.64	...	...	...
23	10.5	10.3	8.8	6.5	4.7	3.4	2.6	1.9	1.4	1.1	0.82	0.64	...	...	...
24	16.7	13.8	10.3	7.6	5.5	4.0	3.0	2.2	1.7	1.3	0.97	0.75	...	...	...
25	12.3	12.1	10.3	7.6	5.5	4.0	3.0	2.2	1.7	1.3	0.97	0.75	...	...	...
26	15.9	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20	...	...	...
27	12.3	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20	...	...	...
28	15.9	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20	...	...	...
29	12.3	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20	...	...	...
30	13.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...
31	10.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...
32	15.9	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20	...	...	...
33	12.3	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20	...	...	...
34	13.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...
35	10.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...
36	15.9	9.9	...	...	...	...	...	...	...	...	...	...	...	...	...
37	12.3	9.9	...	...	...	...	...	...	...	...	...	...	...	...	...
38	13.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...
39	10.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...
40	13.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...
41	10.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17	...	...	...

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TABLE 1A (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
07	1	25Cr–22Ni–2Mo–N	Forgings	SA-182	F310MoLN	S31050	...	...	8	2
07	2	25Cr–22Ni–2Mo–N	Forgings	SA-182	F310MoLN	S31050	...	...	8	2
	3	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...	0.250 < $t \leq$ 1.250	8	2
	4	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...	0.250 < $t \leq$ 1.250	8	2
	5	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...	0.250 < $t \leq$ 1.250	8	2
	6	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...	0.250 < $t \leq$ 1.250	8	2
	7	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...	0.250 < $t \leq$ 1.250	8	2
	8	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...	0.250 < $t \leq$ 1.250	8	2
	9	25Cr–22Ni–2Mo–N	Plate	SA-240	310MoLN	S31050	...	...	8	2
	10	25Cr–22Ni–2Mo–N	Plate	SA-240	310MoLN	S31050	...	...	8	2
	11	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...	≤ 0.250, wall	8	2
	12	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...	≤ 0.250, wall	8	2
	13	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...	≤ 0.250, wall	8	2
	14	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...	≤ 0.250, wall	8	2
	15	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...	≤ 0.250, wall	8	2
	16	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...	≤ 0.250, wall	8	2
07	17	29Cr–6.5Ni–2Mo–N	Plate, sheet, strip	SA-240	...	S32906	...	≥ 0.40	10H	1
07	18	29Cr–6.5Ni–2Mo–N	Bar	SA-479	...	S32906	...	...	10H	1
07	19	29Cr–6.5Ni–2Mo–N	Smls. tube	SA-789	...	S32906	...	≥ 0.40	10H	1
07	20	29Cr–6.5Ni–2Mo–N	Smls. pipe	SA-790	...	S32906	...	≥ 0.40	10H	1
07	21	29Cr–6.5Ni–2Mo–N	Plate, sheet, strip	SA-240	...	S32906	...	< 0.40	10H	1
07	22	29Cr–6.5Ni–2Mo–N	Smls. tube	SA-789	...	S32906	...	< 0.40	10H	1
07	23	29Cr–6.5Ni–2Mo–N	Smls. pipe	SA-790	...	S32906	...	< 0.40	10H	1

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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																	
	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/Condition/ Temper
	1	...	Smls. pipe	SB-42	...	C12000	H80
	2	...	Smls. tube	SB-75	...	C12000	H80
	3	...	Smls. cond. tube	SB-111	...	C12000	H80
07	4	...	Finned tube	SB-359	...	C12200	H55
	5	...	Smls. tube	SB-75	...	C12200	050
	6	...	Smls. tube	SB-75	...	C12200	060
	7	...	Smls. pipe	SB-42	...	C12200	061
	8	...	Finned tube	SB-359	...	C12200	061
07	9	...	Wld. cond. tube	SB-543	...	C12200	W061
07	10	...	Plate, sheet, strip	SB-152	...	C12200	H00
07	11	...	Plate, sheet, strip	SB-152	...	C12200	H01
07	12	...	Plate, sheet, strip	SB-152	...	C12200	H02
07	13	...	Plate, sheet, strip	SB-152	...	C12200	H03
07	14	...	Plate, sheet, strip	SB-152	...	C12200	H04
	15	...	Plate, sheet, strip	SB-152	...	C12200	025
07	16	...	Wld. cond. tube	SB-543	...	C12200	WC55
	17	...	Smls. pipe	SB-42	...	C12200	H55
	18	...	Smls. tube	SB-75	...	C12200	H55
	19	...	Smls. cond. tube	SB-111	...	C12200	H55
	20	...	Smls. U-bend tube	SB-395	...	C12200	H55
07	21	...	Smls. pipe	SB-42	...	C12200	H80
	22	...	Smls. cond. tube	SB-75	...	C12200	H80
	23	...	Smls. tube	SB-111	...	C12200	H80
07	24	...	Plate, sheet, strip, bar	SB-152	...	C12300	H00
07	25	...	Plate, sheet, strip, bar	SB-152	...	C12300	H01
07	26	...	Plate, sheet, strip, bar	SB-152	...	C12300	H02
07	27	...	Plate, sheet, strip, bar	SB-152	...	C12300	H03
07	28	...	Plate, sheet, strip, bar	SB-152	...	C12300	H04
	29	...	Plate, sheet, strip, bar	SB-152	...	C12300	025
A08	30	...	...	...	...	...	...
	31	...	Plate, sheet, strip	SB-152	...	C14200	025
	32	...	Smls. cond. tube	SB-111	...	C14200	H55
	33	...	Smls. U-bend tube	SB-395	...	C14200	H55
	34	...	Smls. cond. tube	SB-111	...	C14200	H80
	35	...	Smls. cond. tube	SB-111	...	C19200	061
	36	...	Smls. U-bend tube	SB-395	...	C19200	061
07	37	...	Wld. cond. tube	SB-543	...	C19400	W061
07	38	...	Wld. cond. tube	SB-543	...	C19400	WC55

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	1/8 < NPS ≤ 2	31	45	40	400	300	400	400	NFC-6	G1, G6, T4, W9, W10	
2	...	31	45	40	400	350 (Cl. 3 only)	400	400	NFC-6	G1, G9, T4, W9, W10	
3	< 3	31	45	40	NP	300	400	400	NFC-6	G9, T4, W9	
4	...	31	30	9	NP	300 (Cl. 3 only)	400	NP	NFC-1	G1, T3, W10	07
5	...	31	30	9	NP	300	400	400	NFC-7	T3	
6	...	31	30	9	400	300	NP	NP	NFC-1	G1, T3, W10	
7	...	31	30	9	400	300	400	400	NFC-1	G1, T3, W10	
8	...	31	30	9	NP	300 (Cl. 3 only)	400	NP	NFC-1	G1, T3, W10	
9	...	31	30	9	NP	300 (Cl. 3 only)	400	400	NFC-1	G14, T3, W11	07
10	...	31	30	10	NP	300	400	400	NFC-1	T2	07
11	...	31	30	10	NP	300	400	400	NFC-1	T2	07
12	...	31	30	10	NP	300	400	400	NFC-1	T2	07
13	...	31	30	10	NP	300	400	400	NFC-1	T2	07
14	...	31	30	10	NP	300	400	400	NFC-1	T2	07
15	...	31	30	10	NP	300	400	400	NFC-1	T2	
16	...	31	32	15	NP	300 (Cl. 3 only)	400	400	NFC-1	G14, T4, W3	07
17	2 < NPS ≤ 12	31	36	30	400	400	400	400	NFC-6	G1, W9, W10	
18	...	31	36	30	400	400 (Cl. 3 only)	400	400	NFC-6	G1, G9, W9, W10	
19	< 3	31	36	30	NP	400	400	400	NFC-6	G9, W9	
20	< 2	31	36	30	NP	400 (Cl. 3 only)	400	400	NFC-6	W9	
21	1/8 < NPS ≤ 3	31	45	40	400	300	400	400	NFC-6	G1, G6, T4, W9, W10	07
22	< 4	31	45	40	400	350 (Cl. 3 only)	400	400	NFC-6	G1, G9, T4, W9, W10	
23	< 3	31	45	40	NP	300	400	400	NFC-6	G9, T4, W9	
24	...	31	30	10	NP	300	400	400	NFC-1	T2	07
25	...	31	30	10	NP	300	400	400	NFC-1	T2	07
26	...	31	30	10	NP	300	400	400	NFC-1	T2	07
27	...	31	30	10	NP	300	400	400	NFC-1	T2	07
28	...	31	30	10	NP	300	400	400	NFC-1	T2	07
29	...	31	30	10	NP	300	400	400	NFC-1	T2	
30	...	...	...	...	...	...	...	...	...	...	A08
31	...	31	30	10	NP	300 (Cl. 3 only)	NP	NP	NFC-1	T2	
32	< 3	31	36	30	NP	400	400	400	NFC-6	G9, W9	
33	...	31	36	30	NP	400 (Cl. 3 only)	400	400	NFC-6	W9	
34	< 3	31	45	40	NP	300	400	400	NFC-6	G9, T4, W9	
35	< 3	31	38	12	NP	NP	300	300	NFC-1	...	
36	...	31	38	12	NP	NP	300	300	NFC-1	...	
37	...	31	45	15	NP	NP	400	400	NFC-5	G14, G15	07
38	...	31	45	22	NP	300 (Cl. 3 only)	400	400	NFC-5	G14, G15	07

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	950
	1	12.9	12.9	12.9	12.9	12.5	11.8	*4.3*	...	...	...	...	...	...	...	...	...	...	...
	2	12.9	12.9	12.9	12.9	12.5	11.8	*4.3*	...	...	...	...	...	...	...	...	...	...	...
	3	12.9	12.9	12.9	12.9	12.5	11.8	*4.3*	...	...	...	...	...	...	...	...	...	...	...
07	4	6.0	5.1	4.9	4.8	4.7	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...	...
	5	6.0	5.1	4.9	4.8	4.7	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...	...
	6	6.0	5.1	4.9	4.8	4.7	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...	...
	7	6.0	5.1	4.9	4.8	4.7	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...	...
	8	6.0	5.1	4.9	4.8	4.7	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...	...
07	9	5.1	4.3	4.1	4.1	4.0	*3.4*	*2.6*	...	...	...	...	...	...	...	...	...	...	...
07	10	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...	...
07	11	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...	...
07	12	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...	...
07	13	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...	...
07	14	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...	...
	15	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...	...
07	16	7.8	7.8	7.8	7.8	7.5	7.3	*2.6*	...	...	...	...	...	...	...	...	...	...	...
	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	10.3	10.3	10.3	10.3	10.0	9.7	9.4	...	...	...	...	...	...	...	...	...	...	...
07	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	12.9	12.9	12.9	12.9	12.5	11.8	*4.3*	...	...	...	...	...	...	...	...	...	...	...
07	24	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...	...
07	25	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...	...
07	26	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...	...
07	27	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...	...
07	28	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...	...
	29	6.7	5.6	5.4	5.3	*5.0*	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...	...
A08	30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	31	6.7	5.6	5.4	5.3	*5.0*	...	...	...	...	...	...	...	...	...	...	...	...	...
	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	8.0	7.1	6.7	6.4	6.2	...	...	...	...	...	...	...	...	...	...	...	...	...
	36	8.0	7.1	6.7	6.4	6.2	...	...	...	...	...	...	...	...	...	...	...	...	...
07	37	8.5	8.4	8.3	8.1	7.8	7.6	6.0	...	...	...	...	...	...	...	...	...	...	...
07	38	10.9	10.9	10.9	10.6	10.1	7.7	6.0	...	...	...	...	...	...	...	...	...	...	...

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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																	
	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/Condition/ Temper
A08	1	...	Smls. pipe	SB-43	...	C23000	H58
	2	...	Smls. tube	SB-135	...	C23000	050
	3	...	Smls. red brass tube	SB-135	...	C23000	060
	4	...	Smls. pipe	SB-43	...	C23000	061
	5	...	Smls. cond. tube	SB-111	...	C23000	061
	6	...	Smls. tube	SB-395	...	C23000	061
A08 07	7	...	Wld. cond. tube	SB-543	...	C23000	W061
07	8	...	Wld. cond. tube	SB-543	...	C23000	WC55
	9	...	Smls. tube	SB-111	...	C28000	061
07	10	...	Plate	SB-171	...	C36500	M20
	11	...	Plate	SB-171	...	C36500	025
07	12	...	Plate	SB-171	...	C36500	M20
	13	...	Plate	SB-171	...	C36500	025
07	14	...	Plate	SB-171	...	C36500	M20
	15	...	Plate	SB-171	...	C36500	025
	16	...	Forgings, brass	SB-283	...	C37700	M10
07	17	...	Forgings, brass	SB-283	...	C37700	M11
07	18	...	Forgings, brass	SB-283	...	C37700	020
07	19	...	Forgings, brass	SB-283	...	C37700	TQ50
	20	...	Forgings, brass	SB-283	...	C37700	M10
07	21	...	Forgings, brass	SB-283	...	C37700	M11
07	22	...	Forgings, brass	SB-283	...	C37700	020
07	23	...	Forgings, brass	SB-283	...	C37700	TQ50
07	24	...	Plate	SB-171	...	C44300	M20
	25	...	Plate	SB-171	...	C44300	025
	26	...	Smls. cond. tube	SB-111	...	C44300	061
	27	...	Finned tube	SB-359	...	C44300	061
	28	...	Smls. U-bend tube	SB-395	...	C44300	061
07	29	...	Wld. cond. tube	SB-543	...	C44300	W061
07	30	...	Plate	SB-171	...	C44400	M20
	31	...	Plate	SB-171	...	C44400	025
	32	...	Smls. cond. tube	SB-111	...	C44400	061
	33	...	Finned tube	SB-359	...	C44400	061
	34	...	Smls. U-bend tube	SB-395	...	C44400	061
07	35	...	Wld. cond. tube	SB-543	...	C44400	W061
07	36	...	Plate	SB-171	...	C44500	M20
	37	...	Plate	SB-171	...	C44500	025
	38	...	Smls. cond. tube	SB-111	...	C44500	061
	39	...	Finned tube	SB-359	...	C44500	061
	40	...	Smls. U-bend tube	SB-395	...	C44500	061
07	41	...	Wld. cond. tube	SB-543	...	C44500	W061

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	...	32	40	12	450	300 (Cl. 3 only)	450	450	NFC-1	G1, G7, T3, W10	A08
2	...	32	40	12	NP	300 (Cl. 3 only)	NP	NP	NFC-1	...	
3	...	32	40	12	NP	300 (Cl. 3 only)	450	450	NFC-1	G7, T3	
4	...	32	40	12	450	300 (Cl. 3 only)	450	450	NFC-1	G1, G7, T3, W10	
5	< 3	32	40	12	NP	300 (Cl. 3 only)	450	450	NFC-1	G7, T3	
6	...	32	40	12	NP	300 (Cl. 3 only)	450	450	NFC-1	G7, T3	
7	...	32	40	12	NP	300 (Cl. 3 only)	450	450	NFC-1	G14, G15, T3	07 A08
8	...	32	42	20	NP	300 (Cl. 3 only)	450	450	NFC-2	G14, G15, T3	07
9	...	32	50	20	400	350 (Cl. 3 only)	400	400	NFC-3	G1, G6, T3, W10	
10	$3.5 < t \le 5$	32	40	12	NP	350 (Cl. 3 only)	400	400	NFC-2	G7, T4	07
11	$3.5 < t \le 5$	32	40	12	NP	350 (Cl. 3 only)	400	400	NFC-2	G7, T4	
12	$2 < t \le 3.5$	32	45	15	NP	350 (Cl. 3 only)	400	400	NFC-2	T4	07
13	$2 < t \le 3.5$	32	45	15	NP	350 (Cl. 3 only)	400	400	NFC-2	T4	
14	≤ 2	32	50	20	NP	350 (Cl. 3 only)	400	400	NFC-2	T3	07
15	≤ 2	32	50	20	NP	350 (Cl. 3 only)	400	400	NFC-2	T3	
16	$> 1\frac{1}{2}$	...	46	15	NP	NP	200	200	NFC-2	W14	
17	$> 1\frac{1}{2}$	...	46	15	NP	NP	200	200	NFC-2	W14	07
18	$> 1\frac{1}{2}$	...	46	15	NP	NP	200	200	NFC-2	W14	07
19	$> 1\frac{1}{2}$	...	46	15	NP	NP	200	200	NFC-2	W14	07
20	$\le 1\frac{1}{2}$	...	50	18	NP	NP	200	200	NFC-2	W14	
21	$\le 1\frac{1}{2}$	...	50	18	NP	NP	200	200	NFC-2	W14	07
22	$\le 1\frac{1}{2}$	...	50	18	NP	NP	200	200	NFC-2	W14	07
23	$\le 1\frac{1}{2}$	...	50	18	NP	NP	200	200	NFC-2	W14	07
24	≤ 4	32	45	15	NP	350 (Cl. 3 only)	450	450	NFC-2	T3	07
25	≤ 4	32	45	15	NP	350 (Cl. 3 only)	450	450	NFC-2	T3	
26	< 3	32	45	15	450	350 (Cl. 3 only)	450	450	NFC-2	G1, G6, T3, W10	
27	...	32	45	15	NP	350 (Cl. 3 only)	450	NP	NFC-2	G1, G6, T3, W10	
28	...	32	45	15	NP	350 (Cl. 3 only)	450	450	NFC-2	T3	
29	...	32	45	15	NP	NP	450	450	NFC-2	G7, G14, G15, T3	07
30	≤ 4	32	45	15	NP	350 (Cl. 3 only)	450	450	NFC-2	T3	07
31	≤ 4	32	45	15	NP	350 (Cl. 3 only)	450	450	NFC-2	T3	
32	< 3	32	45	15	450	350 (Cl. 3 only)	450	450	NFC-2	G1, G6, T3, W10	
33	...	32	45	15	NP	350 (Cl. 3 only)	450	NP	NFC-2	G1, G6, T3, W10	
34	...	32	45	15	NP	350 (Cl. 3 only)	450	450	NFC-2	T3	
35	...	32	45	15	NP	NP	450	450	NFC-2	G7, G14, G15, T3	07
36	≤ 4	32	45	15	NP	350 (Cl. 3 only)	450	450	NFC-2	T3	07
37	≤ 4	32	45	15	NP	350 (Cl. 3 only)	450	450	NFC-2	T3	
38	< 3	32	45	15	450	350 (Cl. 3 only)	450	450	NFC-2	G1, G6, T3, W10	
39	...	32	45	15	NP	350 (Cl. 3 only)	450	NP	NFC-2	G1, G6, T3, W10	
40	...	32	45	15	NP	350 (Cl. 3 only)	450	450	NFC-2	T3	
41	...	32	45	15	NP	NP	450	450	NFC-2	G7, G14, G15, T3	07

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	950
A08	1	8.0	8.0	8.0	8.0	8.0	*7.0*	*5.0*	*2.0*	...	...	...	...	...	...	...	...	...	...
	2	8.0	8.0	8.0	8.0	8.0	...	...	...	...	...	...	...	...	...	...	...	...	...
	3	8.0	8.0	8.0	8.0	8.0	*7.0*	*5.0*	*2.0*	...	...	...	...	...	...	...	...	...	...
	4	8.0	8.0	8.0	8.0	8.0	*7.0*	*5.0*	*2.0*	...	...	...	...	...	...	...	...	...	...
	5	8.0	8.0	8.0	8.0	8.0	*7.0*	*5.0*	*2.0*	...	...	...	...	...	...	...	...	...	...
	6	8.0	8.0	8.0	8.0	8.0	*7.0*	*5.0*	*2.0*	...	...	...	...	...	...	...	...	...	...
A08 07	7	6.8	6.8	6.8	6.8	6.8	*6.0*	*4.3*	*1.7*	...	...	...	...	...	...	...	...	...	...
07	8	6.8	6.8	6.8	6.8	6.8	*6.0*	*4.3*	*1.7*	...	...	...	...	...	...	...	...	...	...
	9	13.3	13.3	13.3	13.3	13.3	*10.8*	*5.3*	...	...	...	...	...	...	...	...	...	...	...
07	10	8.0	8.0	8.0	8.0	8.0	8.0	*5.3*	...	...	...	...	...	...	...	...	...	...	...
	11	8.0	8.0	8.0	8.0	8.0	8.0	*5.3*	...	...	...	...	...	...	...	...	...	...	...
07	12	10.0	10.0	10.0	10.0	10.0	10.0	*5.3*	...	...	...	...	...	...	...	...	...	...	...
	13	10.0	10.0	10.0	10.0	10.0	10.0	*5.3*	...	...	...	...	...	...	...	...	...	...	...
07	14	13.3	13.3	13.3	13.3	13.3	*10.8*	*5.3*	...	...	...	...	...	...	...	...	...	...	...
	15	13.3	13.3	13.3	13.3	13.3	*10.8*	*5.3*	...	...	...	...	...	...	...	...	...	...	...
	16	10.0	9.4	9.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
07	17	10.0	9.4	9.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
07	18	10.0	9.4	9.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
07	19	10.0	9.4	9.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	20	12.0	11.3	10.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
07	21	12.0	11.3	10.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
07	22	12.0	11.3	10.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
07	23	12.0	11.3	10.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
07	24	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...	...
	25	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...	...
	26	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...	...
	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*	...	...	...	...	...	...	...	...	...	...
07	29	8.5	8.5	8.5	8.5	8.5	*8.3*	*3.0*	*1.7*	...	...	...	...	...	...	...	...	...	...
07	30	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...	...
	31	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...	...
	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*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...	...
07	35	8.5	8.5	8.5	8.5	8.5	*8.3*	*3.0*	*1.7*	...	...	...	...	...	...	...	...	...	...
07	36	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...	...
	37	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...	...
	38	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...	...
	39	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...	...
	40	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	*2.0*	...	...	...	...	...	...	...	...	...	...
07	41	8.5	8.5	8.5	8.5	8.5	*8.3*	*3.0*	*1.7*	...	...	...	...	...	...	...	...	...	...

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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																	
	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07 A08
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
41	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/Condition/ Temper
07	1	...	Plate	SB-171	...	C46400	M20
	2	...	Plate	SB-171	...	C46400	025
07	3	...	Plate	SB-171	...	C46400	M20
	4	...	Plate	SB-171	...	C46400	025
07	5	...	Plate	SB-171	...	C46500	M20
	6	...	Plate	SB-171	...	C46500	025
07	7	...	Plate	SB-171	...	C46500	M20
	8	...	Plate	SB-171	...	C46500	025
	9	...	Smls. cond. tube	SB-111	...	C60800	061
	10	...	Smls. U-bend tube	SB-395	...	C60800	061
07	11	...	Plate	SB-171	...	C61400	M20
	12	...	Plate	SB-171	...	C61400	025
	13	...	Plate, sheet	SB-169	...	C61400	025 or 060
07	14	...	Plate	SB-171	...	C61400	M20
	15	...	Plate	SB-171	...	C61400	025
	16	...	Plate, sheet	SB-169	...	C61400	025 or 060
	17	...	Plate, sheet	SB-169	...	C61400	025 or 060
07	18	...	Plate	SB-171	...	C63000	M20
	19	...	Plate	SB-171	...	C63000	025
07	20	...	Plate	SB-171	...	C63000	M20
	21	...	Plate	SB-171	...	C63000	025
07	22	...	Plate	SB-171	...	C63000	M20
	23	...	Plate	SB-171	...	C63000	025
	24	...	Forgings	SB-283	...	C64200	M10
07	25	...	Forgings	SB-283	...	C64200	M11
07	26	...	Forgings	SB-283	...	C64200	020
07	27	...	Forgings	SB-283	...	C64200	TQ50
	28	...	Forgings	SB-283	...	C64200	M10
07	29	...	Forgings	SB-283	...	C64200	M11
07	30	...	Forgings	SB-283	...	C64200	020
07	31	...	Forgings	SB-283	...	C64200	TQ50
	32	...	Bar, rod	SB-98	...	C65100	060
	33	...	Bar, rod	SB-98	...	C65100	H02
	34	...	Smls. pipe & tube	SB-315	...	C65500	061
	35	...	Plate, sheet	SB-96	...	C65500	061
	36	...	Bar, rod	SB-98	...	C65500	060
	37	...	Bar, rod	SB-98	...	C65500	H02

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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																
	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	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*	...	...	...
17	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*	...	...	...
18	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*	...	...	...
19	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*	...	...	...
20	22.1	...	*17.5*	...	*11.3*	...	*7.7*	...	*4.8*	...	*3.0*	...	*1.7*	*1.2*	...	...	...
21	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*	...	...	...
22	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*	...	...	...
23	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*	...	...	...
24	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*	...	...	...
25	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*	...	...	...
26	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*	...	...	...
27	13.6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	18.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	13.6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	18.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	21.4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	15.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	21.4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	15.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	21.4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/Condition/ Temper
	1	47Ni–22Cr–19Fe–6Mo	Wld. pipe	SB-619	...	N06007	Solution ann.
	2	47Ni–22Cr–19Fe–6Mo	Wld. pipe	SB-619	...	N06007	Solution ann.
	3	47Ni–22Cr–19Fe–6Mo	Smls. pipe & tube	SB-622	...	N06007	Solution ann.
	4	47Ni–22Cr–19Fe–6Mo	Smls. pipe & tube	SB-622	...	N06007	Solution ann.
	5	47Ni–22Cr–19Fe–6Mo	Wld. tube	SB-626	...	N06007	Solution ann.
	6	47Ni–22Cr–19Fe–6Mo	Wld. tube	SB-626	...	N06007	Solution ann.
A08	7	55Ni–21Cr–13.5Mo	Smls. & wld. fittings	SB-366	...	N06022	Solution ann.
A08	8	55Ni–21Cr–13.5Mo	Forgings	SB-462	...	N06022	Solution ann.
A08	9	55Ni–21Cr–13.5Mo	Forgings	SB-462	...	N06022	Solution ann.
A08	10	55Ni–21Cr–13.5Mo	Forgings	SB-564	...	N06022	Solution ann.
A08	11	55Ni–21Cr–13.5Mo	Forgings	SB-564	...	N06022	Solution ann.
A08	12	55Ni–21Cr–13.5Mo	Rod	SB-574	...	N06022	Solution ann.
A08	13	55Ni–21Cr–13.5Mo	Rod	SB-574	...	N06022	Solution ann.
A08	14	55Ni–21Cr–13.5Mo	Plate, sheet, strip	SB-575	...	N06022	Solution ann.
A08	15	55Ni–21Cr–13.5Mo	Plate, sheet, strip	SB-575	...	N06022	Solution ann.
A08	16	55Ni–21Cr–13.5Mo	Wld. pipe	SB-619	...	N06022	Solution ann.
A08	17	55Ni–21Cr–13.5Mo	Wld. pipe	SB-619	...	N06022	Solution ann.
A08	18	55Ni–21Cr–13.5Mo	Smls. pipe & tube	SB-622	...	N06022	Solution ann.
A08	19	55Ni–21Cr–13.5Mo	Smls. pipe & tube	SB-622	...	N06022	Solution ann.
A08	20	55Ni–21Cr–13.5Mo	Wld. tube	SB-626	...	N06022	Solution ann.
A08	21	55Ni–21Cr–13.5Mo	Wld. tube	SB-626	...	N06022	Solution ann.
	22	40Ni–29Cr–15Fe–5Mo	Smls. & wld. fittings	SB-366	...	N06030	Solution ann.
	23	40Ni–29Cr–15Fe–5Mo	Forgings	SB-462	...	N06030	Solution ann.
	24	40Ni–29Cr–15Fe–5Mo	Forgings	SB-462	...	N06030	Solution ann.
	25	40Ni–29Cr–15Fe–5Mo	Rod	SB-581	...	N06030	Solution ann.
	26	40Ni–29Cr–15Fe–5Mo	Rod	SB-581	...	N06030	Solution ann.
	27	40Ni–29Cr–15Fe–5Mo	Plate, sheet, strip	SB-582	...	N06030	Solution ann.
	28	40Ni–29Cr–15Fe–5Mo	Plate, sheet, strip	SB-582	...	N06030	Solution ann.
	29	40Ni–29Cr–15Fe–5Mo	Wld. pipe	SB-619	...	N06030	Solution ann.
	30	40Ni–29Cr–15Fe–5Mo	Wld. pipe	SB-619	...	N06030	Solution ann.
	31	40Ni–29Cr–15Fe–5Mo	Smls. pipe & tube	SB-622	...	N06030	Solution ann.
	32	40Ni–29Cr–15Fe–5Mo	Smls. pipe & tube	SB-622	...	N06030	Solution ann.
	33	40Ni–29Cr–15Fe–5Mo	Wld. tube	SB-626	...	N06030	Solution ann.
	34	40Ni–29Cr–15Fe–5Mo	Wld. tube	SB-626	...	N06030	Solution ann.
	35	46Ni–27Cr–23Fe–2.75Si	Rod	SB-166	...	N06045	Solution ann.
	36	46Ni–27Cr–23Fe–2.75Si	Rod	SB-166	...	N06045	Solution ann.
	37	46Ni–27Cr–23Fe–2.75Si	Smls. pipe & tube	SB-167	...	N06045	Solution ann.
	38	46Ni–27Cr–23Fe–2.75Si	Smls. pipe & tube	SB-167	...	N06045	Solution ann.

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	...	45	90	35	NP	NP	1000	650	NFN-11	G14	
2	...	45	90	35	NP	NP	1000	650	NFN-11	G5, G14	
3	...	45	90	35	NP	NP	1000	650	NFN-11	...	
4	...	45	90	35	NP	NP	1000	650	NFN-11	G5	
5	...	45	90	35	NP	NP	1000	650	NFN-11	G14	
6	...	45	90	35	NP	NP	1000	650	NFN-11	G5, G14	
7	...	43	100	45	1250	NP	1250	650	NFN-10	G5, G27, G28, T15, W12	A08
8	...	43	100	45	1250	NP	1250	NP	NFN-10	G5, G27, G28, T15	A08
9	...	43	100	45	1250	NP	1250	NP	NFN-10	G27, G28, T15	A08
10	...	43	100	45	1250	800	1250	650	NFN-10	G5, G27, G28, T15	A08
11	...	43	100	45	1250	NP	1250	650	NFN-10	G27, G28, T15	A08
12	...	43	100	45	1250	800	1250	650	NFN-10	G5, G27, G28, T15	A08
13	...	43	100	45	1250	NP	1250	650	NFN-10	G27, G28, T15	A08
14	...	43	100	45	1250	800	1250	650	NFN-10	G5, G27, G28, T15	A08
15	...	43	100	45	1250	NP	1250	650	NFN-10	G27, G28, T15	A08
16	...	43	100	45	1250	800	1250	650	NFN-10	G5, G14, G27, G28, T15, W6	A08
17	...	43	100	45	1250	NP	1250	650	NFN-10	G14, G27, G28, T15	A08
18	...	43	100	45	1250	800	1250	650	NFN-10	G5, G27, G28, T15	A08
19	...	43	100	45	1250	NP	1250	650	NFN-10	G27, G28, T15	A08
20	...	43	100	45	1250	800	1250	650	NFN-10	G5, G14, G27, G28, T15, W6	A08
21	...	43	100	45	1250	NP	1250	650	NFN-10	G14, G27, G28, T15	A08
22	...	45	85	35	NP	NP	800	650	NFN-19	G5, W12	
23	...	45	85	35	NP	NP	800	NP	NFN-19	G5	
24	...	45	85	35	NP	NP	800	NP	NFN-19	...	
25	...	45	85	35	NP	800	800	650	NFN-19	G5	
26	...	45	85	35	NP	NP	800	650	NFN-19	...	
27	...	45	85	35	NP	800	800	650	NFN-19	G5	
28	...	45	85	35	NP	NP	800	650	NFN-19	...	
29	...	45	85	35	NP	800	800	650	NFN-19	G5, G14, W6	
30	...	45	85	35	NP	NP	800	650	NFN-19	G14	
31	...	45	85	35	NP	800	800	650	NFN-19	G5	
32	...	45	85	35	NP	NP	800	650	NFN-19	...	
33	...	45	85	35	NP	800	800	650	NFN-19	G5, G14, W6	
34	...	45	85	35	NP	NP	800	650	NFN-19	G14	
35	...	46	90	35	1500	NP	1500	NP	NFN-8	G5, T11	
36	...	46	90	35	1500	NP	1500	NP	NFN-8	T11	
37	...	46	90	35	1500	NP	1500	NP	NFN-8	G5, T11	
38	...	46	90	35	1500	NP	1500	NP	NFN-8	T11	

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	950
	1	19.8	...	17.8	...	16.5	...	15.5	...	14.8	...	14.3	14.1	14.0	13.8	13.7	13.7	13.6	13.5
	2	19.8	...	19.8	...	19.8	...	19.8	...	19.8	...	19.3	19.1	18.8	18.7	18.5	18.4	18.3	18.3
	3	23.3	...	21.0	...	19.5	...	18.3	...	17.4	...	16.8	16.6	16.4	16.3	16.2	16.1	16.0	15.9
	4	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	22.7	22.4	22.2	22.0	21.8	21.7	21.6	21.5
	5	19.8	...	17.8	...	16.5	...	15.5	...	14.8	...	14.3	14.1	14.0	13.8	13.7	13.7	13.6	13.5
	6	19.8	...	19.8	...	19.8	...	19.8	...	19.8	...	19.3	19.1	18.8	18.7	18.5	18.4	18.3	18.3
A08	7	28.6	...	28.6	...	28.2	...	27.2	...	26.5	...	26.0	25.8	25.6	25.4	25.3	25.1	24.9	24.7
A08	8	28.6	...	28.6	...	28.2	...	27.2	...	26.5	...	26.0	25.8	25.6	25.4	25.3	25.1	24.9	24.7
A08	9	28.6	...	26.7	...	24.6	...	22.9	...	21.5	...	20.4	20.0	19.6	19.3	19.0	18.8	18.6	18.5
A08	10	28.6	...	28.6	...	28.2	...	27.2	...	26.5	...	26.0	25.8	25.6	25.4	25.3	25.1	24.9	24.7
A08	11	28.6	...	26.7	...	24.6	...	22.9	...	21.5	...	20.4	20.0	19.6	19.3	19.0	18.8	18.6	18.5
A08	12	28.6	...	28.6	...	28.2	...	27.2	...	26.5	...	26.0	25.8	25.6	25.4	25.3	25.1	24.9	24.7
A08	13	28.6	...	26.7	...	24.6	...	22.9	...	21.5	...	20.4	20.0	19.6	19.3	19.0	18.8	18.6	18.5
A08	14	28.6	...	28.6	...	28.2	...	27.2	...	26.5	...	26.0	25.8	25.6	25.4	25.3	25.1	24.9	24.7
A08	15	28.6	...	26.7	...	24.6	...	22.9	...	21.5	...	20.4	20.0	19.6	19.3	19.0	18.8	18.6	18.5
A08	16	24.3	...	24.3	...	23.9	...	23.1	...	22.6	...	22.1	21.9	21.8	21.6	21.5	21.3	21.1	21.0
A08	17	24.3	...	22.7	...	20.9	...	19.4	...	18.3	...	17.4	17.0	16.7	16.4	16.2	16.0	15.8	15.7
A08	18	28.6	...	28.6	...	28.2	...	27.2	...	26.5	...	26.0	25.8	25.6	25.4	25.3	25.1	24.9	24.7
A08	19	28.6	...	26.7	...	24.6	...	22.9	...	21.5	...	20.4	20.0	19.6	19.3	19.0	18.8	18.6	18.5
A08	20	24.3	...	24.3	...	23.9	...	23.1	...	22.6	...	22.1	21.9	21.8	21.6	21.5	21.3	21.1	21.0
A08	21	24.3	...	22.7	...	20.9	...	19.4	...	18.3	...	17.4	17.0	16.7	16.4	16.2	16.0	15.8	15.7
	22	23.3	...	23.3	...	23.3	...	22.5	...	21.9	...	21.3	20.9	20.5	20.1	19.7	...	...	...
	23	23.3	...	23.3	...	23.3	...	22.5	...	21.9	...	21.3	20.9	20.5	20.1	19.7	...	...	...
	24	23.3	...	20.0	...	18.3	...	17.2	...	16.4	...	15.8	15.5	15.2	14.9	14.6	...	...	...
	25	23.3	...	23.3	...	23.3	...	22.5	...	21.9	...	21.3	20.9	20.5	20.1	19.7	...	...	...
	26	23.3	...	20.0	...	18.3	...	17.2	...	16.4	...	15.8	15.5	15.2	14.9	14.6	...	...	...
	27	23.3	...	23.3	...	23.3	...	22.5	...	21.9	...	21.3	20.9	20.5	20.1	19.7	...	...	...
	28	23.3	...	20.0	...	18.3	...	17.2	...	16.4	...	15.8	15.5	15.2	14.9	14.6	...	...	...
	29	19.8	...	19.8	...	19.8	...	19.1	...	18.6	...	18.1	17.7	17.4	17.1	16.8	...	...	...
	30	19.8	...	17.0	...	15.6	...	14.6	...	13.9	...	13.4	13.1	12.9	12.7	12.4	...	...	...
	31	23.3	...	23.3	...	23.3	...	22.5	...	21.9	...	21.3	20.9	20.5	20.1	19.7	...	...	...
	32	23.3	...	20.0	...	18.3	...	17.2	...	16.4	...	15.8	15.5	15.2	14.9	14.6	...	...	...
	33	19.8	...	19.8	...	19.8	...	19.1	...	18.6	...	18.1	17.7	17.4	17.1	16.8	...	...	...
	34	19.8	...	17.0	...	15.6	...	14.6	...	13.9	...	13.4	13.1	12.9	12.7	12.4	...	...	...
	35	23.3	...	23.3	...	23.3	...	23.3	...	22.6	...	22.1	21.9	21.7	21.6	21.4	21.1	*16.0*	*12.9*
	36	23.3	...	20.9	...	19.3	...	18.1	...	17.4	...	17.0	16.8	16.8	16.7	16.6	16.5	*16.0*	*12.9*
	37	23.3	...	23.3	...	23.3	...	23.3	...	22.6	...	22.1	21.9	21.7	21.6	21.4	21.1	*16.0*	*12.9*
	38	23.3	...	20.9	...	19.3	...	18.1	...	17.4	...	17.0	16.8	16.8	16.7	16.6	16.5	*16.0*	*12.9*

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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																	
	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	
1	13.5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	18.2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	15.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	21.4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	13.5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	18.2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	24.4	23.0	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...	...	...	...	A08
8	24.4	23.0	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...	...	...	...	A08
9	18.3	18.2	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...	...	...	...	A08
10	24.4	23.0	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...	...	...	...	A08
11	18.3	18.2	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...	...	...	...	A08
12	24.4	23.0	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...	...	...	...	A08
13	18.3	18.2	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...	...	...	...	A08
14	24.4	23.0	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...	...	...	...	A08
15	18.3	18.2	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...	...	...	...	A08
16	20.7	19.6	*14.9*	*10.8*	*8.2*	*6.5*	...	...	...	...	...	...	...	...	...	...	...	A08
17	15.6	15.5	*14.9*	*10.8*	*8.2*	*6.5*	...	...	...	...	...	...	...	...	...	...	...	A08
18	24.4	23.0	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...	...	...	...	A08
19	18.3	18.2	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...	...	...	...	A08
20	20.7	19.6	*14.9*	*10.8*	*8.2*	*6.5*	...	...	...	...	...	...	...	...	...	...	...	A08
21	15.6	15.5	*14.9*	*10.8*	*8.2*	*6.5*	...	...	...	...	...	...	...	...	...	...	...	A08
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	...	...	...	
36	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	...	...	...	
37	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	...	...	...	
38	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	...	...	...	

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/Condition/ Temper
	1	46Ni–27Cr–23Fe–2.75Si	Plate, sheet, strip	SB-168	...	N06045	Solution ann.
	2	46Ni–27Cr–23Fe–2.75Si	Plate, sheet, strip	SB-168	...	N06045	Solution ann.
	3	46Ni–27Cr–23Fe–2.75Si	Smls. & wld. fittings	SB-366	...	N06045	Solution ann.
	4	46Ni–27Cr–23Fe–2.75Si	Forged fittings	SB-462	...	N06045	Solution ann.
	5	46Ni–27Cr–23Fe–2.75Si	Forged fittings	SB-462	...	N06045	Solution ann.
	6	46Ni–27Cr–23Fe–2.75Si	Wld. tube	SB-516	...	N06045	Solution ann.
	7	46Ni–27Cr–23Fe–2.75Si	Wld. tube	SB-516	...	N06045	Solution ann.
	8	46Ni–27Cr–23Fe–2.75Si	Wld. pipe	SB-517	...	N06045	Solution ann.
	9	46Ni–27Cr–23Fe–2.75Si	Wld. pipe	SB-517	...	N06045	Solution ann.
	10	46Ni–27Cr–23Fe–2.75Si	Forgings	SB-564	...	N06045	Solution ann.
	11	46Ni–27Cr–23Fe–2.75Si	Forgings	SB-564	...	N06045	Solution ann.
	12	59Ni–23Cr–16Mo	Fittings	SB-366	CR5923	N06059	Annealed
	13	59Ni–23Cr–16Mo	Fittings	SB-366	WP5923	N06059	Annealed
	14	59Ni–23Cr–16Mo	Wld. fittings	SB-366	WP5923W	N06059	Annealed
	15	59Ni–23Cr–16Mo	Fittings	SB-366	WP5923WX	N06059	Annealed
	16	59Ni–23Cr–16Mo	Forged fittings	SB-462	...	N06059	Solution ann.
	17	59Ni–23Cr–16Mo	Forged fittings	SB-462	...	N06059	Solution ann.
	18	59Ni–23Cr–16Mo	Forgings	SB-564	...	N06059	Solution ann.
	19	59Ni–23Cr–16Mo	Forgings	SB-564	...	N06059	Solution ann.
	20	59Ni–23Cr–16Mo	Rod	SB-574	...	N06059	Solution ann.
	21	59Ni–23Cr–16Mo	Rod	SB-574	...	N06059	Solution ann.
	22	59Ni–23Cr–16Mo	Plate, sheet, strip	SB-575	...	N06059	Solution ann.
	23	59Ni–23Cr–16Mo	Plate, sheet, strip	SB-575	...	N06059	Solution ann.
	24	59Ni–23Cr–16Mo	Wld. pipe	SB-619	...	N06059	Solution ann.
	25	59Ni–23Cr–16Mo	Wld. pipe	SB-619	...	N06059	Solution ann.
	26	59Ni–23Cr–16Mo	Smls. pipe & tube	SB-622	...	N06059	Solution ann.
	27	59Ni–23Cr–16Mo	Smls. pipe & tube	SB-622	...	N06059	Solution ann.
	28	59Ni–23Cr–16Mo	Wld. tube	SB-626	...	N06059	Solution ann.
	29	59Ni–23Cr–16Mo	Wld. tube	SB-626	...	N06059	Solution ann.
07	30	59Ni–23Cr–16Mo–1.6Cu	Smls. & wld. fittings	SB-366	...	N06200	Solution ann.
07	31	59Ni–23Cr–16Mo–1.6Cu	Forgings	SB-462	...	N06200	Solution ann.
07	32	59Ni–23Cr–16Mo–1.6Cu	Forgings	SB-462	...	N06200	Solution ann.
07	33	59Ni–23Cr–16Mo–1.6Cu	Forgings	SB-564	...	N06200	Solution ann.
07	34	59Ni–23Cr–16Mo–1.6Cu	Forgings	SB-564	...	N06200	Solution ann.
07	35	59Ni–23Cr–16Mo–1.6Cu	Rod	SB-574	...	N06200	Solution ann.
07	36	59Ni–23Cr–16Mo–1.6Cu	Rod	SB-574	...	N06200	Solution ann.
07	37	59Ni–23Cr–16Mo–1.6Cu	Plate, sheet, strip	SB-575	...	N06200	Solution ann.
07	38	59Ni–23Cr–16Mo–1.6Cu	Plate, sheet, strip	SB-575	...	N06200	Solution ann.

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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																	
	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	
1	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	...	...	...	
2	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	...	...	...	
3	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	...	...	...	
4	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	...	...	...	
5	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	...	...	...	
6	*8.0*	*6.0*	*4.8*	*3.7*	*3.0*	*2.4*	*1.9*	*1.5*	*1.2*	*0.90*	*0.70*	...	...	...	...	...	...	
7	*8.0*	*6.0*	*4.8*	*3.7*	*3.0*	*2.4*	*1.9*	*1.5*	*1.2*	*0.90*	*0.70*	...	...	...	...	...	...	
8	*8.0*	*6.0*	*4.8*	*3.7*	*3.0*	*2.4*	*1.9*	*1.5*	*1.2*	*0.90*	*0.70*	...	...	...	...	...	...	
9	*8.0*	*6.0*	*4.8*	*3.7*	*3.0*	*2.4*	*1.9*	*1.5*	*1.2*	*0.90*	*0.70*	...	...	...	...	...	...	
10	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	...	...	...	
11	*9.4*	*7.1*	*5.6*	*4.4*	*3.5*	*2.8*	*2.2*	*1.8*	*1.4*	*1.1*	*0.85*	...	...	...	...	...	...	
12	19.6	19.2	16.0	*12.4*	*9.9*	*8.0*	*6.3*	*5.0*	*4.1*	...	...	...	...	...	...	...	...	
13	23.1	22.6	18.8	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	...	...	...	
14	19.6	19.2	16.0	*12.4*	*9.9*	*8.0*	*6.3*	*5.0*	*4.1*	...	...	...	...	...	...	...	...	
15	23.1	22.6	18.8	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	...	...	...	
16	17.1	16.8	16.5	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	...	...	...	
17	23.1	22.6	18.8	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	...	...	...	
18	17.1	16.8	16.5	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	...	...	...	
19	23.1	22.6	18.8	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	...	...	...	
20	17.1	16.8	16.5	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	...	...	...	
21	23.1	22.6	18.8	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	...	...	...	
22	17.1	16.8	16.5	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	...	...	...	
23	23.1	22.6	18.8	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	...	...	...	
24	14.5	14.3	14.0	*12.4*	*9.9*	*8.0*	*6.3*	*5.0*	*4.1*	...	...	...	...	...	...	...	...	
25	19.6	19.2	16.0	*12.4*	*9.9*	*8.0*	*6.3*	*5.0*	*4.1*	...	...	...	...	...	...	...	...	
26	17.1	16.8	16.5	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	...	...	...	
27	23.1	22.6	18.8	*14.6*	*11.6*	*9.4*	*7.4*	*5.9*	*4.8*	...	...	...	...	...	...	...	...	
28	14.5	14.3	14.0	*12.4*	*9.9*	*8.0*	*6.3*	*5.0*	*4.1*	...	...	...	...	...	...	...	...	
29	19.6	19.2	16.0	*12.4*	*9.9*	*8.0*	*6.3*	*5.0*	*4.1*	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/Condition/ Temper
07	1	59Ni–23Cr–16Mo–1.6Cu	Wld. pipe	SB-619	...	N06200	Solution ann.
07	2	59Ni–23Cr–16Mo–1.6Cu	Wld. pipe	SB-619	...	N06200	Solution ann.
07	3	59Ni–23Cr–16Mo–1.6Cu	Smls. pipe & tube	SB-622	...	N06200	Solution ann.
07	4	59Ni–23Cr–16Mo–1.6Cu	Smls. pipe & tube	SB-622	...	N06200	Solution ann.
07	5	59Ni–23Cr–16Mo–1.6Cu	Wld. tube	SB-626	...	N06200	Solution ann.
07	6	59Ni–23Cr–16Mo–1.6Cu	Wld. tube	SB-626	...	N06200	Solution ann.
A08	7	60Ni–19Cr–19Mo–1.8Ta	Smls. & wld. fittings	SB-366	...	N06210	Solution ann.
A08	8	60Ni–19Cr–19Mo–1.8Ta	Forgings	SB-564	...	N06210	Solution ann.
A08	9	60Ni–19Cr–19Mo–1.8Ta	Forgings	SB-564	...	N06210	Solution ann.
A08	10	60Ni–19Cr–19Mo–1.8Ta	Rod	SB-574	...	N06210	Solution ann.
A08	11	60Ni–19Cr–19Mo–1.8Ta	Rod	SB-574	...	N06210	Solution ann.
A08	12	60Ni–19Cr–19Mo–1.8Ta	Plate, sheet, strip	SB-575	...	N06210	Solution ann.
A08	13	60Ni–19Cr–19Mo–1.8Ta	Plate, sheet, strip	SB-575	...	N06210	Solution ann.
A08	14	60Ni–19Cr–19Mo–1.8Ta	Wld. pipe	SB-619	...	N06210	Solution ann.
A08	15	60Ni–19Cr–19Mo–1.8Ta	Wld. pipe	SB-619	...	N06210	Solution ann.
A08	16	60Ni–19Cr–19Mo–1.8Ta	Smls. pipe & tube	SB-622	...	N06210	Solution ann.
A08	17	60Ni–19Cr–19Mo–1.8Ta	Smls. pipe & tube	SB-622	...	N06210	Solution ann.
A08	18	60Ni–19Cr–19Mo–1.8Ta	Wld. tube	SB-626	...	N06210	Solution ann.
A08	19	60Ni–19Cr–19Mo–1.8Ta	Wld. tube	SB-626	...	N06210	Solution ann.
	20	57Ni–22Cr–14W–2Mo–La	Smls. & wld. fittings	SB-366	...	N06230	Solution ann.
	21	57Ni–22Cr–14W–2Mo–La	Plate, sheet, strip	SB-435	...	N06230	Solution ann.
	22	57Ni–22Cr–14W–2Mo–La	Plate, sheet, strip	SB-435	...	N06230	Solution ann.
	23	57Ni–22Cr–14W–2Mo–La	Forgings	SB-564	...	N06230	Solution ann.
	24	57Ni–22Cr–14W–2Mo–La	Forgings	SB-564	...	N06230	Solution ann.
	25	57Ni–22Cr–14W–2Mo–La	Bar	SB-572	...	N06230	Solution ann.
	26	57Ni–22Cr–14W–2Mo–La	Bar	SB-572	...	N06230	Solution ann.
	27	57Ni–22Cr–14W–2Mo–La	Wld. pipe	SB-619	...	N06230	Solution ann.
	28	57Ni–22Cr–14W–2Mo–La	Wld. pipe	SB-619	...	N06230	Solution ann.
	29	57Ni–22Cr–14W–2Mo–La	Smls. pipe & tube	SB-622	...	N06230	Solution ann.
	30	57Ni–22Cr–14W–2Mo–La	Smls. pipe & tube	SB-622	...	N06230	Solution ann.
	31	57Ni–22Cr–14W–2Mo–La	Wld. tube	SB-626	...	N06230	Solution ann.
	32	57Ni–22Cr–14W–2Mo–La	Wld. tube	SB-626	...	N06230	Solution ann.
	33	61Ni–16Mo–16Cr	Smls. & wld. fittings	SB-366	...	N06455	Annealed
	34	61Ni–16Mo–16Cr	Rod	SB-574	...	N06455	Solution ann.
	35	61Ni–16Mo–16Cr	Rod	SB-574	...	N06455	Solution ann.
	36	61Ni–16Mo–16Cr	Plate, sheet, strip	SB-575	...	N06455	Solution ann.
	37	61Ni–16Mo–16Cr	Plate, sheet, strip	SB-575	...	N06455	Solution ann.
	38	61Ni–16Mo–16Cr	Wld. pipe	SB-619	...	N06455	Solution ann.
	39	61Ni–16Mo–16Cr	Wld. pipe	SB-619	...	N06455	Solution ann.
A08	40	61Ni–16Mo–16Cr	Smls. pipe & tube	SB-622	...	N06455	Solution ann.
A08	41	61Ni–16Mo–16Cr	Smls. pipe & tube	SB-622	...	N06455	Solution ann.
	42	61Ni–16Mo–16Cr	Wld. tube	SB-626	...	N06455	Solution ann.
	43	61Ni–16Mo–16Cr	Wld. tube	SB-626	...	N06455	Solution ann.

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	...	43	100	45	NP	NP	800	NP	NFN-10	G14	07
2	...	43	100	45	NP	NP	800	NP	NFN-10	G5, G14	07
3	...	43	100	45	NP	NP	800	NP	NFN-10	...	07
4	...	43	100	45	NP	NP	800	NP	NFN-10	G5	07
5	...	43	100	45	NP	NP	800	NP	NFN-10	G14	07
6	...	43	100	45	NP	NP	800	NP	NFN-10	G5, G14	07
7	...	43	100	45	NP	NP	800	NP	NFN-14	G5, W12	A08
8	...	43	100	45	NP	NP	800	NP	NFN-14	...	A08
9	...	43	100	45	NP	NP	800	NP	NFN-14	G5	A08
10	...	43	100	45	NP	NP	800	NP	NFN-14	...	A08
11	...	43	100	45	NP	NP	800	NP	NFN-14	G5	A08
12	...	43	100	45	NP	NP	800	NP	NFN-14	...	A08
13	...	43	100	45	NP	NP	800	NP	NFN-14	G5	A08
14	...	43	100	45	NP	NP	800	NP	NFN-14	...	A08
15	...	43	100	45	NP	NP	800	NP	NFN-14	G5, G14	A08
16	...	43	100	45	NP	NP	800	NP	NFN-14	...	A08
17	...	43	100	45	NP	NP	800	NP	NFN-14	G5	A08
18	...	43	100	45	NP	NP	800	NP	NFN-14	...	A08
19	...	43	100	45	NP	NP	800	NP	NFN-14	G5, G14	A08
20	...	43	110	45	1650	NP	1800	650	NFN-24	G4, G5, T15, W12	
21	...	43	110	45	1650	NP	1800	650	NFN-24	G4, T16	
22	...	43	110	45	1650	NP	1800	650	NFN-24	G4, G5, T15	
23	...	43	110	45	1650	NP	1800	650	NFN-24	G4, T16	
24	...	43	110	45	1650	NP	1800	650	NFN-24	G4, G5, T15	
25	...	43	110	45	1650	NP	1800	650	NFN-24	G4, T16	
26	...	43	110	45	1650	NP	1800	650	NFN-24	G4, G5, T15	
27	...	43	110	45	1650	NP	1800	650	NFN-24	G4, G14, T16	
28	...	43	110	45	1650	NP	1800	650	NFN-24	G4, G5, G14, T15	
29	...	43	110	45	1650	NP	1800	650	NFN-24	G4, T16	
30	...	43	110	45	1650	NP	1800	650	NFN-24	G4, G5, T15	
31	...	43	110	45	1650	NP	1800	650	NFN-24	G4, G14, T16	
32	...	43	110	45	1650	NP	1800	650	NFN-24	G4, G5, G14, T15	
33	...	43	100	40	NP	NP	800	650	NFN-14	G5, W12	
34	...	43	100	40	NP	NP	800	650	NFN-14	...	
35	...	43	100	40	NP	NP	800	650	NFN-14	G5	
36	...	43	100	40	NP	NP	800	650	NFN-14	...	
37	...	43	100	40	NP	NP	800	650	NFN-14	G5	
38	...	43	100	40	NP	NP	800	650	NFN-14	G14	
39	...	43	100	40	NP	NP	800	650	NFN-14	G5, G14	
40	...	43	100	40	NP	NP	800	650	NFN-14	...	A08
41	...	43	100	40	NP	NP	800	650	NFN-14	G5	A08
42	...	43	100	40	NP	NP	800	650	NFN-14	G14	
43	...	43	100	40	NP	NP	800	650	NFN-14	G5, G14	

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	950
07	1	24.3	...	22.9	...	21.1	...	19.4	...	18.0	...	16.9	16.5	16.2	16.0	15.9	...	...	...
07	2	24.3	...	24.3	...	24.3	...	23.5	...	22.8	...	22.3	22.1	21.9	21.6	21.4	...	...	...
07	3	28.6	...	26.9	...	24.8	...	22.9	...	21.2	...	19.9	19.4	19.1	18.8	18.7	...	...	...
07	4	28.6	...	28.6	...	28.6	...	27.6	...	26.8	...	26.2	26.0	25.7	25.4	25.2	...	...	...
07	5	24.3	...	22.9	...	21.1	...	19.4	...	18.0	...	16.9	16.5	16.2	16.0	15.9	...	...	...
07	6	24.3	...	24.3	...	24.3	...	23.5	...	22.8	...	22.3	22.1	21.9	21.6	21.4	...	...	...
A08	7	28.6	...	28.6	...	28.5	...	27.6	...	26.9	...	26.3	25.5	24.8	24.1	23.6	...	...	...
A08	8	28.6	...	26.6	...	24.5	...	22.6	...	21.0	...	19.5	18.9	18.4	17.9	17.5	...	...	...
A08	9	28.6	...	28.6	...	28.5	...	27.6	...	26.9	...	26.3	25.5	24.8	24.1	23.6	...	...	...
A08	10	28.6	...	26.6	...	24.5	...	22.6	...	21.0	...	19.5	18.9	18.4	17.9	17.5	...	...	...
A08	11	28.6	...	28.6	...	28.5	...	27.6	...	26.9	...	26.3	25.5	24.8	24.1	23.6	...	...	...
A08	12	28.6	...	26.6	...	24.5	...	22.6	...	21.0	...	19.5	18.9	18.4	17.9	17.5	...	...	...
A08	13	28.6	...	28.6	...	28.5	...	27.6	...	26.9	...	26.3	25.5	24.8	24.1	23.6	...	...	...
A08	14	24.3	...	22.6	...	20.8	...	19.2	...	17.8	...	16.6	16.1	15.6	15.2	14.8	...	...	...
A08	15	24.3	...	24.3	...	24.2	...	23.5	...	22.9	...	22.4	21.7	21.1	20.5	20.0	...	...	...
A08	16	28.6	...	26.6	...	24.5	...	22.6	...	21.0	...	19.5	18.9	18.4	17.9	17.5	...	...	...
A08	17	28.6	...	28.6	...	28.5	...	27.6	...	26.9	...	26.3	25.5	24.8	24.1	23.6	...	...	...
A08	18	24.3	...	22.6	...	20.8	...	19.2	...	17.8	...	16.6	16.1	15.6	15.2	14.8	...	...	...
A08	19	24.3	...	24.3	...	24.2	...	23.5	...	22.9	...	22.4	21.7	21.1	20.5	20.0	...	...	...
	20	30.0	...	30.0	...	30.0	...	30.0	...	30.0	...	29.4	29.1	28.7	28.4	28.2	28.2	28.2	28.2
	21	30.0	...	28.2	...	26.4	...	24.7	...	23.1	...	22.0	21.5	21.2	21.0	20.9	20.9	20.9	20.9
	22	30.0	...	30.0	...	30.0	...	30.0	...	30.0	...	29.4	29.1	28.7	28.4	28.2	28.2	28.2	28.2
	23	30.0	...	28.2	...	26.4	...	24.7	...	23.1	...	22.0	21.5	21.2	21.0	20.9	20.9	20.9	20.9
	24	30.0	...	30.0	...	30.0	...	30.0	...	30.0	...	29.4	29.1	28.7	28.4	28.2	28.2	28.2	28.2
	25	30.0	...	28.2	...	26.4	...	24.7	...	23.1	...	22.0	21.5	21.2	21.0	20.9	20.9	20.9	20.9
	26	30.0	...	30.0	...	30.0	...	30.0	...	30.0	...	29.4	29.1	28.7	28.4	28.2	28.2	28.2	28.2
	27	25.5	...	24.0	...	22.4	...	21.0	...	19.6	...	18.7	18.3	18.0	17.9	17.8	17.8	17.8	17.8
	28	25.5	...	25.5	...	25.5	...	25.5	...	25.5	...	25.0	24.7	24.4	24.1	24.0	24.0	24.0	24.0
	29	30.0	...	28.2	...	26.4	...	24.7	...	23.1	...	22.0	21.5	21.2	21.0	20.9	20.9	20.9	20.9
	30	30.0	...	30.0	...	30.0	...	30.0	...	30.0	...	29.4	29.1	28.7	28.4	28.2	28.2	28.2	28.2
	31	25.5	...	24.0	...	22.4	...	21.0	...	19.6	...	18.7	18.3	18.0	17.9	17.8	17.8	17.8	17.8
	32	25.5	...	25.5	...	25.5	...	25.5	...	25.5	...	25.0	24.7	24.4	24.1	24.0	24.0	24.0	24.0
	33	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.5	...	25.8	...	...	...
	34	26.7	...	24.6	...	23.0	...	21.7	...	20.8	...	20.1	19.9	19.6	19.4	19.1	...	...	...
	35	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.7	26.7	26.5	26.1	25.8	...	...	...
	36	26.7	...	24.6	...	23.0	...	21.7	...	20.8	...	20.1	19.9	19.6	19.4	19.1	...	...	...
	37	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.7	26.7	26.5	26.1	25.8	...	...	...
	38	22.7	...	20.9	...	19.5	...	18.5	...	17.7	...	17.1	16.9	16.7	16.5	16.2	...	...	...
	39	22.7	...	22.7	...	22.7	...	22.7	...	22.7	...	22.7	22.7	22.5	22.2	21.9	...	...	...
A08	40	26.7	...	24.6	...	23.0	...	21.7	...	20.8	...	20.1	19.9	19.6	19.4	19.1	...	...	...
A08	41	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.7	26.7	26.5	26.1	25.8	...	...	...
	42	22.7	...	20.9	...	19.5	...	18.5	...	17.7	...	17.1	16.9	16.7	16.5	16.2	...	...	...
	43	22.7	...	22.7	...	22.7	...	22.7	...	22.7	...	22.7	22.7	22.5	22.2	21.9	...	...	...

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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																	
	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
20	28.2	28.2	*23.2*	*19.0*	*15.6*	*12.9*	*10.6*	*8.5*	*6.7*	*5.3*	*4.1*	*2.9*	*2.1*	*1.5*	*1.1*	*0.70*	*0.45*	
21	20.9	20.9	20.9	*19.0*	*15.6*	*12.9*	*10.6*	*8.5*	*6.7*	*5.3*	*4.1*	*2.9*	*2.1*	*1.5*	*1.1*	*0.70*	*0.45*	
22	28.2	28.2	*23.2*	*19.0*	*15.6*	*12.9*	*10.6*	*8.5*	*6.7*	*5.3*	*4.1*	*2.9*	*2.1*	*1.5*	*1.1*	*0.70*	*0.45*	
23	20.9	20.9	20.9	*19.0*	*15.6*	*12.9*	*10.6*	*8.5*	*6.7*	*5.3*	*4.1*	*2.9*	*2.1*	*1.5*	*1.1*	*0.70*	*0.45*	
24	28.2	28.2	*23.2*	*19.0*	*15.6*	*12.9*	*10.6*	*8.5*	*6.7*	*5.3*	*4.1*	*2.9*	*2.1*	*1.5*	*1.1*	*0.70*	*0.45*	
25	20.9	20.9	20.9	*19.0*	*15.6*	*12.9*	*10.6*	*8.5*	*6.7*	*5.3*	*4.1*	*2.9*	*2.1*	*1.5*	*1.1*	*0.70*	*0.45*	
26	28.2	28.2	*23.2*	*19.0*	*15.6*	*12.9*	*10.6*	*8.5*	*6.7*	*5.3*	*4.1*	*2.9*	*2.1*	*1.5*	*1.1*	*0.70*	*0.45*	
27	17.8	17.8	17.8	*16.2*	*13.3*	*11.0*	*9.0*	*7.2*	*5.7*	*4.5*	*3.5*	*2.5*	*1.8*	*1.3*	*0.94*	*0.60*	*0.38*	
28	24.0	24.0	*19.7*	*16.2*	*13.3*	*11.0*	*9.0*	*7.2*	*5.7*	*4.5*	*3.5*	*2.5*	*1.8*	*1.3*	*0.94*	*0.60*	*0.38*	
29	20.9	20.9	20.9	*19.0*	*15.6*	*12.9*	*10.6*	*8.5*	*6.7*	*5.3*	*4.1*	*2.9*	*2.1*	*1.5*	*1.1*	*0.70*	*0.45*	
30	28.2	28.2	*23.2*	*19.0*	*15.6*	*12.9*	*10.6*	*8.5*	*6.7*	*5.3*	*4.1*	*2.9*	*2.1*	*1.5*	*1.1*	*0.70*	*0.45*	
31	17.8	17.8	17.8	*16.2*	*13.3*	*11.0*	*9.0*	*7.2*	*5.7*	*4.5*	*3.5*	*2.5*	*1.8*	*1.3*	*0.94*	*0.60*	*0.38*	
32	24.0	24.0	*19.7*	*16.2*	*13.3*	*11.0*	*9.0*	*7.2*	*5.7*	*4.5*	*3.5*	*2.5*	*1.8*	*1.3*	*0.94*	*0.60*	*0.38*	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
41	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
42	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
43	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/Condition/ Temper
A08	1	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.
A08	2	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.
	3	72Ni–15Cr–8Fe	Smls. & wld. fittings	SB-366	...	N06600	Annealed
A08	4	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Cold drawn/ann.
A08	5	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Cold drawn/ann.
	6	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.
A08	7	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.
A08	8	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only)				External Pressure Chart No.	Notes	
					I	III	VIII-1	XII			
1	>5	43	75	25	NP	800	1200	650	NFN-4	T12	A08
2	>5	43	75	25	NP	800	1200	650	NFN-4	G5, T11	A08
3	...	43	80	30	NP	NP	1200	650	NFN-4	G5, T11, W12	
4	>5	43	80	30	NP	800 (Cl. 3 only)	1200	650	NFN-4	T12	A08
5	>5	43	80	30	NP	800 (Cl. 3 only)	1200	650	NFN-4	G5, T11	A08
6	...	43	80	30	NP	800	NP	NP	NFN-4	G5	
7	≤5	43	80	30	NP	800 (Cl. 3 only)	1200	650	NFN-4	G5, T11	A08
8	≤5	43	80	30	NP	NP	1200	650	NFN-4	T12	A08

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	950
A08	1	16.7	...	15.9	...	15.2	...	14.6	...	14.0	...	13.5	13.3	13.1	12.9	12.7	12.5	12.4	*10.6*
A08	2	16.7	...	16.7	...	16.7	...	16.7	...	16.7	...	16.7	16.7	16.7	16.7	16.7	16.7	*16.0*	*10.6*
	3	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	*16.0*	*10.6*
A08	4	20.0	...	19.1	...	18.3	...	17.5	...	16.8	...	16.2	15.9	15.7	15.5	15.2	15.1	14.9	*10.6*
A08	5	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	*16.0*	*10.6*
	6	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	...	...	...
A08	7	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	20.0	20.0	20.0	20.0	20.0	*16.0*	*10.6*
A08	8	20.0	...	19.1	...	18.3	...	17.5	...	16.8	...	16.2	15.9	15.7	15.5	15.2	15.1	14.9	*10.6*

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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																	
	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	
1	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...	...	...	...	A08
2	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...	...	...	...	A08
3	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...	...	...	...	
4	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...	...	...	...	A08
5	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...	...	...	...	A08
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...	...	...	...	A08
8	*7.0*	*4.5*	*3.0*	*2.2*	*2.0*	...	...	...	...	...	...	...	...	...	...	...	...	A08

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/Condition/ 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
A08	11	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Cold drawn/ann.
A08	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–23Cr–Fe	Smls. tube	SB-163	...	N06601	Annealed
	20	60Ni–23Cr–Fe	Smls. tube	SB-163	...	N06601	Annealed
	21	60Ni–23Cr–Fe	Bar	SB-166	...	N06601	Annealed
	22	60Ni–23Cr–Fe	Bar	SB-166	...	N06601	Annealed
	23	60Ni–23Cr–Fe	Smls. pipe & tube	SB-167	...	N06601	Annealed
	24	60Ni–23Cr–Fe	Smls. pipe & tube	SB-167	...	N06601	Annealed
	25	60Ni–23Cr–Fe	Plate, sheet, strip	SB-168	...	N06601	Annealed
	26	60Ni–23Cr–Fe	Plate, sheet, strip	SB-168	...	N06601	Annealed
	27	52Ni–22Cr–13Co–9Mo	Bar, rod	SB-166	...	N06617	Annealed
	28	52Ni–22Cr–13Co–9Mo	Bar, rod	SB-166	...	N06617	Annealed
	29	52Ni–22Cr–13Co–9Mo	Smls. pipe & tube	SB-167	...	N06617	Annealed
	30	52Ni–22Cr–13Co–9Mo	Smls. pipe & tube	SB-167	...	N06617	Annealed
	31	52Ni–22Cr–13Co–9Mo	Plate, sheet, strip	SB-168	...	N06617	Annealed
	32	52Ni–22Cr–13Co–9Mo	Plate, sheet, strip	SB-168	...	N06617	Annealed
	33	52Ni–22Cr–13Co–9Mo	Forgings	SB-564	...	N06617	Annealed
	34	52Ni–22Cr–13Co–9Mo	Forgings	SB-564	...	N06617	Annealed
A08 07	35	60Ni–22Cr–9Mo–3.5Cb	Plate, sheet, strip	SB-443	2	N06625	Solution ann.
A08 07	36	60Ni–22Cr–9Mo–3.5Cb	Plate, sheet, strip	SB-443	2	N06625	Solution ann.
A08 07	37	60Ni–22Cr–9Mo–3.5Cb	Smls. pipe & tube	SB-444	2	N06625	Solution ann.
A08 07	38	60Ni–22Cr–9Mo–3.5Cb	Smls. pipe & tube	SB-444	2	N06625	Solution ann.
A08 07	39	60Ni–22Cr–9Mo–3.5Cb	Bar	SB-446	2	N06625	Solution ann.
A08 07	40	60Ni–22Cr–9Mo–3.5Cb	Bar	SB-446	2	N06625	Solution ann.

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	≤3	43	80	35	1200	800	1200	650	NFN-4	G5, T11	
2	≤3	43	80	35	1200	NP	1200	650	NFN-4	T11	
3	...	43	80	35	1200	800	1200	650	NFN-4	G5, T11	
4	...	43	80	35	1200	NP	1200	650	NFN-4	T11	
5	...	43	80	35	1200	800	1200	650	NFN-4	G5, T11	
6	...	43	80	35	1200	NP	1200	650	NFN-4	T11	
7	...	43	80	35	NP	NP	1200	650	NFN-4	G14, T11	
8	...	43	80	35	NP	NP	1200	650	NFN-4	G5, G14, T11	
9	...	43	80	35	NP	800	NP	NP	NFN-4	G5	
10	...	43	80	35	NP	NP	1200	650	NFN-4	T11	
11	≤5	43	80	35	1200	800 (Cl. 3 only)	1200	650	NFN-4	T11	A08
12	≤5	43	80	35	1200	800	1200	650	NFN-4	G5, T11	A08
13	...	43	80	35	NP	NP	1200	650	NFN-4	G14, T11	
14	...	43	80	35	NP	NP	1200	650	NFN-4	G5, G14, T11	
15	...	43	85	35	1200	800 (Cl. 3 only)	1200	650	NFN-4	T13	
16	...	43	85	35	1200	800 (Cl. 3 only)	1200	650	NFN-4	G5, T12	
17	...	43	85	35	1200	800 (Cl. 3 only)	1200	650	NFN-4	G20, T13	
18	...	43	85	35	1200	800 (Cl. 3 only)	1200	650	NFN-4	G5, G20, T12	
19	≤3 O.D.	43	80	30	1650	NP	1650	NP	NFN-4	G4, T14	
20	≤3 O.D.	43	80	30	1650	NP	1650	NP	NFN-4	G4, G5, T13	
21	...	43	80	30	1650	NP	1650	NP	NFN-4	G4, T14	
22	...	43	80	30	1650	NP	1650	NP	NFN-4	G4, G5, T13	
23	...	43	80	30	1650	NP	1650	NP	NFN-4	G4, T14	
24	...	43	80	30	1650	NP	1650	NP	NFN-4	G4, G5, T13	
25	...	43	80	30	1650	NP	1650	NP	NFN-4	G4, T14	
26	...	43	80	30	1650	NP	1650	NP	NFN-4	G4, G5, T13	
27	...	43	95	35	1650	NP	1800	NP	NFN-4	G4	
28	...	43	95	35	1650	NP	1800	NP	NFN-4	G4, G5	
29	...	43	95	35	1650	NP	1800	NP	NFN-4	G4	
30	...	43	95	35	1650	NP	1800	NP	NFN-4	G4, G5	
31	...	43	95	35	1650	NP	1800	NP	NFN-4	G4	
32	...	43	95	35	1650	NP	1800	NP	NFN-4	G4, G5	
33	...	43	95	35	1650	NP	1800	NP	NFN-4	G4	
34	...	43	95	35	1650	NP	1800	NP	NFN-4	G4, G5	
35	...	43	100	40	1100	NP	1600	650	NFN-22	G4, G5, G23, T17, W13	07 A08
36	...	43	100	40	1100	NP	1600	650	NFN-22	G4, G23, T18, W13	07 A08
37	...	43	100	40	1100	NP	1600	650	NFN-22	G4, G5, G23, T17, W13	07 A08
38	...	43	100	40	1100	NP	1600	650	NFN-22	G4, G23, T18, W13	07 A08
39	...	43	100	40	1100	NP	1600	650	NFN-22	G4, G5, G23, T17, W13	07 A08
40	...	43	100	40	1100	NP	1600	650	NFN-22	G4, G23, T18, W13	07 A08

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	950
	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*	*10.6*
	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*	*10.6*
	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*	*10.6*
	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*	*10.6*
	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*	*10.6*
	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*	*10.6*
	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*	*9.0*
	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*	*9.0*
	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*	*10.6*
A08	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*	*10.6*
A08	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*	*10.6*
	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*	*9.0*
	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*	*9.0*
	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	19.3
	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	*20.4*
	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	19.3
	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	*20.4*
	19	20.0	...	17.8	...	16.6	...	15.5	...	14.7	...	14.2	14.0	13.9	13.8	13.8	13.8	13.8	13.7
	20	20.0	...	20.0	...	20.0	...	20.0	...	19.9	...	19.2	19.0	18.8	18.7	18.6	18.6	18.6	18.6
	21	20.0	...	17.8	...	16.6	...	15.5	...	14.7	...	14.2	14.0	13.9	13.8	13.8	13.8	13.8	13.7
	22	20.0	...	20.0	...	20.0	...	20.0	...	19.9	...	19.2	19.0	18.8	18.7	18.6	18.6	18.6	18.6
	23	20.0	...	17.8	...	16.6	...	15.5	...	14.7	...	14.2	14.0	13.9	13.8	13.8	13.8	13.8	13.7
	24	20.0	...	20.0	...	20.0	...	20.0	...	19.9	...	19.2	19.0	18.8	18.7	18.6	18.6	18.6	18.6
	25	20.0	...	17.8	...	16.6	...	15.5	...	14.7	...	14.2	14.0	13.9	13.8	13.8	13.8	13.8	13.7
	26	20.0	...	20.0	...	20.0	...	20.0	...	19.9	...	19.2	19.0	18.8	18.7	18.6	18.6	18.6	18.6
	27	23.3	...	20.8	...	19.2	...	18.1	...	17.2	...	16.6	16.4	16.2	16.0	15.9	15.8	15.7	15.6
	28	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	22.5	22.1	21.9	21.7	21.5	21.3	21.2	21.0
	29	23.3	...	20.8	...	19.2	...	18.1	...	17.2	...	16.6	16.4	16.2	16.0	15.9	15.8	15.7	15.6
	30	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	22.5	22.1	21.9	21.7	21.5	21.3	21.2	21.0
	31	23.3	...	20.8	...	19.2	...	18.1	...	17.2	...	16.6	16.4	16.2	16.0	15.9	15.8	15.7	15.6
	32	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	22.5	22.1	21.9	21.7	21.5	21.3	21.2	21.0
	33	23.3	...	20.8	...	19.2	...	18.1	...	17.2	...	16.6	16.4	16.2	16.0	15.9	15.8	15.7	15.6
	34	23.3	...	23.3	...	23.3	...	23.3	...	23.3	...	22.5	22.1	21.9	21.7	21.5	21.3	21.2	21.0
A08 07	35	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.6
A08 07	36	26.7	...	24.6	...	23.4	...	22.4	...	21.7	...	21.0	20.8	20.5	20.3	20.1	20.0	19.8	19.7
A08 07	37	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.6
A08 07	38	26.7	...	24.6	...	23.4	...	22.4	...	21.7	...	21.0	20.8	20.5	20.3	20.1	20.0	19.8	19.7
A08 07	39	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.6
A08 07	40	26.7	...	24.6	...	23.4	...	22.4	...	21.7	...	21.0	20.8	20.5	20.3	20.1	20.0	19.8	19.7

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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																	
	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	
1	7.0	4.5	3.0	2.2	2.0	...	...	...	...	...	...	...	...	...	...	...	...	
2	7.0	4.5	3.0	2.2	2.0	...	...	...	...	...	...	...	...	...	...	...	...	
3	7.0	4.5	3.0	2.2	2.0	...	...	...	...	...	...	...	...	...	...	...	...	
4	7.0	4.5	3.0	2.2	2.0	...	...	...	...	...	...	...	...	...	...	...	...	
5	7.0	4.5	3.0	2.2	2.0	...	...	...	...	...	...	...	...	...	...	...	...	
6	7.0	4.5	3.0	2.2	2.0	...	...	...	...	...	...	...	...	...	...	...	...	
7	6.0	3.8	2.6	1.9	1.7	...	...	...	...	...	...	...	...	...	...	...	...	
8	6.0	3.8	2.6	1.9	1.7	...	...	...	...	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	7.0	4.5	3.0	2.2	2.0	...	...	...	...	...	...	...	...	...	...	...	...	
11	7.0	4.5	3.0	2.2	2.0	...	...	...	...	...	...	...	...	...	...	...	...	A08
12	7.0	4.5	3.0	2.2	2.0	...	...	...	...	...	...	...	...	...	...	...	...	A08
13	6.0	3.8	2.6	1.9	1.7	...	...	...	...	...	...	...	...	...	...	...	...	
14	6.0	3.8	2.6	1.9	1.7	...	...	...	...	...	...	...	...	...	...	...	...	
15	14.5	10.3	7.2	5.8	5.5	...	...	...	...	...	...	...	...	...	...	...	...	
16	14.5	10.3	7.2	5.8	5.5	...	...	...	...	...	...	...	...	...	...	...	...	
17	14.5	10.3	7.2	5.8	5.5	...	...	...	...	...	...	...	...	...	...	...	...	
18	14.5	10.3	7.2	5.8	5.5	...	...	...	...	...	...	...	...	...	...	...	...	
19	13.7	13.6	10.4	8.0	6.1	4.6	3.6	2.8	2.1	1.7	1.3	1.1	0.87	0.71	...	...	...	
20	17.6	13.6	10.4	8.0	6.1	4.6	3.6	2.8	2.1	1.7	1.3	1.1	0.87	0.71	...	...	...	
21	13.7	13.6	10.4	8.0	6.1	4.6	3.6	2.8	2.1	1.7	1.3	1.1	0.87	0.71	...	...	...	
22	17.6	13.6	10.4	8.0	6.1	4.6	3.6	2.8	2.1	1.7	1.3	1.1	0.87	0.71	...	...	...	
23	13.7	13.6	10.4	8.0	6.1	4.6	3.6	2.8	2.1	1.7	1.3	1.1	0.87	0.71	...	...	...	
24	17.6	13.6	10.4	8.0	6.1	4.6	3.6	2.8	2.1	1.7	1.3	1.1	0.87	0.71	...	...	...	
25	13.7	13.6	10.4	8.0	6.1	4.6	3.6	2.8	2.1	1.7	1.3	1.1	0.87	0.71	...	...	...	
26	17.6	13.6	10.4	8.0	6.1	4.6	3.6	2.8	2.1	1.7	1.3	1.1	0.87	0.71	...	...	...	
27	15.5	15.4	15.4	15.3	15.3	14.5	11.2	8.7	6.6	5.1	3.9	3.0	2.3	1.8	1.4	1.1	0.73	
28	20.9	20.9	20.8	20.7	18.1	14.5	11.2	8.7	6.6	5.1	3.9	3.0	2.3	1.8	1.4	1.1	0.73	
29	15.5	15.4	15.4	15.3	15.3	14.5	11.2	8.7	6.6	5.1	3.9	3.0	2.3	1.8	1.4	1.1	0.73	
30	20.9	20.9	20.8	20.7	18.1	14.5	11.2	8.7	6.6	5.1	3.9	3.0	2.3	1.8	1.4	1.1	0.73	
31	15.5	15.4	15.4	15.3	15.3	14.5	11.2	8.7	6.6	5.1	3.9	3.0	2.3	1.8	1.4	1.1	0.73	
32	20.9	20.9	20.8	20.7	18.1	14.5	11.2	8.7	6.6	5.1	3.9	3.0	2.3	1.8	1.4	1.1	0.73	
33	15.5	15.4	15.4	15.3	15.3	14.5	11.2	8.7	6.6	5.1	3.9	3.0	2.3	1.8	1.4	1.1	0.73	
34	20.9	20.9	20.8	20.7	18.1	14.5	11.2	8.7	6.6	5.1	3.9	3.0	2.3	1.8	1.4	1.1	0.73	
35	26.4	26.3	26.2	26.1	20.0	15.0	11.6	8.5	6.7	4.9	3.8	2.6	1.9	...	...	...	...	07 A08
36	19.6	19.5	19.4	19.3	19.3	15.0	11.6	8.5	6.7	4.9	3.8	2.6	1.9	...	...	...	...	07 A08
37	26.4	26.3	26.2	26.1	20.0	15.0	11.6	8.5	6.7	4.9	3.8	2.6	1.9	...	...	...	...	07 A08
38	19.6	19.5	19.4	19.3	19.3	15.0	11.6	8.5	6.7	4.9	3.8	2.6	1.9	...	...	...	...	07 A08
39	26.4	26.3	26.2	26.1	20.0	15.0	11.6	8.5	6.7	4.9	3.8	2.6	1.9	...	...	...	...	07 A08
40	19.6	19.5	19.4	19.3	19.3	15.0	11.6	8.5	6.7	4.9	3.8	2.6	1.9	...	...	...	...	07 A08

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/Condition/ Temper
A08 07	1	60Ni–22Cr–9Mo–3.5Cb	Smls. & wld. fittings	SB-366	...	N06625	Annealed
A08 07	2	60Ni–22Cr–9Mo–3.5Cb	Bar	SB-446	1	N06625	Annealed
A08 07	3	60Ni–22Cr–9Mo–3.5Cb	Forgings	SB-564	...	N06625	Annealed
07	4	...	...	...	...	...	...
A08 07	5	60Ni–22Cr–9Mo–3.5Cb	Plate, sheet, strip	SB-443	1	N06625	Annealed
A08	6	60Ni–22Cr–9Mo–3.5Cb	Plate, sheet, strip	SB-443	1	N06625	Annealed
A08 07	7	60Ni–22Cr–9Mo–3.5Cb	Smls. pipe	SB-444	1	N06625	Annealed
A08 07	8	60Ni–22Cr–9Mo–3.5Cb	Bar	SB-446	1	N06625	Annealed
07	9	...	...	...	...	...	...
A08 07	10	60Ni–22Cr–9Mo–3.5Cb	Forgings	SB-564	...	N06625	Annealed
A08	11	60Ni–22Cr–9Mo–3.5Cb	Wld. tube	SB-704	...	N06625	Annealed
A08 07	12	60Ni–22Cr–9Mo–3.5Cb	Wld. pipe	SB-705	1	N06625	Annealed
	13	Ni–Cr–Mo–W	Forged fittings	SB-462	...	N06686	Solution ann.
	14	Ni–Cr–Mo–W	Forged fittings	SB-462	...	N06686	Solution ann.
	15	Ni–Cr–Mo–W	Forgings	SB-564	...	N06686	Solution ann.
	16	Ni–Cr–Mo–W	Forgings	SB-564	...	N06686	Solution ann.
	17	Ni–Cr–Mo–W	Rod	SB-574	...	N06686	Solution ann.
	18	Ni–Cr–Mo–W	Rod	SB-574	...	N06686	Solution ann.
	19	Ni–Cr–Mo–W	Plate, sheet, strip	SB-575	...	N06686	Solution ann.
	20	Ni–Cr–Mo–W	Plate, sheet, strip	SB-575	...	N06686	Solution ann.
	21	Ni–Cr–Mo–W	Wld. pipe	SB-619	...	N06686	Solution ann.
	22	Ni–Cr–Mo–W	Wld. pipe	SB-619	...	N06686	Solution ann.
	23	Ni–Cr–Mo–W	Smls. pipe & tube	SB-622	...	N06686	Solution ann.
	24	Ni–Cr–Mo–W	Smls. pipe & tube	SB-622	...	N06686	Solution ann.
	25	Ni–Cr–Mo–W	Wld. tube	SB-626	...	N06686	Solution ann.
	26	Ni–Cr–Mo–W	Wld. tube	SB-626	...	N06686	Solution ann.
	27	58Ni–29Cr–9Fe	Bar, rod	SB-166	...	N06690	Annealed
	28	58Ni–29Cr–9Fe	Bar, rod	SB-166	...	N06690	Annealed
	29	58Ni–29Cr–9Fe	Plate, sheet, strip	SB-168	...	N06690	Annealed
	30	58Ni–29Cr–9Fe	Plate, sheet, strip	SB-168	...	N06690	Annealed
	31	58Ni–29Cr–9Fe	Smls. pipe & tube	SB-167	...	N06690	Cold drawn/ann.
	32	58Ni–29Cr–9Fe	Smls. pipe & tube	SB-167	...	N06690	Cold drawn/ann.
	33	49Ni–25Cr–18Fe–6Mo	Plate, sheet, strip	SB-582	...	N06975	Solution ann.
	34	49Ni–25Cr–18Fe–6Mo	Plate, sheet, strip	SB-582	...	N06975	Solution ann.
	35	49Ni–25Cr–18Fe–6Mo	Wld. pipe	SB-619	...	N06975	Solution ann.
	36	49Ni–25Cr–18Fe–6Mo	Wld. pipe	SB-619	...	N06975	Solution ann.
	37	49Ni–25Cr–18Fe–6Mo	Smls. pipe & tube	SB-622	...	N06975	Solution ann.
	38	49Ni–25Cr–18Fe–6Mo	Smls. pipe & tube	SB-622	...	N06975	Solution ann.
	39	49Ni–25Cr–18Fe–6Mo	Wld. tube	SB-626	...	N06975	Solution ann.
	40	49Ni–25Cr–18Fe–6Mo	Wld. tube	SB-626	...	N06975	Solution ann.

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	...	43	110	50	1100	NP	1200	650	NFN-17	G23, T16, W12	07 A08
2	$4 < t \le 10$	43	110	50	1100	800	1200	650	NFN-17	G23, T16	07 A08
3	$4 < t \le 10$	43	110	50	1100	800	1200	650	NFN-17	G23, T16	07 A08
4	...	...	...	...	...	...	...	...	...	...	07
5	...	43	110	55	1100	800	1200	650	NFN-17	G23, T16	07 A08
6	...	43	120	60	1100	NP	1200	650	NFN-17	G22, G23, T16	A08
7	...	43	120	60	1100	800	1200	650	NFN-17	G23, T16	07 A08
8	≤ 4	43	120	60	1100	800	1200	650	NFN-17	G22, G23, T16	07 A08
9	...	...	...	...	...	...	...	...	...	...	07
10	≤ 4	43	120	60	1100	800	1200	650	NFN-17	G22, G23, T16	07 A08
11	...	43	120	60	1100	800	1200	650	NFN-17	G14, G23, T16	A08
12	...	43	120	60	1100	NP	1200	650	NFN-17	G14, G23, T16	07 A08
13	$\le 3\frac{1}{2}$	43	100	45	NP	NP	800	NP	NFN-10	G5	
14	$\le 3\frac{1}{2}$	43	100	45	NP	NP	800	NP	NFN-10	...	
15	...	43	100	45	NP	NP	800	NP	NFN-10	G5	
16	...	43	100	45	NP	NP	800	NP	NFN-10	...	
17	$\le 3\frac{1}{2}$	43	100	45	NP	NP	800	NP	NFN-10	G5	
18	$\le 3\frac{1}{2}$	43	100	45	NP	NP	800	NP	NFN-10	...	
19	...	43	100	45	NP	NP	800	NP	NFN-10	G5	
20	...	43	100	45	NP	NP	800	NP	NFN-10	...	
21	≤ 8	43	100	45	NP	NP	800	NP	NFN-10	G5, G14	
22	≤ 8	43	100	45	NP	NP	800	NP	NFN-10	G14	
23	...	43	100	45	NP	NP	800	NP	NFN-10	G5	
24	...	43	100	45	NP	NP	800	NP	NFN-10	...	
25	$\le 3\frac{1}{2}$	43	100	45	NP	NP	800	NP	NFN-10	G5, G14	
26	$\le 3\frac{1}{2}$	43	100	45	NP	NP	800	NP	NFN-10	G14	
27	...	43	85	35	NP	NP	850	650	NFN-4	...	
28	...	43	85	35	NP	NP	850	650	NFN-4	G5	
29	...	43	85	35	NP	NP	850	650	NFN-4	...	
30	...	43	85	35	NP	NP	850	650	NFN-4	G5	
31	...	43	85	35	1200	NP	850	650	NFN-4	H3, T12	
32	...	43	85	35	1200	NP	850	650	NFN-4	G5, H3, T12	
33	...	45	85	32	NP	NP	800	650	NFN-11	...	
34	...	45	85	32	NP	NP	800	650	NFN-11	G5	
35	...	45	85	32	NP	NP	800	650	NFN-11	G14	
36	...	45	85	32	NP	NP	800	650	NFN-11	G5, G14	
37	...	45	85	32	NP	NP	800	650	NFN-11	...	
38	...	45	85	32	NP	NP	800	650	NFN-11	G5	
39	...	45	85	32	NP	NP	800	650	NFN-11	G14	
40	...	45	85	32	NP	NP	800	650	NFN-11	G5, G14	

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	950
A08 07	1	31.4	...	31.4	...	31.4	...	30.8	...	30.2	...	29.7	29.4	29.1	28.9	28.6	28.3	28.0	27.7
A08 07	2	31.4	...	31.4	...	31.4	...	30.8	...	30.2	...	29.7	29.4	29.1	28.9	28.6	28.3	28.0	27.7
A08 07	3	31.4	...	31.4	...	31.4	...	30.8	...	30.2	...	29.7	29.4	29.1	28.9	28.6	28.3	28.0	27.7
07	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
A08 07	5	31.4	...	31.4	...	31.4	...	30.8	...	30.2	...	29.7	29.4	29.1	28.9	28.6	28.3	28.0	27.7
A08	6	34.3	...	34.3	...	34.3	...	33.6	...	32.9	...	32.4	32.1	31.8	31.5	31.2	30.9	30.6	30.3
A08 07	7	34.3	...	34.3	...	34.3	...	33.6	...	32.9	...	32.4	32.1	31.8	31.5	31.2	30.9	30.6	30.3
A08 07	8	34.3	...	34.3	...	34.3	...	33.6	...	32.9	...	32.4	32.1	31.8	31.5	31.2	30.9	30.6	30.3
07	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
A08 07	10	34.3	...	34.3	...	34.3	...	33.6	...	32.9	...	32.4	32.1	31.8	31.5	31.2	30.9	30.6	30.3
A08	11	29.1	...	29.1	...	29.1	...	28.5	...	28.0	...	27.5	27.3	27.0	26.8	26.5	26.3	26.0	25.7
A08 07	12	29.1	...	29.1	...	29.1	...	28.5	...	28.0	...	27.5	27.3	27.0	26.8	26.5	26.3	26.0	25.7
	13	28.6	...	28.6	...	28.2	...	27.2	...	26.5	...	25.9	25.7	25.4	25.2	24.9	...	...	...
	14	28.6	...	24.9	...	23.4	...	22.5	...	21.6	...	20.8	20.4	20.1	19.9	19.9	...	...	...
	15	28.6	...	28.6	...	28.2	...	27.2	...	26.5	...	25.9	25.7	25.4	25.2	24.9	...	...	...
	16	28.6	...	24.9	...	23.4	...	22.5	...	21.6	...	20.8	20.4	20.1	19.9	19.9	...	...	...
	17	28.6	...	28.6	...	28.2	...	27.2	...	26.5	...	25.9	25.7	25.4	25.2	24.9	...	...	...
	18	28.6	...	24.9	...	23.4	...	22.5	...	21.6	...	20.8	20.4	20.1	19.9	19.9	...	...	...
	19	28.6	...	28.6	...	28.2	...	27.2	...	26.5	...	25.9	25.7	25.4	25.2	24.9	...	...	...
	20	28.6	...	24.9	...	23.4	...	22.5	...	21.6	...	20.8	20.4	20.1	19.9	19.9	...	...	...
	21	24.3	...	24.3	...	24.0	...	23.1	...	22.5	...	22.0	21.8	21.6	21.4	21.2	...	...	...
	22	24.3	...	21.2	...	19.9	...	19.1	...	18.4	...	17.7	17.3	17.1	16.9	16.9	...	...	...
	23	28.6	...	28.6	...	28.2	...	27.2	...	26.5	...	25.9	25.7	25.4	25.2	24.9	...	...	...
	24	28.6	...	24.9	...	23.4	...	22.5	...	21.6	...	20.8	20.4	20.1	19.9	19.9	...	...	...
	25	24.3	...	24.3	...	24.0	...	23.1	...	22.5	...	22.0	21.8	21.6	21.4	21.2	...	...	...
	26	24.3	...	21.2	...	19.9	...	19.1	...	18.4	...	17.7	17.3	17.1	16.9	16.9	...	...	...
	27	23.3	...	21.1	...	19.9	...	19.1	...	18.6	...	18.4	18.4	18.4	18.4	18.4	18.4	...	...
	28	23.3	...	23.3	...	23.3	...	23.3	...	23.1	...	22.9	22.9	22.8	22.7	22.6	22.5	...	...
	29	23.3	...	21.1	...	19.9	...	19.1	...	18.6	...	18.4	18.4	18.4	18.4	18.4	18.4	...	...
	30	23.3	...	23.3	...	23.3	...	23.3	...	23.1	...	22.9	22.9	22.8	22.7	22.6	22.5	...	...
	31	23.3	...	21.1	...	19.9	...	19.1	...	18.6	...	18.4	18.4	18.4	18.4	18.4	18.4	18.3	*16.5*
	32	23.3	...	23.3	...	23.3	...	23.3	...	23.1	...	22.9	22.9	22.8	22.7	22.6	22.5	22.2	*16.5*
	33	21.3	...	19.5	...	18.5	...	17.5	...	16.5	...	15.6	15.3	15.0	14.8	14.7	...	...	...
	34	21.3	...	21.3	...	21.3	...	21.3	...	21.3	...	21.1	20.6	20.2	20.0	19.8	...	...	...
	35	18.1	...	16.6	...	15.7	...	14.9	...	14.0	...	13.3	13.0	12.7	12.6	12.5	...	...	...
	36	18.1	...	18.1	...	18.1	...	18.1	...	18.1	...	17.9	17.5	17.2	17.0	16.8	...	...	...
	37	21.3	...	19.5	...	18.5	...	17.5	...	16.5	...	15.6	15.3	15.0	14.8	14.7	...	...	...
	38	21.3	...	21.3	...	21.3	...	21.3	...	21.3	...	21.1	20.6	20.2	20.0	19.8	...	...	...
	39	18.1	...	16.6	...	15.7	...	14.9	...	14.0	...	13.3	13.0	12.7	12.6	12.5	...	...	...
	40	18.1	...	18.1	...	18.1	...	18.1	...	18.1	...	17.9	17.5	17.2	17.0	16.8	...	...	...

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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																	
	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	
1	27.4	27.0	26.6	*21.0*	*13.2*	...	...	...	...	...	...	...	...	...	...	...	...	07 A08
2	27.4	27.0	26.6	*21.0*	*13.2*	...	...	...	...	...	...	...	...	...	...	...	...	07 A08
3	27.4	27.0	26.6	*21.0*	*13.2*	...	...	...	...	...	...	...	...	...	...	...	...	07 A08
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
5	27.4	27.0	26.6	*21.0*	*13.2*	...	...	...	...	...	...	...	...	...	...	...	...	07 A08
6	29.9	29.5	29.0	*21.0*	*13.2*	...	...	...	...	...	...	...	...	...	...	...	...	A08
7	29.9	29.5	29.0	*21.0*	*13.2*	...	...	...	...	...	...	...	...	...	...	...	...	07 A08
8	29.9	29.5	29.0	*21.0*	*13.2*	...	...	...	...	...	...	...	...	...	...	...	...	07 A08
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
10	29.9	29.5	29.0	*21.0*	*13.2*	...	...	...	...	...	...	...	...	...	...	...	...	07 A08
11	25.4	25.1	24.7	*17.9*	*11.2*	...	...	...	...	...	...	...	...	...	...	...	...	A08
12	25.4	25.1	24.7	*17.9*	*11.2*	...	...	...	...	...	...	...	...	...	...	...	...	07 A08
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	*11.6*	*9.0*	*6.5*	*4.5*	*3.0*	...	...	...	...	...	...	...	...	...	...	...	...	
32	*11.6*	*9.0*	*6.5*	*4.5*	*3.0*	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/Condition/ Temper
1	47Ni–22Cr–20Fe–7Mo	Rod	SB-581	...	N06985	Annealed
2	47Ni–22Cr–20Fe–7Mo	Rod	SB-581	...	N06985	Annealed
3	47Ni–22Cr–20Fe–7Mo	Plate, sheet, strip	SB-582	...	N06985	Annealed
4	47Ni–22Cr–20Fe–7Mo	Plate, sheet, strip	SB-582	...	N06985	Annealed
5	47Ni–22Cr–20Fe–7Mo	Smls. & wld. fittings	SB-366	...	N06985	Annealed
6	47Ni–22Cr–20Fe–7Mo	Rod	SB-581	...	N06985	Annealed
7	47Ni–22Cr–20Fe–7Mo	Rod	SB-581	...	N06985	Annealed
8	47Ni–22Cr–20Fe–7Mo	Plate, sheet, strip	SB-582	...	N06985	Annealed
9	47Ni–22Cr–20Fe–7Mo	Plate, sheet, strip	SB-582	...	N06985	Annealed
10	47Ni–22Cr–20Fe–7Mo	Wld. pipe	SB-619	...	N06985	Annealed
11	47Ni–22Cr–20Fe–7Mo	Wld. pipe	SB-619	...	N06985	Annealed
12	47Ni–22Cr–20Fe–7Mo	Smls. pipe & tube	SB-622	...	N06985	Annealed
13	47Ni–22Cr–20Fe–7Mo	Smls. pipe & tube	SB-622	...	N06985	Annealed
14	47Ni–22Cr–20Fe–7Mo	Wld. tube	SB-626	...	N06985	Annealed
15	47Ni–22Cr–20Fe–7Mo	Wld. tube	SB-626	...	N06985	Annealed
16	35Ni–35Fe–20Cr–Cb	Forgings	SB-462	...	N08020	Annealed
17	35Ni–35Fe–20Cr–Cb	Forgings	SB-462	...	N08020	Annealed
18	35Ni–35Fe–20Cr–Cb	Plate	SB-463	...	N08020	Annealed
19	35Ni–35Fe–20Cr–Cb	Plate	SB-463	...	N08020	Annealed
20	35Ni–35Fe–20Cr–Cb	Bar	SB-473	...	N08020	Annealed
21	35Ni–35Fe–20Cr–Cb	Bar	SB-473	...	N08020	Annealed
22	35Ni–35Fe–20Cr–Cb	Smls. pipe & tube	SB-729	...	N08020	Annealed
23	35Ni–35Fe–20Cr–Cb	Smls. pipe & tube	SB-729	...	N08020	Annealed
24	35Ni–35Fe–20Cr–Cb	Wld. pipe	SB-464	...	N08020	Wld. ann.
25	35Ni–35Fe–20Cr–Cb	Wld. pipe	SB-464	...	N08020	Wld. ann.
26	35Ni–35Fe–20Cr–Cb	Wld. pipe	SB-464	...	N08020	Wld. ann.
27	35Ni–35Fe–20Cr–Cb	Wld. tube	SB-468	...	N08020	Wld. ann.
28	35Ni–35Fe–20Cr–Cb	Wld. tube	SB-468	...	N08020	Wld. ann.
29	35Ni–35Fe–20Cr–Cb	Wld. tube	SB-468	...	N08020	Wld. ann.
30	35Ni–35Fe–20Cr–Cb	Smls. & wld. fittings	SB-366	...	N08020	Annealed
31	37Ni–33Fe–23Cr–4Mo–Cu	Plate, sheet, strip	SB-463	...	N08024	Annealed
32	37Ni–33Fe–23Cr–4Mo–Cu	Plate, sheet, strip	SB-463	...	N08024	Annealed
33	37Ni–33Fe–23Cr–4Mo–Cu	Wld. pipe	SB-464	...	N08024	Wld. ann.
34	37Ni–33Fe–23Cr–4Mo–Cu	Wld. pipe	SB-464	...	N08024	Wld. ann.
35	37Ni–33Fe–23Cr–4Mo–Cu	Wld. tube	SB-468	...	N08024	Wld. ann.
36	37Ni–33Fe–23Cr–4Mo–Cu	Wld. tube	SB-468	...	N08024	Wld. ann.
37	35Ni–30Fe–24Cr–6Mo–Cu	Plate, sheet, strip	SB-463	...	N08026	Annealed
38	35Ni–30Fe–24Cr–6Mo–Cu	Plate, sheet, strip	SB-463	...	N08026	Annealed
39	35Ni–30Fe–24Cr–6Mo–Cu	Wld. pipe	SB-464	...	N08026	Wld. ann.
40	35Ni–30Fe–24Cr–6Mo–Cu	Wld. pipe	SB-464	...	N08026	Wld. ann.
41	35Ni–30Fe–24Cr–6Mo–Cu	Wld. tube	SB-468	...	N08026	Wld. ann.
42	35Ni–30Fe–24Cr–6Mo–Cu	Wld. tube	SB-468	...	N08026	Wld. ann.

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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																
	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800
1	22.3	*18.5*	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...	...	...	...
2	16.5	16.5	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...	...	...	...
3	22.3	*18.5*	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...	...	...	...
4	16.5	16.5	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...	...	...	...
5	22.3	*18.5*	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...	...	...	...
6	16.5	16.5	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...	...	...	...
7	22.3	*18.5*	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...	...	...	...
8	22.3	*18.5*	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...	...	...	...
9	16.5	16.5	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	19.0	*15.7*	*12.8*	*10.4*	*8.3*	*6.6*	...	...	...	...	...	...	...	...	...	...	...
13	14.0	14.0	*12.8*	*10.4*	*8.3*	*6.6*	...	...	...	...	...	...	...	...	...	...	...
14	22.3	*18.5*	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...	...	...	...
15	16.5	16.5	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	19.0	*15.7*	*12.8*	*10.4*	*8.3*	*6.6*	...	...	...	...	...	...	...	...	...	...	...
19	14.0	14.0	*12.8*	*10.4*	*8.3*	*6.6*	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/Condition/ Temper
	1	65Ni–28Mo–2Fe	Plate, sheet, strip	SB-333	...	N10665	Solution ann.
	2	65Ni–28Mo–2Fe	Plate, sheet, strip	SB-333	...	N10665	Solution ann.
	3	65Ni–28Mo–2Fe	Rod	SB-335	...	N10665	Solution ann.
	4	65Ni–28Mo–2Fe	Rod	SB-335	...	N10665	Solution ann.
	5	65Ni–28Mo–2Fe	Forgings	SB-462	...	N10665	Solution ann.
	6	65Ni–28Mo–2Fe	Forgings	SB-462	...	N10665	Solution ann.
A08	7	65Ni–28Mo–2Fe	Forgings	SB-564	...	N10665	Solution ann.
A08	8	65Ni–28Mo–2Fe	Forgings	SB-564	...	N10665	Solution ann.
	9	65Ni–28Mo–2Fe	Wld. pipe	SB-619	...	N10665	Solution ann.
	10	65Ni–28Mo–2Fe	Wld. pipe	SB-619	...	N10665	Solution ann.
	11	65Ni–28Mo–2Fe	Smls. pipe & tube	SB-622	...	N10665	Solution ann.
	12	65Ni–28Mo–2Fe	Smls. pipe & tube	SB-622	...	N10665	Solution ann.
	13	65Ni–28Mo–2Fe	Wld. tube	SB-626	...	N10665	Solution ann.
	14	65Ni–28Mo–2Fe	Wld. tube	SB-626	...	N10665	Solution ann.
	15	65Ni–29.5Mo–2Fe–2Cr	Plate, sheet, strip	SB-333	...	N10675	Solution ann.
	16	65Ni–29.5Mo–2Fe–2Cr	Plate, sheet, strip	SB-333	...	N10675	Solution ann.
	17	65Ni–29.5Mo–2Fe–2Cr	Rod	SB-335	...	N10675	Solution ann.
	18	65Ni–29.5Mo–2Fe–2Cr	Rod	SB-335	...	N10675	Solution ann.
	19	65Ni–29.5Mo–2Fe–2Cr	Smls. & wld. fittings	SB-366	...	N10675	Solution ann.
	20	65Ni–29.5Mo–2Fe–2Cr	Forgings	SB-462	...	N10675	Solution ann.
	21	65Ni–29.5Mo–2Fe–2Cr	Forgings	SB-462	...	N10675	Solution ann.
	22	65Ni–29.5Mo–2Fe–2Cr	Forgings	SB-564	...	N10675	Solution ann.
	23	65Ni–29.5Mo–2Fe–2Cr	Forgings	SB-564	...	N10675	Solution ann.
	24	65Ni–29.5Mo–2Fe–2Cr	Wld. pipe	SB-619	...	N10675	Solution ann.
	25	65Ni–29.5Mo–2Fe–2Cr	Wld. pipe	SB-619	...	N10675	Solution ann.
	26	65Ni–29.5Mo–2Fe–2Cr	Smls. pipe & tube	SB-622	...	N10675	Solution ann.
	27	65Ni–29.5Mo–2Fe–2Cr	Smls. pipe & tube	SB-622	...	N10675	Solution ann.
	28	65Ni–29.5Mo–2Fe–2Cr	Wld. tube	SB-626	...	N10675	Solution ann.
	29	65Ni–29.5Mo–2Fe–2Cr	Wld. tube	SB-626	...	N10675	Solution ann.
	30	37Ni–30Co–28Cr–2.7Si	Smls. & wld. fittings	SB-366	...	N12160	Solution ann.
	31	37Ni–30Co–28Cr–2.7Si	Plate, sheet, strip	SB-435	...	N12160	Solution ann.
	32	37Ni–30Co–28Cr–2.7Si	Plate, sheet, strip	SB-435	...	N12160	Solution ann.
	33	37Ni–30Co–28Cr–2.7Si	Forgings	SB-564	...	N12160	Solution ann.
	34	37Ni–30Co–28Cr–2.7Si	Forgings	SB-564	...	N12160	Solution ann.
	35	37Ni–30Co–28Cr–2.7Si	Rod	SB-572	...	N12160	Solution ann.
	36	37Ni–30Co–28Cr–2.7Si	Rod	SB-572	...	N12160	Solution ann.
	37	37Ni–30Co–28Cr–2.7Si	Wld. pipe	SB-619	...	N12160	Solution ann.
	38	37Ni–30Co–28Cr–2.7Si	Wld. pipe	SB-619	...	N12160	Solution ann.
	39	37Ni–30Co–28Cr–2.7Si	Smls. pipe & tube	SB-622	...	N12160	Solution ann.
	40	37Ni–30Co–28Cr–2.7Si	Smls. pipe & tube	SB-622	...	N12160	Solution ann.
	41	37Ni–30Co–28Cr–2.7Si	Wld. tube	SB-626	...	N12160	Solution ann.
	42	37Ni–30Co–28Cr–2.7Si	Wld. tube	SB-626	...	N12160	Solution ann.

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	...	44	110	51	NP	800 (Cl. 3 only)	800	650	NFN-16	...	
2	...	44	110	51	NP	800 (Cl. 3 only)	800	NP	NFN-16	G5	
3	...	44	110	51	NP	800 (Cl. 3 only)	800	650	NFN-16	G13	
4	...	44	110	51	NP	800 (Cl. 3 only)	800	650	NFN-16	G5, G13	
5	...	44	110	51	NP	NP	800	NP	NFN-16	...	
6	...	44	110	51	NP	NP	800	NP	NFN-16	G5	
7	...	44	110	51	NP	NP	800	NP	NFN-16	...	A08
8	...	44	110	51	NP	NP	800	NP	NFN-16	G5	A08
9	...	44	110	51	NP	NP	800	650	NFN-16	G14	
10	...	44	110	51	NP	NP	800	650	NFN-16	G5, G14	
11	...	44	110	51	NP	800 (Cl. 3 only)	800	650	NFN-16	...	
12	...	44	110	51	NP	800 (Cl. 3 only)	800	650	NFN-16	G5	
13	...	44	110	51	NP	NP	800	650	NFN-16	G5, G14	
14	...	44	110	51	NP	NP	800	650	NFN-16	G14	
15	...	44	110	51	NP	NP	800	650	NFN-16	G5	
16	...	44	110	51	NP	NP	800	650	NFN-16	...	
17	...	44	110	51	NP	NP	800	650	NFN-16	G5	
18	...	44	110	51	NP	NP	800	650	NFN-16	...	
19	...	44	110	51	NP	NP	800	650	NFN-16	G5, W12	
20	...	44	110	51	NP	NP	800	NP	NFN-16	G5	
21	...	44	110	51	NP	NP	800	NP	NFN-16	...	
22	...	44	110	51	NP	NP	800	650	NFN-16	G5	
23	...	44	110	51	NP	NP	800	650	NFN-16	...	
24	...	44	110	51	NP	NP	800	650	NFN-16	G5, G14	
25	...	44	110	51	NP	NP	800	650	NFN-16	G14	
26	...	44	110	51	NP	NP	800	650	NFN-16	G5	
27	...	44	110	51	NP	NP	800	650	NFN-16	...	
28	...	44	110	51	NP	NP	800	650	NFN-16	G5, G14	
29	...	44	110	51	NP	NP	800	650	NFN-16	G14	
30	...	46	90	35	NP	NP	1500	NP	NFN-13	G5, T14, W12	
31	...	46	90	35	NP	NP	1500	NP	NFN-13	T14	
32	...	46	90	35	NP	NP	1500	NP	NFN-13	G5, T14	
33	...	46	90	35	NP	NP	1500	NP	NFN-13	T14	
34	...	46	90	35	NP	NP	1500	NP	NFN-13	G5, T14	
35	...	46	90	35	NP	NP	1500	NP	NFN-13	T14	
36	...	46	90	35	NP	NP	1500	NP	NFN-13	G5, T14	
37	...	46	90	35	NP	NP	1500	NP	NFN-13	G14, T14	
38	...	46	90	35	NP	NP	1500	NP	NFN-13	G5, G14, T14	
39	...	46	90	35	NP	NP	1500	NP	NFN-13	T14	
40	...	46	90	35	NP	NP	1500	NP	NFN-13	G5, T14	
41	...	46	90	35	NP	NP	1500	NP	NFN-13	G14, T14	
42	...	46	90	35	NP	NP	1500	NP	NFN-13	G5, G14, T14	

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	950
	1	31.4	...	31.4	...	30.2	...	28.9	...	27.9	...	27.2	26.9	26.6	26.2	25.8	...	...	...
	2	31.4	...	31.4	...	31.4	...	31.4	...	31.4	...	31.2	31.1	30.9	30.7	30.6	...	...	...
	3	31.4	...	31.4	...	30.2	...	28.9	...	27.9	...	27.2	26.9	26.6	26.2	25.8	...	...	...
	4	31.4	...	31.4	...	31.4	...	31.4	...	31.4	...	31.2	31.1	30.9	30.7	30.6	...	...	...
	5	31.4	...	31.4	...	30.2	...	28.9	...	27.9	...	27.2	26.9	26.6	26.2	25.8	...	...	...
	6	31.4	...	31.4	...	31.4	...	31.4	...	31.4	...	31.2	31.1	30.9	30.7	30.6	...	...	...
A08	7	31.4	...	31.4	...	30.2	...	28.9	...	27.9	...	27.2	26.9	26.6	26.2	25.8	...	...	...
A08	8	31.4	...	31.4	...	31.4	...	31.4	...	31.4	...	31.2	31.1	30.9	30.7	30.6	...	...	...
	9	26.7	...	26.7	...	25.7	...	24.6	...	23.7	...	23.1	22.9	22.6	22.3	21.9	...	...	...
	10	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.5	26.4	26.3	26.1	26.0	...	...	...
	11	31.4	...	31.4	...	30.2	...	28.9	...	27.9	...	27.2	26.9	26.6	26.2	25.8	...	...	...
	12	31.4	...	31.4	...	31.4	...	31.4	...	31.4	...	31.2	31.1	30.9	30.7	30.6	...	...	...
	13	26.7	...	26.7	...	26.7	...	26.7	...	26.7	...	26.5	26.4	26.3	26.1	26.0	...	...	...
	14	26.7	...	26.7	...	25.7	...	24.6	...	23.7	...	23.1	22.9	22.6	22.3	21.9	...	...	...
	15	31.4	...	31.4	...	31.4	...	31.4	...	31.1	...	30.6	30.4	30.2	30.1	29.9	...	...	...
	16	31.4	...	31.4	...	30.3	...	28.8	...	27.4	...	26.3	25.8	25.4	25.1	24.8	...	...	...
	17	31.4	...	31.4	...	31.4	...	31.4	...	31.1	...	30.6	30.4	30.2	30.1	29.9	...	...	...
	18	31.4	...	31.4	...	30.3	...	28.8	...	27.4	...	26.3	25.8	25.4	25.1	24.8	...	...	...
	19	31.4	...	31.4	...	31.4	...	31.4	...	31.1	...	30.6	30.4	30.2	30.1	29.9	...	...	...
	20	31.4	...	31.4	...	31.4	...	31.4	...	31.1	...	30.6	30.4	30.2	30.1	29.9	...	...	...
	21	31.4	...	31.4	...	30.3	...	28.8	...	27.4	...	26.3	25.8	25.4	25.1	24.8	...	...	...
	22	31.4	...	31.4	...	31.4	...	31.4	...	31.1	...	30.6	30.4	30.2	30.1	29.9	...	...	...
	23	31.4	...	31.4	...	30.3	...	28.8	...	27.4	...	26.3	25.8	25.4	25.1	24.8	...	...	...
	24	26.7	...	26.7	...	26.7	...	26.7	...	26.4	...	26.0	25.8	25.7	25.6	25.4	...	...	...
	25	26.7	...	26.7	...	25.8	...	24.5	...	23.4	...	22.4	21.9	21.6	21.3	21.1	...	...	...
	26	31.4	...	31.4	...	31.4	...	31.4	...	31.1	...	30.6	30.4	30.2	30.1	29.9	...	...	...
	27	31.4	...	31.4	...	30.3	...	28.8	...	27.4	...	26.3	25.8	25.4	25.1	24.8	...	...	...
	28	26.7	...	26.7	...	26.7	...	26.7	...	26.4	...	26.0	25.8	25.7	25.6	25.4	...	...	...
	29	26.7	...	26.7	...	25.8	...	24.5	...	23.4	...	22.4	21.9	21.6	21.3	21.1	...	...	...
	30	23.3	...	23.3	...	23.3	...	22.2	...	20.3	...	19.0	18.6	18.4	18.3	18.3	18.3	18.3	18.3
	31	23.3	...	20.5	...	18.3	...	16.5	...	15.0	...	14.1	13.8	13.6	13.6	13.5	13.5	13.5	13.5
	32	23.3	...	23.3	...	23.3	...	22.2	...	20.3	...	19.0	18.6	18.4	18.3	18.3	18.3	18.3	18.3
	33	23.3	...	20.5	...	18.3	...	16.5	...	15.0	...	14.1	13.8	13.6	13.6	13.5	13.5	13.5	13.5
	34	23.3	...	23.3	...	23.3	...	22.2	...	20.3	...	19.0	18.6	18.4	18.3	18.3	18.3	18.3	18.3
	35	23.3	...	20.5	...	18.3	...	16.5	...	15.0	...	14.1	13.8	13.6	13.6	13.5	13.5	13.5	13.5
	36	23.3	...	23.3	...	23.3	...	22.2	...	20.3	...	19.0	18.6	18.4	18.3	18.3	18.3	18.3	18.3
	37	19.8	...	17.4	...	15.6	...	14.0	...	12.8	...	12.0	11.7	11.6	11.6	11.5	11.5	11.5	11.5
	38	19.8	...	19.8	...	19.8	...	18.9	...	17.3	...	16.2	15.8	15.6	15.6	15.6	15.6	15.6	15.6
	39	23.3	...	20.5	...	18.3	...	16.5	...	15.0	...	14.1	13.8	13.6	13.6	13.5	13.5	13.5	13.5
	40	23.3	...	23.3	...	23.3	...	22.2	...	20.3	...	19.0	18.6	18.4	18.3	18.3	18.3	18.3	18.3
	41	19.8	...	17.4	...	15.6	...	14.0	...	12.8	...	12.0	11.7	11.6	11.6	11.5	11.5	11.5	11.5
	42	19.8	...	19.8	...	19.8	...	18.9	...	17.3	...	16.2	15.8	15.6	15.6	15.6	15.6	15.6	15.6

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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																
	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800
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	16.6	*13.5*	*11.0*	*9.1*	*7.5*	*6.2*	*5.1*	*4.3*	*3.6*	*3.0*	*2.5*	...	...	...	...	...	...
31	13.5	*13.5*	*11.0*	*9.1*	*7.5*	*6.2*	*5.1*	*4.3*	*3.6*	*3.0*	*2.5*	...	...	...	...	...	...
32	16.6	*13.5*	*11.0*	*9.1*	*7.5*	*6.2*	*5.1*	*4.3*	*3.6*	*3.0*	*2.5*	...	...	...	...	...	...
33	13.5	*13.5*	*11.0*	*9.1*	*7.5*	*6.2*	*5.1*	*4.3*	*3.6*	*3.0*	*2.5*	...	...	...	...	...	...
34	16.6	*13.5*	*11.0*	*9.1*	*7.5*	*6.2*	*5.1*	*4.3*	*3.6*	*3.0*	*2.5*	...	...	...	...	...	...
35	13.5	*13.5*	*11.0*	*9.1*	*7.5*	*6.2*	*5.1*	*4.3*	*3.6*	*3.0*	*2.5*	...	...	...	...	...	...
36	16.6	*13.5*	*11.0*	*9.1*	*7.5*	*6.2*	*5.1*	*4.3*	*3.6*	*3.0*	*2.5*	...	...	...	...	...	...
37	11.5	*11.5*	*9.4*	*7.7*	*6.4*	*5.3*	*4.3*	*3.7*	*3.1*	*2.6*	*2.1*	...	...	...	...	...	...
38	14.1	*11.5*	*9.4*	*7.7*	*6.4*	*5.3*	*4.3*	*3.7*	*3.1*	*2.6*	*2.1*	...	...	...	...	...	...
39	13.5	*13.5*	*11.0*	*9.1*	*7.5*	*6.2*	*5.1*	*4.3*	*3.6*	*3.0*	*2.5*	...	...	...	...	...	...
40	16.6	*13.5*	*11.0*	*9.1*	*7.5*	*6.2*	*5.1*	*4.3*	*3.6*	*3.0*	*2.5*	...	...	...	...	...	...
41	11.5	*11.5*	*9.4*	*7.7*	*6.4*	*5.3*	*4.3*	*3.7*	*3.1*	*2.6*	*2.1*	...	...	...	...	...	...
42	14.1	*11.5*	*9.4*	*7.7*	*6.4*	*5.3*	*4.3*	*3.7*	*3.1*	*2.6*	*2.1*	...	...	...	...	...	...

A08
A08

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/Condition/ Temper
	1	59Ni–22Cr–14Mo–4Fe–3W	Castings	SA-494	CX2MW	N26022	Solution ann.
	2	53Ni–17Mo–16Cr–6Fe–5W	Castings	SA-494	CW-12MW/C	N30002	Annealed
	3	62Ni–28Mo–5Fe	Castings	SA-494	N-12MV/B	N30012	Annealed
	4	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Smls. & wld. fittings	SB-366	...	R20033	Solution ann.
	5	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Forged fittings	SB-462	...	R20033	Solution ann.
	6	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Forgings	SB-564	...	R20033	Solution ann.
	7	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Wld. pipe	SB-619	...	R20033	Solution ann.
	8	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Smls. pipe & tube	SB-622	...	R20033	Solution ann.
	9	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Plate, sheet, strip	SB-625	...	R20033	Solution ann.
	10	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Wld. tube	SB-626	...	R20033	Solution ann.
	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	Plate, sheet, strip	SB-435	...	R30556	Annealed
	14	21Ni–30Fe–22Cr–18Co–3Mo–3W	Rod	SB-572	...	R30556	Annealed
	15	21Ni–30Fe–22Cr–18Co–3Mo–3W	Rod	SB-572	...	R30556	Annealed
	16	21Ni–30Fe–22Cr–18Co–3Mo–3W	Wld. pipe	SB-619	...	R30556	Annealed
	17	21Ni–30Fe–22Cr–18Co–3Mo–3W	Wld. pipe	SB-619	...	R30556	Annealed
	18	21Ni–30Fe–22Cr–18Co–3Mo–3W	Smls. pipe & tube	SB-622	...	R30556	Annealed
	19	21Ni–30Fe–22Cr–18Co–3Mo–3W	Smls. pipe & tube	SB-622	...	R30556	Annealed
	20	21Ni–30Fe–22Cr–18Co–3Mo–3W	Wld. tube	SB-626	...	R30556	Annealed
	21	21Ni–30Fe–22Cr–18Co–3Mo–3W	Wld. tube	SB-626	...	R30556	Annealed
	22	Co–26Cr–9Ni–5Mo–3Fe–2W	Rod	SB-815	...	R31233	Solution ann.
	23	Co–26Cr–9Ni–5Mo–3Fe–2W	Plate, sheet, strip	SB-818	...	R31233	Solution ann.
07	24	Ti	Plate, sheet, strip	SB-265	1	R50250	Annealed
A08	25	Ti	Smls. tube	SB-338	1	R50250	Annealed
A08	26	Ti	Wld. tube	SB-338	1	R50250	Annealed
A08	27	Ti	Bar, billet	SB-348	1	R50250	Annealed
A08	28	Ti	Smls. & wld. fittings	SB-363	WPT1	R50250	Annealed
A08	29	Ti	Forgings	SB-381	F-1	R50250	Annealed
A08	30	Ti	Smls. pipe	SB-861	1	R50250	Annealed
A08	31	Ti	Wld. pipe	SB-862	1	R50250	Annealed
	32	Ti	Castings	SB-367	C-2	R50400	...
	33	Ti	Plate, sheet, strip	SB-265	2	R50400	Annealed
	34	Ti	Smls. tube	SB-338	2	R50400	Annealed
	35	Ti	Wld. tube	SB-338	2	R50400	Annealed
	36	Ti	Bar, billet	SB-348	2	R50400	Annealed
	37	Ti	Smls. & wld. fittings	SB-363	WPT2	R50400	Annealed
	38	Ti	Forgings	SB-381	F-2	R50400	Annealed
	39	Ti	Smls. pipe	SB-861	2	R50400	Annealed
	40	Ti	Wld. pipe	SB-862	2	R50400	Annealed

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	...	43	80	45	NP	NP	500	500	NFN-10	G15	
2	...	...	72	40	NP	NP	1000	650	NFN-10	G15, W1	
3	...	...	76	40	NP	NP	1000	650	NFN-10	G15, W1	
4	...	45	109	55	NP	NP	800	NP	NFN-10	W12	
5	...	45	109	55	NP	NP	800	NP	NFN-10	...	
6	...	45	109	55	NP	NP	800	NP	NFN-10	...	
7	...	45	109	55	NP	NP	800	NP	NFN-10	G14	
8	...	45	109	55	NP	NP	800	NP	NFN-10	...	
9	...	45	109	55	NP	NP	800	NP	NFN-10	...	
10	...	45	109	55	NP	NP	800	NP	NFN-10	G14	
11	...	45	109	55	NP	NP	800	NP	NFN-10	...	
12	...	45	100	45	NP	NP	1650	650	NFN-15	G4, T17	
13	...	45	100	45	NP	NP	1650	650	NFN-15	G4, G5, T16	
14	...	45	100	45	NP	NP	1650	650	NFN-15	G4, T17	
15	...	45	100	45	NP	NP	1650	650	NFN-15	G4, G5, T16	
16	...	45	100	45	NP	NP	1650	650	NFN-15	G4, G14, T16	
17	...	45	100	45	NP	NP	1650	650	NFN-15	G4, G5, G14, T15	
18	...	45	100	45	NP	NP	1650	650	NFN-15	G4, T17	
19	...	45	100	45	NP	NP	1650	650	NFN-15	G4, G5, T16	
20	...	45	100	45	NP	NP	1650	650	NFN-15	G4, G14, T16	
21	...	45	100	45	NP	NP	1650	650	NFN-15	G4, G5, G14, T15	
22	...	49	130	55	NP	NP	800	NP	NFN-15	G8	
23	...	49	130	55	NP	NP	800	NP	NFN-15	G8	
24	...	51	35	20	600	600	600	NP	NFT-3	...	07
25	...	51	35	20	600	600	600	NP	NFT-3	...	A08
26	...	51	35	20	600	600	600	NP	NFT-3	G14, W6	A08
27	...	51	35	20	600	600	600	NP	NFT-3	...	A08
28	...	51	35	20	NP	600	600	NP	NFT-3	W5, W12	A08
29	...	51	35	20	NP	600	600	NP	NFT-3	...	A08
30	...	51	35	20	600	600	600	NP	NFT-3	...	A08
31	...	51	35	20	600	600	600	NP	NFT-3	G14, W6	A08
32	...	51	50	40	NP	NP	500	500	NFT-2	W1	
33	...	51	50	40	600	600	600	600	NFT-2	...	
34	...	51	50	40	600	600	600	600	NFT-2	...	
35	...	51	50	40	600	600	600	600	NFT-2	G14, W6	
36	...	51	50	40	600	600	600	600	NFT-2	...	
37	...	51	50	40	NP	600	600	600	NFT-2	W5, W12	
38	...	51	50	40	NP	600	600	600	NFT-2	...	
39	...	51	50	40	600	600	600	600	NFT-2	...	
40	...	51	50	40	600	600	600	600	NFT-2	G14, W6	

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	950
	1	22.9	...	22.2	...	21.6	...	21.4	...	21.4	...	...	...	...	...	...	...	...	...
	2	20.6	...	19.5	...	18.5	...	18.5	...	18.1	...	16.9	16.9	16.9	16.9	16.9	16.9	16.5	16.1
	3	21.7	...	20.3	...	20.3	...	20.3	...	20.3	...	18.6	18.3	18.0	17.7	17.3	17.0	16.6	16.2
	4	31.1	...	30.9	...	28.1	...	26.1	...	24.8	...	23.6	23.5	23.1	22.9	22.6	...	...	...
	5	31.1	...	30.9	...	28.1	...	26.1	...	24.8	...	23.6	23.5	23.1	22.9	22.6	...	...	...
	6	31.1	...	30.9	...	28.1	...	26.1	...	24.8	...	23.6	23.5	23.1	22.9	22.6	...	...	...
	7	26.4	...	26.3	...	23.9	...	22.2	...	21.1	...	20.1	20.0	19.6	19.5	19.2	...	...	...
	8	31.1	...	30.9	...	28.1	...	26.1	...	24.8	...	23.6	23.5	23.1	22.9	22.6	...	...	...
	9	31.1	...	30.9	...	28.1	...	26.1	...	24.8	...	23.6	23.5	23.1	22.9	22.6	...	...	...
	10	26.4	...	26.3	...	23.9	...	22.2	...	21.1	...	20.1	20.0	19.6	19.5	19.2	...	...	...
	11	31.1	...	30.9	...	28.1	...	26.1	...	24.8	...	23.6	23.5	23.1	22.9	22.6	...	...	...
	12	28.6	...	25.6	...	23.1	...	21.3	...	20.1	...	19.3	18.9	18.7	18.4	18.2	18.0	17.8	17.6
	13	28.6	...	28.6	...	28.0	...	27.1	...	26.4	...	26.0	25.6	25.2	24.9	24.6	24.3	24.1	23.8
	14	28.6	...	25.6	...	23.1	...	21.3	...	20.1	...	19.3	18.9	18.7	18.4	18.2	18.0	17.8	17.6
	15	28.6	...	28.6	...	28.0	...	27.1	...	26.4	...	26.0	25.6	25.2	24.9	24.6	24.3	24.1	23.8
	16	24.3	...	21.8	...	19.6	...	18.1	...	17.1	...	16.4	16.1	15.9	15.7	15.5	15.3	15.2	15.0
	17	24.3	...	24.3	...	23.8	...	23.0	...	22.5	...	22.1	21.7	21.4	21.1	20.9	20.7	20.5	20.2
	18	28.6	...	25.6	...	23.1	...	21.3	...	20.1	...	19.3	18.9	18.7	18.4	18.2	18.0	17.8	17.6
	19	28.6	...	28.6	...	28.0	...	27.1	...	26.4	...	26.0	25.6	25.2	24.9	24.6	24.3	24.1	23.8
	20	24.3	...	21.8	...	19.6	...	18.1	...	17.1	...	16.4	16.1	15.9	15.7	15.5	15.3	15.2	15.0
	21	24.3	...	24.3	...	23.8	...	23.0	...	22.5	...	22.1	21.7	21.4	21.1	20.9	20.7	20.5	20.2
	22	34.2	...	32.1	...	28.5	...	25.5	...	23.4	...	22.0	21.5	21.2	20.9	20.5	...	...	...
	23	34.2	...	32.1	...	28.5	...	25.5	...	23.4	...	22.0	21.5	21.2	20.9	20.5	...	...	...
07	24	10.0	9.3	8.3	7.4	6.6	6.0	5.4	4.7	4.2	3.8	3.5	...	...	...	...	...	...	...
A08	25	10.0	9.3	8.3	7.4	6.6	6.0	5.5	4.7	4.2	3.8	3.5	...	...	...	...	...	...	...
A08	26	8.5	7.9	7.0	6.3	5.6	5.1	4.7	4.1	3.6	3.2	3.0	...	...	...	...	...	...	...
A08	27	10.0	9.3	8.3	7.4	6.6	6.0	5.5	4.7	4.2	3.8	3.5	...	...	...	...	...	...	...
A08	28	10.0	9.3	8.3	7.4	6.6	6.0	5.5	4.7	4.2	3.8	3.5	...	...	...	...	...	...	...
A08	29	10.0	9.3	8.3	7.4	6.6	6.0	5.5	4.7	4.2	3.8	3.5	...	...	...	...	...	...	...
A08	30	10.0	9.3	8.3	7.4	6.6	6.0	5.5	4.7	4.2	3.8	3.5	...	...	...	...	...	...	...
A08	31	8.5	7.9	7.0	6.3	5.6	5.1	4.7	4.1	3.6	3.2	3.0	...	...	...	...	...	...	...
	32	14.3	13.1	11.8	10.7	9.7	8.9	8.1	7.4	6.8	...	...	...	...	...	...	...	...	...
	33	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...	...
	34	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...	...
	35	12.1	11.7	10.6	9.6	8.8	8.1	7.5	7.0	6.5	6.0	5.5	...	...	...	...	...	...	...
	36	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...	...
	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	...	...	...	...	...	...	...
	39	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...	...
	40	12.1	11.7	10.6	9.6	8.8	8.1	7.5	7.0	6.5	6.0	5.5	...	...	...	...	...	...	...

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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																
	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	15.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	15.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	17.5	17.3	17.1	16.9	*13.6*	*10.9*	*8.8*	*7.0*	*5.6*	*4.5*	*3.6*	*2.7*	*2.1*	*1.6*	...	...	...
13	23.6	23.3	21.2	*17.0*	*13.6*	*10.9*	*8.8*	*7.0*	*5.6*	*4.5*	*3.6*	*2.7*	*2.1*	*1.6*	...	...	...
14	17.5	17.3	17.1	16.9	*13.6*	*10.9*	*8.8*	*7.0*	*5.6*	*4.5*	*3.6*	*2.7*	*2.1*	*1.6*	...	...	...
15	23.6	23.3	21.2	*17.0*	*13.6*	*10.9*	*8.8*	*7.0*	*5.6*	*4.5*	*3.6*	*2.7*	*2.1*	*1.6*	...	...	...
16	14.8	14.7	14.5	*14.4*	*11.6*	*9.3*	*7.5*	*6.0*	*4.8*	*3.8*	*3.1*	*2.3*	*1.8*	*1.4*	...	...	...
17	20.0	19.8	*18.0*	*14.4*	*11.6*	*9.3*	*7.5*	*6.0*	*4.8*	*3.8*	*3.1*	*2.3*	*1.8*	*1.4*	...	...	...
18	17.5	17.3	17.1	16.9	*13.6*	*10.9*	*8.8*	*7.0*	*5.6*	*4.5*	*3.6*	*2.7*	*2.1*	*1.6*	...	...	...
19	23.6	23.3	21.2	*17.0*	*13.6*	*10.9*	*8.8*	*7.0*	*5.6*	*4.5*	*3.6*	*2.7*	*2.1*	*1.6*	...	...	...
20	14.8	14.7	14.5	*14.4*	*11.6*	*9.3*	*7.5*	*6.0*	*4.8*	*3.8*	*3.1*	*2.3*	*1.8*	*1.4*	...	...	...
21	20.0	19.8	*18.0*	*14.4*	*11.6*	*9.3*	*7.5*	*6.0*	*4.8*	*3.8*	*3.1*	*2.3*	*1.8*	*1.4*	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

07
A08
A08
A08
A08
A08
A08
A08

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/Condition/ Temper
A08	1	Ti	Plate, sheet, strip	SB-265	2H	R50400	Annealed
A08	2	Ti	Smls. tube	SB-338	2H	R50400	Annealed
A08	3	Ti	Wld. tube	SB-338	2H	R50400	Annealed
A08	4	Ti	Bar, billet	SB-348	2H	R50400	Annealed
A08	5	Ti	Smls. fittings	SB-363	WPT2H	R50400	Annealed
A08	6	Ti	Wld. fittings	SB-363	WPT2HW	R50400	Annealed
A08	7	Ti	Forgings	SB-381	F-2H	R50400	Annealed
A08	8	Ti	Smls. pipe	SB-861	2H	R50400	Annealed
A08	9	Ti	Wld. pipe	SB-862	2H	R50400	Annealed
	10	Ti	Castings	SB-367	C-3	R50550	...
	11	Ti	Plate, sheet, strip	SB-265	3	R50550	Annealed
	12	Ti	Smls. tube	SB-338	3	R50550	Annealed
	13	Ti	Wld. tube	SB-338	3	R50550	Annealed
	14	Ti	Bar, billet	SB-348	3	R50550	Annealed
	15	Ti	Smls. & wld. fittings	SB-363	WPT3	R50550	Annealed
	16	Ti	Forgings	SB-381	F-3	R50550	Annealed
	17	Ti	Smls. pipe	SB-861	3	R50550	Annealed
	18	Ti	Wld. pipe	SB-862	3	R50550	Annealed
07	19	Ti–Pd	Plate, sheet, strip	SB-265	11	R52250	Annealed
07	20	Ti–Pd	Plate, sheet, strip	SB-265	17	R52252	Annealed
07	21	Ti–Ru	Plate, sheet, strip	SB-265	27	R52254	Annealed
	22	Ti–Pd	Plate, sheet, strip	SB-265	7	R52400	Annealed
	23	Ti–Pd	Smls. tube	SB-338	7	R52400	Annealed
	24	Ti–Pd	Wld. tube	SB-338	7	R52400	Annealed
	25	Ti–Pd	Bar, billet	SB-348	7	R52400	Annealed
	26	Ti–Pd	Smls. fittings	SB-363	WPT7	R52400	Annealed
	27	Ti–Pd	Wld. fittings	SB-363	WPT7W	R52400	Annealed
	28	Ti–Pd	Castings	SB-367	7B	R52400	Annealed
	29	Ti–Pd	Forgings	SB-381	F-7	R52400	Annealed
	30	Ti–Pd	Smls. pipe	SB-861	7	R52400	Annealed
	31	Ti–Pd	Wld. pipe	SB-862	7	R52400	Annealed
A08	32	Ti–0.15Pd	Plate, sheet, strip	SB-265	7H	R52400	Annealed
A08	33	Ti–0.15Pd	Smls. tube	SB-338	7H	R52400	Annealed
A08	34	Ti–0.15Pd	Wld. tube	SB-338	7H	R52400	Annealed
A08	35	Ti–0.15Pd	Bar, billet	SB-348	7H	R52400	Annealed
A08	36	Ti–0.15Pd	Smls. fittings	SB-363	WPT7H	R52400	Annealed
A08	37	Ti–0.15Pd	Wld. fittings	SB-363	WPT7HW	R52400	Annealed
A08	38	Ti–0.15Pd	Forgings	SB-381	F-7H	R52400	Annealed
A08	39	Ti–0.15Pd	Smls. pipe	SB-861	7H	R52400	Annealed
A08	40	Ti–0.15Pd	Wld. pipe	SB-862	7H	R52400	Annealed

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
2	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
3	...	51	58	40	NP	NP	500	NP	NFT-2	G14, W6	A08
4	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
5	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
6	...	51	58	40	NP	NP	500	NP	NFT-2	W12	A08
7	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
8	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
9	...	51	58	40	NP	NP	500	NP	NFT-2	W12	A08
10	...	52	65	55	NP	NP	500	NP	NFT-1	W1	
11	...	52	65	55	600	600	600	600	NFT-1	...	
12	...	52	65	55	600	600	600	600	NFT-1	...	
13	...	52	65	55	600	600	600	600	NFT-1	G14, W6	
14	...	52	65	55	600	600	600	600	NFT-1	...	
15	...	52	65	55	NP	600	600	600	NFT-1	W5, W12	
16	...	52	65	55	NP	600	600	600	NFT-1	...	
17	...	52	65	55	600	600	600	600	NFT-1	...	
18	...	52	65	55	600	600	600	600	NFT-1	G14, W6	
19	...	51	35	20	NP	NP	600	NP	NFT-3	...	07
20	...	51	35	20	NP	NP	600	NP	NFT-3	...	07
21	...	51	35	20	NP	NP	600	NP	NFT-3	...	07
22	...	51	50	40	NP	600	600	600	NFT-2	...	
23	...	51	50	40	NP	600	600	600	NFT-2	...	
24	...	51	50	40	NP	600	600	600	NFT-2	G14, W6	
25	...	51	50	40	NP	600	600	600	NFT-2	...	
26	...	51	50	40	NP	NP	600	600	NFT-2	...	
27	...	51	50	40	NP	NP	600	600	NFT-2	G14	
28	...	51	50	40	NP	NP	500	500	NFT-2	W1	
29	...	51	50	40	NP	NP	600	600	NFT-2	...	
30	...	51	50	40	NP	600	600	600	NFT-2	...	
31	...	51	50	40	NP	600	600	600	NFT-2	G14, W6	
32	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
33	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
34	...	51	58	40	NP	NP	500	NP	NFT-2	G14, W6	A08
35	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
36	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
37	...	51	58	40	NP	NP	500	NP	NFT-2	W12	A08
38	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
39	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
40	...	51	58	40	NP	NP	500	NP	NFT-2	W12	A08

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	950
A08	1	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	2	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	3	14.1	13.5	12.2	11.1	10.2	9.5	8.7	8.1	7.5	...	...	...	...	...	...	...	...	...
A08	4	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	5	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	6	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	7	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	8	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	9	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
	10	18.6	17.5	15.8	14.2	12.8	11.5	10.3	9.3	8.5	...	...	...	...	...	...	...	...	...
	11	18.6	17.5	15.8	14.2	12.8	11.5	10.3	9.3	8.5	7.9	7.4	...	...	...	...	...	...	...
	12	18.6	17.5	15.8	14.2	12.8	11.5	10.3	9.3	8.5	7.9	7.4	...	...	...	...	...	...	...
	13	15.8	14.9	13.4	12.1	10.8	9.7	8.8	7.9	7.2	6.7	6.3	...	...	...	...	...	...	...
	14	18.6	17.5	15.8	14.2	12.8	11.5	10.3	9.3	8.5	7.9	7.4	...	...	...	...	...	...	...
	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	18.6	17.5	15.8	14.2	12.8	11.5	10.3	9.3	8.5	7.9	7.4	...	...	...	...	...	...	...
	18	15.8	14.9	13.4	12.1	10.8	9.7	8.8	7.9	7.2	6.7	6.3	...	...	...	...	...	...	...
07	19	10.0	9.3	8.3	7.4	6.6	6.0	5.4	4.7	4.2	3.8	3.5	...	...	...	...	...	...	...
07	20	10.0	9.3	8.3	7.4	6.6	6.0	5.4	4.7	4.2	3.8	3.5	...	...	...	...	...	...	...
07	21	10.0	9.3	8.3	7.4	6.6	6.0	5.4	4.7	4.2	3.8	3.5	...	...	...	...	...	...	...
	22	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...	...
	23	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...	...
	24	12.1	11.7	10.6	9.6	8.8	8.1	7.5	7.0	6.5	6.0	5.5	...	...	...	...	...	...	...
	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	13.1	11.8	10.7	9.7	8.9	8.1	7.4	6.8	...	...	...	...	...	...	...	...	...
	29	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...	...
	30	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...	...
	31	12.1	11.7	10.6	9.6	8.8	8.1	7.5	7.0	6.5	6.0	5.5	...	...	...	...	...	...	...
A08	32	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	33	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	34	14.1	13.5	12.2	11.1	10.2	9.5	8.7	8.1	7.5	...	...	...	...	...	...	...	...	...
A08	35	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	36	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	37	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	38	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	39	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	40	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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																	
	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	07
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/Condition/ Temper
	1	Ti–Pd	Plate, sheet, strip	SB-265	16	R52402	Annealed
	2	Ti–Pd	Smls. tube	SB-338	16	R52402	Annealed
	3	Ti–Pd	Wld. tube	SB-338	16	R52402	Annealed
	4	Ti–Pd	Bar, billet	SB-348	16	R52402	Annealed
	5	Ti–Pd	Forgings	SB-381	F-16	R52402	Annealed
A08	6	Ti–0.05Pd	Plate, sheet, strip	SB-265	16H	R52402	Annealed
A08	7	Ti–0.05Pd	Smls. tube	SB-338	16H	R52402	Annealed
A08	8	Ti–0.05Pd	Wld. tube	SB-338	16H	R52402	Annealed
A08	9	Ti–0.05Pd	Bar, billet	SB-348	16H	R52402	Annealed
A08	10	Ti–0.05Pd	Smls. fittings	SB-363	WPT16H	R52402	Annealed
A08	11	Ti–0.05Pd	Wld. fittings	SB-363	WPT16HW	R52402	Annealed
A08	12	Ti–0.05Pd	Forgings	SB-381	F-16H	R52402	Annealed
A08	13	Ti–0.05Pd	Smls. pipe	SB-861	16H	R52402	Annealed
A08	14	Ti–0.05Pd	Wld. pipe	SB-862	16H	R52402	Annealed
	15	Ti–Ru	Plate, sheet, strip	SB-265	26	R52404	Annealed
	16	Ti–Ru	Smls. tube	SB-338	26	R52404	Annealed
	17	Ti–Ru	Wld. tube	SB-338	26	R52404	Annealed
	18	Ti–Ru	Bar, billet	SB-348	26	R52404	Annealed
	19	Ti–Ru	Smls. fittings	SB-363	WPT26	R52404	Annealed
	20	Ti–Ru	Wld. fittings	SB-363	WPT26W	R52404	Annealed
	21	Ti–Ru	Forgings	SB-381	F-26	R52404	Annealed
	22	Ti–Ru	Smls. pipe	SB-861	26	R52404	Annealed
	23	Ti–Ru	Wld. pipe	SB-862	26	R52404	Annealed
A08	24	Ti–0.10Ru	Plate, sheet, strip	SB-265	26H	R52404	Annealed
A08	25	Ti–0.10Ru	Smls. tube	SB-338	26H	R52404	Annealed
A08	26	Ti–0.10Ru	Wld. tube	SB-338	26H	R52404	Annealed
A08	27	Ti–0.10Ru	Bar, billet	SB-348	26H	R52404	Annealed
A08	28	Ti–0.10Ru	Smls. fittings	SB-363	WPT26H	R52404	Annealed
A08	29	Ti–0.10Ru	Wld. fittings	SB-363	WPT26HW	R52404	Annealed
A08	30	Ti–0.10Ru	Forgings	SB-381	F-26H	R52404	Annealed
A08	31	Ti–0.10Ru	Smls. pipe	SB-861	26H	R52404	Annealed
A08	32	Ti–0.10Ru	Wld. pipe	SB-862	26H	R52404	Annealed
	33	Ti–0.3Mo–0.8Ni	Plate, sheet, strip	SB-265	12	R53400	Annealed
	34	Ti–0.3Mo–0.8Ni	Smls. tube	SB-338	12	R53400	Annealed
	35	Ti–0.3Mo–0.8Ni	Wld. tube	SB-338	12	R53400	Annealed
	36	Ti–0.3Mo–0.8Ni	Bar, billet	SB-348	12	R53400	Annealed

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only) I	III	VIII-1	XII	External Pressure Chart No.	Notes	
1	...	51	50	40	NP	NP	600	600	NFT-2	...	
2	...	51	50	40	NP	NP	600	600	NFT-2	...	
3	...	51	50	40	NP	NP	600	600	NFT-2	G14, W6	
4	...	51	50	40	NP	NP	600	600	NFT-2	...	
5	...	51	50	40	NP	NP	600	600	NFT-2	...	
6	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
7	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
8	...	51	58	40	NP	NP	500	NP	NFT-2	G14, W6	A08
9	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
10	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
11	...	51	58	40	NP	NP	500	NP	NFT-2	W12	A08
12	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
13	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
14	...	51	58	40	NP	NP	500	NP	NFT-2	W12	A08
15	...	51	50	40	NP	NP	600	600	NFT-2	...	
16	...	51	50	40	NP	NP	600	600	NFT-2	...	
17	...	51	50	40	NP	NP	600	600	NFT-2	G14, W6	
18	...	51	50	40	NP	NP	600	600	NFT-2	...	
19	...	51	50	40	NP	NP	600	600	NFT-2	...	
20	...	51	50	40	NP	NP	600	600	NFT-2	G14	
21	...	51	50	40	NP	NP	600	600	NFT-2	...	
22	...	51	50	40	NP	NP	600	600	NFT-2	...	
23	...	51	50	40	NP	NP	600	600	NFT-2	G14, W6	
24	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
25	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
26	...	51	58	40	NP	NP	500	NP	NFT-2	G14, W6	A08
27	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
28	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
29	...	51	58	40	NP	NP	500	NP	NFT-2	W12	A08
30	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
31	...	51	58	40	NP	NP	500	NP	NFT-2	...	A08
32	...	51	58	40	NP	NP	500	NP	NFT-2	W12	A08
33	...	52	70	50	NP	NP	600	600	NFT-1	...	
34	...	52	70	50	NP	NP	600	600	NFT-1	...	
35	...	52	70	50	NP	NP	600	600	NFT-1	G14, W6	
36	...	52	70	50	NP	NP	600	600	NFT-1	...	

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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	950
	1	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...	...
	2	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...	...
	3	12.1	11.7	10.6	9.6	8.8	8.1	7.5	7.0	6.5	6.0	5.5	...	...	...	...	...	...	...
	4	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...	...
	5	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...	...
A08	6	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	7	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	8	14.1	13.5	12.2	11.1	10.2	9.5	8.7	8.1	7.5	...	...	...	...	...	...	...	...	...
A08	9	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	10	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	11	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	12	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	13	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	14	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
	15	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...	...
	16	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...	...
	17	12.1	11.7	10.6	9.6	8.8	8.1	7.5	7.0	6.5	6.0	5.5	...	...	...	...	...	...	...
	18	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...	...
	19	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...	...
	20	12.1	11.7	10.6	9.6	8.8	8.1	7.5	7.0	6.5	6.0	5.5	...	...	...	...	...	...	...
	21	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...	...
	22	14.3	13.7	12.4	11.3	10.3	9.5	8.8	8.2	7.6	7.0	6.5	...	...	...	...	...	...	...
	23	12.1	11.7	10.6	9.6	8.8	8.1	7.5	7.0	6.5	6.0	5.5	...	...	...	...	...	...	...
A08	24	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	25	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	26	14.1	13.5	12.2	11.1	10.2	9.5	8.7	8.1	7.5	...	...	...	...	...	...	...	...	...
A08	27	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	28	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	29	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	30	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	31	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
A08	32	16.6	15.9	14.4	13.1	12.0	11.2	10.2	9.5	8.8	...	...	...	...	...	...	...	...	...
	33	20.0	20.0	18.7	17.4	16.2	15.2	14.3	13.6	13.1	12.7	12.3	...	...	...	...	...	...	...
	34	20.0	20.0	18.7	17.4	16.2	15.2	14.3	13.6	13.1	12.7	12.3	...	...	...	...	...	...	...
	35	17.0	17.0	15.9	14.8	13.8	12.9	12.1	11.5	11.1	10.8	10.5	...	...	...	...	...	...	...
	36	20.0	20.0	18.7	17.4	16.2	15.2	14.3	13.6	13.1	12.7	12.3	...	...	...	...	...	...	...

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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																	
	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

TABLE 1B (CONT'D)
SECTION I; SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISION 1; AND SECTION XII
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 Designation/ UNS No.	Class/Condition/ Temper
	1	Ti–0.3Mo–0.8Ni	Smls. fittings	SB-363	WPT12	R53400	Annealed
	2	Ti–0.3Mo–0.8Ni	Wld. fittings	SB-363	WPT12W	R53400	Annealed
	3	Ti–0.3Mo–0.8Ni	Forgings	SB-381	F-12	R53400	Annealed
	4	Ti–0.3Mo–0.8Ni	Smls. pipe	SB-861	12	R53400	Annealed
	5	Ti–0.3Mo–0.8Ni	Wld. pipe	SB-862	12	R53400	Annealed
	6	Ti–3Al–2.5V	Plate, sheet, strip	SB-265	9	R56320	Annealed
	7	Ti–3Al–2.5V	Smls. tube	SB-338	9	R56320	Annealed
	8	Ti–3Al–2.5V	Wld. tube	SB-338	9	R56320	Annealed
	9	Ti–3Al–2.5V	Bar, billet	SB-348	9	R56320	Annealed
07	10	Ti–3Al–2.5V	Smls. fittings	SB-363	WPT9	R56320	Annealed
	11	Ti–3Al–2.5V	Wld. fittings	SB-363	WPT9W	R56320	Annealed
	12	Ti–3Al–2.5V	Forgings	SB-381	F-9	R56320	Annealed
	13	Ti–3Al–2.5V	Smls. pipe	SB-861	9	R56320	Annealed
	14	Ti–3Al–2.5V	Wld. pipe	SB-862	9	R56320	Annealed
	15	99.2Zr	Forgings	SB-493	...	R60702	Annealed
	16	99.2Zr	Smls. tube	SB-523	...	R60702	Annealed
	17	99.2Zr	Wld. tube	SB-523	...	R60702	Annealed
	18	99.2Zr	Bar, wire	SB-550	...	R60702	Annealed
	19	99.2Zr	Plate, sheet, strip	SB-551	...	R60702	Annealed
07	20	99.2Zr	Smls. & wld. pipe	SB-658	...	R60702	Annealed
	21	95.2Zr + Nb	Forgings	SB-493	...	R60705	Annealed
	22	95.2Zr + Nb	Smls. tube	SB-523	...	R60705	Annealed
	23	95.2Zr + Nb	Wld. tube	SB-523	...	R60705	Annealed
	24	95.2Zr + Nb	Bar, wire	SB-550	...	R60705	Annealed
	25	95.2Zr + Nb	Plate, sheet, strip	SB-551	...	R60705	Annealed
07	26	95.2Zr + Nb	Smls. & wld. pipe	SB-658	...	R60705	Annealed

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TABLE 2A (CONT'D)
SECTION III, CLASSES 1, TC, AND SC
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
1	5Cr–½Mo	Smls. tube	SA-213	T5	K41545	...	...	5B	1
2	5Cr–½Mo	Fittings	SA-234	WP5	K41545	...	...	5B	1
3	5Cr–½Mo	Wld. fittings	SA-234	WP5	K41545	W	...	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-182	F5	K41545	...	...	5B	1
9	5Cr–½Mo	Plate	SA-387	5	K41545	2	...	5B	1
10	5Cr–½Mo	Castings	SA-217	C5	J42045	...	...	5B	1
11	5Cr–½Mo	Cast pipe	SA-426	CP5	J42045	...	...	5B	1
12	9Cr–1Mo	Smls. tube	SA-213	T9	K90941	...	...	5B	1
13	9Cr–1Mo	Smls. pipe	SA-335	P9	K90941	...	...	5B	1
14	9Cr–1Mo	Forged pipe	SA-369	FP9	K90941	...	...	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	2	...	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
A08 25	12Cr–Al	Bar	SA/JIS G4303	SUS405	...	...	...	7	1
26	12½Cr–2Ni	Bar	SA-479	414	S41400	...	...	6	4
27	13Cr	Plate	SA-240	410S	S41008	...	...	7	1
28	13Cr	Forgings	SA-182	F6a	S41000	1	...	6	1
29	13Cr	Bar	SA-479	410	S41000	A	...	6	1
30	13Cr	Bar	SA-479	410	S41000	1	...	6	1
31	13Cr	Forgings	SA-182	F6a	S41000	2	...	6	3
32	13Cr	Castings	SA-217	CA15	J91150	...	...	6	3
33	13Cr	Cast pipe	SA-426	CPCA15	J91150	...	...	6	3
34	13Cr–4Ni	Castings	SA-487	CA6NM	J91540	A	...	6	4
35	13Cr–4Ni	Forgings	SA-182	F6NM	S41500	...	...	6	4
36	13Cr–8Ni–2Mo	Forgings	SA-705	XM-13	S13800	...	...	...	...
37	17Cr–4Ni–4Cu	Forgings, bar	SA-564	630	S17400	H1150	...	...	...
38	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1150	...	...	...
39	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1150	...	...	...

07

TABLE 2A (CONT'D)
SECTION III, CLASSES 1, TC, AND SC
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Max. Temp. Limit (SPT = Supports Only)	External Pressure Chart No.	Notes
1	60	30	700	CS-2	...
2	60	30	700	CS-2	...
3	60	30	700	CS-2	...
4	60	30	700	CS-2	...
5	60	30	700	CS-2	...
6	60	30	700	CS-2	...
7	60	30	700	CS-2	G1, G2
8	70	40	700	CS-2	...
9	75	45	700	CS-3	...
10	90	60	700	CS-3	H2
11	90	60	700	CS-3	...
12	60	30	700	CS-2	...
13	60	30	700	CS-2	...
14	60	30	700	CS-2	...
15	90	60	700 (SPT)	CS-3	H2
16	90	60	700	CS-3	...
17	85	60	700	CS-3	...
18	85	60	700	CS-3	...
19	85	60	700	CS-3	...
20	85	60	700	CS-3	...
21	70	40	700	...	...
22	70	40	700	...	...
23	60	25	700	CS-1	G13
24	60	25	700	CS-1	G13
25	60	25	700	CS-1	G13
26	115	90	700	CS-3	...
27	60	30	700	CS-2	...
28	70	40	700	CS-2	...
29	70	40	700	CS-2	...
30	70	40	700	CS-2	...
31	85	55	700	CS-3	...
32	90	65	700	CS-5	...
33	90	65	700	CS-5	...
34	110	80	700	CS-5	...
35	115	90	700	CS-3	...
36	150	135	600	HA-7	W1
37	135	105	650	HA-7	G8, W1
38	135	105	650	HA-7	G8, W1
39	135	105	650	HA-7	G8, W1

A08

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TABLE 2A (CONT'D)
SECTION III, CLASSES 1, TC, AND SC
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	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
2	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
3	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
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	23.3	...	23.3	...	22.6	22.4	22.4	22.0	21.7	21.2	...	...	...	...
9	25.0	...	24.9	...	24.2	24.0	24.0	23.6	23.2	22.7	...	...	...	...
10	30.0	...	29.9	...	29.1	28.8	28.7	28.3	27.9	27.3	...	...	...	...
11	30.0	...	29.9	...	29.1	28.8	28.7	28.3	27.9	27.3	...	...	...	...
12	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
13	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
14	20.0	...	18.1	...	17.4	17.2	17.1	16.8	16.6	16.3	...	...	...	...
15	30.0	...	29.9	...	29.1	28.8	28.7	28.3	27.9	27.3	...	...	...	...
16	30.0	...	29.9	...	29.1	28.8	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	...	22.9	22.5	22.1	21.6	21.2	20.6	...	...	...	...
22	23.3	...	23.3	...	22.9	22.5	22.1	21.6	21.2	20.6	...	...	...	...
23	16.7	...	15.3	...	14.8	14.5	14.3	14.0	13.8	13.5	...	...	...	...
24	16.7	...	15.3	...	14.8	14.5	14.3	14.0	13.8	13.5	...	...	...	...
A08 25	16.7	...	15.3	...	14.8	14.5	14.3	14.0	13.8	13.5	...	...	...	...
26	38.3	38.3	38.3	...	37.7	36.8	36.0	35.1	34.5	33.7	...	...	...	...
27	20.0	...	18.4	...	17.8	17.4	17.2	16.8	16.6	16.2	...	...	...	...
28	23.3	...	23.3	...	22.9	22.5	22.1	21.6	21.2	20.6	...	...	...	...
29	23.3	...	23.3	...	22.9	22.5	22.1	21.6	21.2	20.6	...	...	...	...
30	23.3	...	23.3	...	22.9	22.5	22.1	21.6	21.2	20.6	...	...	...	...
31	28.3	...	28.3	...	27.8	27.3	26.9	26.2	25.7	25.1	...	...	...	...
32	30.0	...	30.0	...	29.4	28.9	28.4	27.7	27.2	26.5	...	...	...	...
33	30.0	...	30.0	...	29.4	28.9	28.4	27.7	27.2	26.5	...	...	...	...
34	36.7	...	36.7	...	36.0	35.1	34.4	33.6	33.1	32.6	...	...	...	...
35	38.3	...	38.3	...	38.3	37.9	36.5	35.0	34.3	33.4	...	...	...	...
36	50.0	50.0	50.0	...	50.0	49.3	47.7	45.7	...	...	...	...	...	...
37	45.0	...	45.0	...	45.0	43.7	42.9	42.2	41.8	...	...	...	...	...
38	45.0	...	45.0	...	45.0	43.7	42.9	42.2	41.8	...	...	...	...	...
39	45.0	...	45.0	...	45.0	43.7	42.9	42.2	41.8	...	...	...	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASSES 1, TC, AND SC
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
A08	1	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316L	S31603	...	...	8	1
A08	2	...	...	...	...	...	...	...	...	...
	3	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316L	S31603	...	...	8	1
	4	16Cr–12Ni–2Mo	Fittings	SA-403	316L	S31603	...	...	8	1
	5	16Cr–12Ni–2Mo	Wld. fittings	SA-403	316L	S31603	WP-W	...	8	1
	6	16Cr–12Ni–2Mo	Bar	SA-479	316L	S31603	...	...	8	1
	7	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316L	S31603	...	...	8	1
	8	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316L	S31603	...	...	8	1
	9	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316L	S31603	...	...	8	1
A08	10	16Cr–12Ni–2Mo	Bar	SA/JIS G4303	SUS316L	...	...	...	8	1
	11	16Cr–12Ni–2Mo	Castings	SA-351	CF3M	J92800	...	...	8	1
	12	16Cr–12Ni–2Mo	Cast pipe	SA-451	CPF3M	J92800	...	...	8	1
	13	16Cr–12Ni–2Mo	Castings	SA-351	CF8M	J92900	...	...	8	1
	14	16Cr–12Ni–2Mo	Cast pipe	SA-451	CPF8M	J92900	...	...	8	1
	15	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...	> 5	8	1
07	16	16Cr–12Ni–2Mo	Forgings	SA-965	F316	S31600	...	...	8	1
	17	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...	> 5	8	1
07	18	16Cr–12Ni–2Mo	Forgings	SA-965	F316H	S31609	...	...	8	1
	19	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...	≤ 5	8	1
	20	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316	S31600	...	...	8	1
	21	16Cr–12Ni–2Mo	Plate	SA-240	316	S31600	...	...	8	1
	22	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316	S31600	...	...	8	1
A08	23	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316	S31600	...	...	8	1
A08	24	...	...	...	...	...	...	...	...	...
	25	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316	S31600	1	...	8	1
	26	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316	S31600	...	...	8	1
	27	16Cr–12Ni–2Mo	Fittings	SA-403	316	S31600	...	...	8	1
	28	16Cr–12Ni–2Mo	Wld. fittings	SA-403	316	S31600	WP-W	...	8	1
	29	16Cr–12Ni–2Mo	Bar	SA-479	316	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
A08	33	16Cr–12Ni–2Mo	Bar	SA/JIS G4303	SUS316	...	...	...	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	Plate	SA-240	316H	S31609	...	...	8	1
	37	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316H	S31609	...	...	8	1
A08	38	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316H	S31609	...	...	8	1
A08	39	...	...	...	...	...	...	...	...	...
	40	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316H	S31609	1	...	8	1
	41	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316H	S31609	...	...	8	1
	42	16Cr–12Ni–2Mo	Fittings	SA-403	316H	S31609	...	...	8	1
	43	16Cr–12Ni–2Mo	Wld. fittings	SA-403	316H	S31609	WP-W	...	8	1

TABLE 2A (CONT'D) 07
SECTION III, CLASSES 1, TC, AND SC
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Max. Temp. Limit (SPT = Supports Only)	External Pressure Chart No.	Notes	
1	70	25	800	HA-4	G7	A08
2	...	...	...	...	...	A08
3	70	25	800	HA-4	G7	
4	70	25	800	HA-4	G7	
5	70	25	800	HA-4	G7	
6	70	25	800	HA-4	G7	
7	70	25	800	HA-4	G7	
8	70	25	800	HA-4	G7	
9	70	25	800	HA-4	G7	
10	70	25	800	HA-4	G7	A08
11	70	30	800	HA-4	G7, G13	
12	70	30	800	HA-4	G7, G13	
13	70	30	800	HA-2	G7, G9, G10, G13	
14	70	30	800	HA-2	G7, G13	
15	70	30	800	HA-2	G7	
16	70	30	800	HA-2	G7, G9, G10	07
17	70	30	800	HA-2	G7	
18	70	30	800	HA-2	G7	07
19	75	30	800	HA-2	G7, G9	
20	75	30	800	HA-2	G7, G9	
21	75	30	800	HA-2	G7, G9, G10	
22	75	30	800	HA-2	G7	
23	75	30	800	HA-2	G7, G9, G10	A08
24	...	...	...	...	...	A08
25	75	30	800	HA-2	G7	
26	75	30	800	HA-2	G7, G9, G10	
27	75	30	800	HA-2	G7	
28	75	30	800	HA-2	G7	
29	75	30	800	HA-2	G7	
30	75	30	800	HA-2	G7	
31	75	30	800	HA-2	G7	
32	75	30	800	HA-2	G7	
33	75	30	800	HA-2	G7	A08
34	75	30	800	HA-2	G7	
35	75	30	800	HA-2	G7	
36	75	30	800	HA-2	G7	
37	75	30	800	HA-2	G7	
38	75	30	800	HA-2	G7	A08
39	...	...	...	...	...	A08
40	75	30	800	HA-2	G7	
41	75	30	800	HA-2	G7	
42	75	30	800	HA-2	G7	
43	75	30	800	HA-2	G7	

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TABLE 2A (CONT'D)
SECTION III, CLASSES 1, TC, AND SC
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
A08	1	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
A08	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	3	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
	4	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
	5	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
	6	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
	7	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
	8	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
	9	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
A08	10	16.7	...	16.7	...	16.7	15.7	14.8	14.0	13.7	13.5	13.2	12.9	...	...
	11	20.0	...	20.0	...	20.0	19.2	17.9	17.0	16.6	16.3	16.0	15.8	...	...
	12	20.0	...	20.0	...	20.0	19.2	17.9	17.0	16.6	16.3	16.0	15.8	...	...
	13	20.0	...	20.0	...	20.0	19.2	17.9	17.0	16.6	16.3	16.0	15.8	...	...
	14	20.0	...	20.0	...	20.0	19.2	17.9	17.0	16.6	16.3	16.0	15.8	...	...
	15	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
07	16	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	17	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
07	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	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	20	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	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	...	...
A08	23	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
A08	24	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	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	...	...
	27	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	28	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	29	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	30	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	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	...	...
A08	33	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	34	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	35	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	36	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	37	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
A08	38	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
A08	39	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	40	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	41	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	42	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	43	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASSES 1, TC, AND SC
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	18Cr–11Ni	Plate	SA-240	305	S30500	...	...	8	1
	2	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317	S31700	...	...	8	1
	3	18Cr–13Ni–3Mo	Smls. & wld. pipe	SA-312	TP317	S31700	...	...	8	1
	4	20Cr–10Ni	Bar	SA-479	ER308	S30880	...	...	8	1
A08	5	21Cr–6Ni–9Mn	Forgings	SA-182	FXM-11	S21904	...	...	8	3
A08	6	21Cr–6Ni–9Mn	Smls. & wld. pipe	SA-312	TPXM-11	S21904	...	...	8	3
A08	7	21Cr–6Ni–9Mn	Plate	SA-666	XM-11	S21904	...	...	8	3
A08	8	21Cr–6Ni–9Mn	Forgings	SA-965	FXM-11	S21904	...	...	8	3
	9	22Cr–13Ni–5Mn	Forgings	SA-182	FXM-19	S20910	...	...	8	3
	10	22Cr–13Ni–5Mn	Plate	SA-240	XM-19	S20910	...	...	8	3
	11	22Cr–13Ni–5Mn	Wld. tube	SA-249	TPXM-19	S20910	...	...	8	3
A08	12	22Cr–13Ni–5Mn	Smls. & wld. pipe	SA-312	TPXM-19	S20910	...	...	8	3
A08	13	...	...	...	...	...	...	...	...	...
	14	22Cr–13Ni–5Mn	Wld. pipe	SA-358	XM-19	S20910	1	...	8	3
	15	22Cr–13Ni–5Mn	Fittings	SA-403	XM-19	S20910	...	...	8	3
	16	22Cr–13Ni–5Mn	Wld. fittings	SA-403	XM-19	S20910	WP-W	...	8	3
	17	22Cr–13Ni–5Mn	Bar	SA-479	XM-19	S20910	...	...	8	3
	18	22Cr–13Ni–5Mn	Wld. pipe	SA-813	TPXM-19	S20910	...	...	8	3
	19	22Cr–13Ni–5Mn	Wld. pipe	SA-814	TPXM-19	S20910	...	...	8	3
07	20	22Cr–13Ni–5Mn	Forgings	SA-965	FXM-19	S20910	...	...	8	3
	21	23Cr–12Ni	Fittings	SA-403	309	S30900	...	...	8	2
	22	23Cr–12Ni	Wld. fittings	SA-403	309	S30900	WP-W	...	8	2
	23	23Cr–12Ni	Wld. pipe	SA-358	309S	S30908	...	...	8	2
	24	23Cr–12Ni	Bar	SA-479	309S	S30908	...	...	8	2
A08	25	23Cr–12Ni	Bar	SA/JIS G4303	SUS309S	...	...	...	8	2
	26	25Cr–12Ni	Castings	SA-351	CH8	J93400	...	...	8	2
	27	25Cr–12Ni	Cast pipe	SA-451	CPH8	J93400	...	...	8	2
	28	25Cr–12Ni	Castings	SA-351	CH20	J93402	...	...	8	2
	29	25Cr–12Ni	Cast pipe	SA-451	CPH20	J93402	...	...	8	2
	30	25Cr–20Ni	Castings	SA-351	CK20	J94202	...	...	8	2
	31	25Cr–20Ni	Cast pipe	SA-451	CPK20	J94202	...	...	8	2
07	32	25Cr–20Ni	Forgings	SA-965	F310	S31000	...	...	8	2
	33	25Cr–20Ni	Wld. pipe	SA-358	310S	S31008	1	...	8	2
	34	25Cr–20Ni	Fittings	SA-403	310S	S31008	...	...	8	2
	35	25Cr–20Ni	Wld. fittings	SA-403	310S	S31008	WP-W	...	8	2

TABLE 2A (CONT'D) 07
SECTION III, CLASSES 1, TC, AND SC
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Max. Temp. Limit (SPT = Supports Only)	External Pressure Chart No.	Notes	
1	75	30	800	HA-1	G7	
2	75	30	800	HA-2	G7	
3	75	30	800	HA-2	G7	
4	75	30	800	HA-2	G7	
5	90	50	600	HA-6	G7	A08
6	90	50	600	HA-6	G7	A08
7	90	50	600	HA-6	G7	A08
8	90	50	600	HA-6	G7	A08
9	100	55	800	HA-6	G7	
10	100	55	800	HA-6	G7	
11	100	55	800	HA-6	G7	
12	100	55	800	HA-6	G7	A08
13	...	...	...	...	...	A08
14	100	55	800	HA-6	G7	
15	100	55	800	HA-6	G7	
16	100	55	800	HA-6	G7	
17	100	55	800	HA-6	G7	
18	100	55	800	HA-6	G7	
19	100	55	800	HA-6	G7	
20	100	55	800	HA-6	G7	07
21	75	30	800	HA-2	G7	
22	75	30	800	HA-2	G7	
23	75	30	800	HA-2	G7	
24	75	30	800	HA-2	G7	
25	75	30	800	HA-2	G7	A08
26	65	28	800	HA-3	G7, G9, G10, G13	
27	65	28	800	HA-3	G7, G13	
28	70	30	800	HA-2	G7	
29	70	30	800	HA-2	G7	
30	65	28	800	HA-3	G7	
31	65	28	800	HA-3	G7	
32	75	30	800	HA-2	G7, G9, G11, G12	07
33	75	30	800	HA-2	G7	
34	75	30	800	HA-2	G7	
35	75	30	800	HA-2	G7	

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TABLE 2A (CONT'D)
SECTION III, CLASSES 1, TC, AND SC
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	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	2	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	3	20.0	...	20.0	...	20.0	19.3	18.0	17.0	16.6	16.3	16.1	15.9	...	...
	4	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
A08	5	30.0	...	30.0	...	28.0	26.4	24.4	23.1	...	...	...	...	...	...
A08	6	30.0	...	30.0	...	28.0	26.4	24.4	23.1	...	...	...	...	...	...
A08	7	30.0	...	30.0	...	28.0	26.4	24.4	23.1	...	...	...	...	...	...
A08	8	30.0	...	30.0	...	28.0	26.4	24.4	23.1	...	...	...	...	...	...
	9	33.3	...	33.1	...	31.4	30.4	29.7	29.2	29.0	28.8	28.5	28.3	...	...
	10	33.3	...	33.1	...	31.4	30.4	29.7	29.2	29.0	28.8	28.5	28.3	...	...
	11	33.3	...	33.1	...	31.4	30.4	29.7	29.2	29.0	28.8	28.5	28.3	...	...
A08	12	33.3	...	33.1	...	31.4	30.4	29.7	29.2	29.0	28.8	28.5	28.3	...	...
A08	13	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	14	33.3	...	33.1	...	31.4	30.4	29.7	29.2	29.0	28.8	28.5	28.3	...	...
	15	33.3	...	33.1	...	31.4	30.4	29.7	29.2	29.0	28.8	28.5	28.3	...	...
	16	33.3	...	33.1	...	31.4	30.4	29.7	29.2	29.0	28.8	28.5	28.3	...	...
	17	33.3	...	33.1	...	31.4	30.4	29.7	29.2	29.0	28.8	28.5	28.3	...	...
	18	33.3	...	33.1	...	31.4	30.4	29.7	29.2	29.0	28.8	28.5	28.3	...	...
	19	33.3	...	33.1	...	31.4	30.4	29.7	29.2	29.0	28.8	28.5	28.3	...	...
07	20	33.3	...	33.1	...	31.4	30.4	29.7	29.2	29.0	28.8	28.5	28.3	...	...
	21	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	...	...
	22	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	...	...
	23	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	...	...
	24	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	...	...
A08	25	20.0	...	20.0	...	20.0	20.0	19.4	18.8	18.5	18.2	18.0	17.7	...	...
	26	18.7	...	18.7	...	18.5	18.0	17.7	17.1	16.7	16.3	15.9	15.4	...	...
	27	18.7	...	18.7	...	18.5	18.0	17.7	17.1	16.7	16.3	15.9	15.4	...	...
	28	20.0	...	20.0	...	19.9	19.4	18.9	18.3	17.9	17.5	17.0	16.5	...	...
	29	20.0	...	20.0	...	19.9	19.4	18.9	18.3	17.9	17.5	17.0	16.5	...	...
	30	18.7	...	18.7	...	18.5	18.0	17.7	17.1	16.7	16.3	15.9	15.4	...	...
	31	18.7	...	18.7	...	18.5	18.0	17.7	17.1	16.7	16.3	15.9	15.4	...	...
07	32	20.0	...	20.0	...	20.0	20.0	19.3	18.5	18.2	17.9	17.7	17.4	...	...
	33	20.0	...	20.0	...	20.0	20.0	19.3	18.5	18.2	17.9	17.7	17.4	...	...
	34	20.0	...	20.0	...	20.0	20.0	19.3	18.5	18.2	17.9	17.7	17.4	...	...
	35	20.0	...	20.0	...	20.0	20.0	19.3	18.5	18.2	17.9	17.7	17.4	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASSES 1, TC, AND SC
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	18Cr–8Ni	Bar	SA-479	304L	S30403	...	...	8	1
	2	18Cr–8Ni	Wld. tube	SA-688	TP304L	S30403	...	...	8	1
	3	18Cr–8Ni	Wld. pipe	SA-813	TP304L	S30403	...	...	8	1
	4	18Cr–8Ni	Wld. pipe	SA-814	TP304L	S30403	...	...	8	1
A08	5	18Cr–8Ni	Bar	SA/JIS G4303	SUS304L	...	...	...	8	1
	6	18Cr–8Ni	Castings	SA-351	CF3	J92500	...	...	8	1
	7	18Cr–8Ni	Cast pipe	SA-451	CPF3	J92500	...	...	8	1
	8	18Cr–8Ni	Castings	SA-351	CF8	J92600	...	...	8	1
	9	18Cr–8Ni	Cast pipe	SA-451	CPF8	J92600	...	...	8	1
	10	18Cr–8Ni	Forgings	SA-182	F304	S30400	...	> 5	8	1
	11	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...	...	8	1
07	12	18Cr–8Ni	Forgings	SA-965	F304	S30400	...	...	8	1
	13	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...	> 5	8	1
07	14	18Cr–8Ni	Forgings	SA-965	F304H	S30409	...	...	8	1
	15	18Cr–8Ni	Bar	SA-479	302	S30200	...	...	8	1
A08	16	18Cr–8Ni	Bar	SA/JIS G4303	SUS302	...	...	...	8	1
	17	18Cr–8Ni	Forgings	SA-182	F304	S30400	...	≤ 5	8	1
	18	18Cr–8Ni	Smls. tube	SA-213	TP304	S30400	...	...	8	1
	19	18Cr–8Ni	Plate	SA-240	304	S30400	...	...	8	1
	20	18Cr–8Ni	Wld. tube	SA-249	TP304	S30400	...	...	8	1
A08	21	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304	S30400	...	...	8	1
A08	22	...	...	...	...	...	...	...	...	...
	23	18Cr–8Ni	Wld. pipe	SA-358	304	S30400	1	...	8	1
	24	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...	...	8	1
	25	18Cr–8Ni	Fittings	SA-403	304	S30400	...	...	8	1
	26	18Cr–8Ni	Wld. fittings	SA-403	304	S30400	WP-W	...	8	1
	27	18Cr–8Ni	Bar	SA-479	304	S30400	...	...	8	1
	28	18Cr–8Ni	Wld. tube	SA-688	TP304	S30400	...	...	8	1
	29	18Cr–8Ni	Wld. tube	SA-813	TP304	S30400	...	...	8	1
	30	18Cr–8Ni	Wld. tube	SA-814	TP304	S30400	...	...	8	1
A08	31	18Cr–8Ni	Bar	SA/JIS G4303	SUS304	...	...	...	8	1
	32	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...	≤ 5	8	1
	33	18Cr–8Ni	Smls. tube	SA-213	TP304H	S30409	...	...	8	1
	34	18Cr–8Ni	Plate	SA-240	304H	S30409	...	...	8	1
	35	18Cr–8Ni	Wld. tube	SA-249	TP304H	S30409	...	...	8	1
A08	36	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304H	S30409	...	...	8	1
A08	37	...	...	...	...	...	...	...	...	...
	38	18Cr–8Ni	Wld. pipe	SA-358	304H	S30409	1	...	8	1
	39	18Cr–8Ni	Smls. pipe	SA-376	TP304H	S30409	...	...	8	1
	40	18Cr–8Ni	Fittings	SA-403	304H	S30409	...	...	8	1
	41	18Cr–8Ni	Wld. fittings	SA-403	304H	S30409	WP-W	...	8	1
	42	18Cr–8Ni	Bar	SA-479	304H	S30409	...	...	8	1
	43	18Cr–8Ni	Wld. tube	SA-813	TP304H	S30409	...	...	8	1
	44	18Cr–8Ni	Wld. tube	SA-814	TP304H	S30409	...	...	8	1

TABLE 2A (CONT'D)
SECTION III, CLASSES 1, TC, AND SC
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

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Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Max. Temp. Limit (SPT = Supports Only)	External Pressure Chart No.	Notes	
1	70	25	800	HA-3	G7	
2	70	25	800	HA-3	G7	
3	70	25	800	HA-3	G7	
4	70	25	800	HA-3	G7	
5	70	25	800	HA-3	G7	A08
6	70	30	800	HA-3	G7, G13	
7	70	30	800	HA-3	G7, G13	
8	70	30	800	HA-1	G7, G9, G10, G13	
9	70	30	800	HA-1	G7, G13	
10	70	30	800	HA-1	G7, G9, G10	
11	70	30	800	HA-1	G7, G9, G10, S2	
12	70	30	800	HA-1	G7, G9, G10	07
13	70	30	800	HA-1	G7	
14	70	30	800	HA-1	G7	07
15	75	30	800	HA-1	G7	
16	75	30	800	HA-1	G7	A08
17	75	30	800	HA-1	G7, G9, G10	
18	75	30	800	HA-1	G7, G9	
19	75	30	800	HA-1	G7, G9, G10	
20	75	30	800	HA-1	G7	
21	75	30	800	HA-1	G7, G9, G10	A08
22	...	...	...	...	...	A08
23	75	30	800	HA-1	G7	
24	75	30	800	HA-1	G7, G9, G10, S2	
25	75	30	800	HA-1	G7	
26	75	30	800	HA-1	G7	
27	75	30	800	HA-1	G7	
28	75	30	800	HA-1	G7	
29	75	30	800	HA-1	G7	
30	75	30	800	HA-1	G7	
31	75	30	800	HA-1	G7	A08
32	75	30	800	HA-1	G7	
33	75	30	800	HA-1	G7	
34	75	30	800	HA-1	G7	
35	75	30	800	HA-1	G7	
36	75	30	800	HA-1	G7	A08
37	...	...	...	...	...	A08
38	75	30	800	HA-1	G7	
39	75	30	800	HA-1	G7	
40	75	30	800	HA-1	G7	
41	75	30	800	HA-1	G7	
42	75	30	800	HA-1	G7	
43	75	30	800	HA-1	G7	
44	75	30	800	HA-1	G7	

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TABLE 2A (CONT'D)
SECTION III, CLASSES 1, TC, AND SC
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	14.7	14.0	13.7	13.5	13.3	13.0	...	...
	2	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
	3	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
	4	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
A08	5	16.7	...	16.7	...	16.7	15.8	14.7	14.0	13.7	13.5	13.3	13.0	...	...
	6	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	7	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	8	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	9	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	10	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	11	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
07	12	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	13	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
07	14	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	15	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
A08	16	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	17	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	18	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	19	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	20	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
A08	21	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
A08	22	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	23	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	24	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	25	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	26	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	27	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	28	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	29	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	30	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
A08	31	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	32	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	33	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	34	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	35	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
A08	36	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
A08	37	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	38	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	39	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	40	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	41	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	42	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	43	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...
	44	20.0	...	20.0	...	20.0	18.6	17.5	16.6	16.2	15.8	15.5	15.2	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASSES 1, TC, AND SC
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	18Cr–10Ni–Cb	Forgings	SA-182	F347	S34700	...	≤ 5	8	1
	2	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347	S34700	...	...	8	1
	3	18Cr–10Ni–Cb	Plate	SA-240	347	S34700	...	...	8	1
	4	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347	S34700	...	...	8	1
A08	5	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP347	S34700	...	...	8	1
A08	6	...	...	...	...	...	...	...	...	...
	7	18Cr–10Ni–Cb	Wld. pipe	SA-358	347	S34700	1	...	8	1
	8	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347	S34700	...	...	8	1
	9	18Cr–10Ni–Cb	Fittings	SA-403	347	S34700	...	...	8	1
	10	18Cr–10Ni–Cb	Wld. fittings	SA-403	347	S34700	WP-W	...	8	1
	11	18Cr–10Ni–Cb	Bar	SA-479	347	S34700	...	...	8	1
	12	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP347	S34700	...	...	8	1
	13	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP347	S34700	...	...	8	1
A08	14	18Cr–10Ni–Cb	Bar	SA/JIS G4303	SUS347	...	...	...	8	1
	15	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...	≤ 5	8	1
	16	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347H	S34709	...	...	8	1
	17	18Cr–10Ni–Cb	Plate	SA-240	347H	S34709	...	...	8	1
	18	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347H	S34709	...	...	8	1
A08	19	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP347H	S34709	...	...	8	1
A08	20	...	...	...	...	...	...	...	...	...
	21	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347H	S34709	...	...	8	1
	22	18Cr–10Ni–Cb	Fittings	SA-403	347H	S34709	...	...	8	1
	23	18Cr–10Ni–Cb	Wld. fittings	SA-403	347H	S34709	WP-W	...	8	1
	24	18Cr–10Ni–Cb	Bar	SA-479	347H	S34709	...	...	8	1
	25	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP347H	S34709	...	...	8	1
	26	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP347H	S34709	...	...	8	1
	27	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...	≤ 5	8	1
	28	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348	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
A08	31	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP348	S34800	...	...	8	1
A08	32	...	...	...	...	...	...	...	...	...
	33	18Cr–10Ni–Cb	Wld. pipe	SA-358	348	S34800	1	...	8	1
	34	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP348	S34800	...	...	8	1
	35	18Cr–10Ni–Cb	Fittings	SA-403	348	S34800	...	...	8	1
	36	18Cr–10Ni–Cb	Wld. fittings	SA-403	348	S34800	WP-W	...	8	1
	37	18Cr–10Ni–Cb	Bar	SA-479	348	S34800	...	...	8	1
	38	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP348	S34800	...	...	8	1
	39	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP348	S34800	...	...	8	1

TABLE 2A (CONT'D)
SECTION III, CLASSES 1, TC, AND SC
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

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Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Max. Temp. Limit (SPT = Supports Only)	External Pressure Chart No.	Notes	
1	75	30	800	HA-2	G7, G9	
2	75	30	800	HA-2	G7, G9	
3	75	30	800	HA-2	G7, G9	
4	75	30	800	HA-2	G7	
5	75	30	800	HA-2	G7, G9	A08
6	...	...	...	...	...	A08
7	75	30	800	HA-2	G7	
8	75	30	800	HA-2	G7, G9	
9	75	30	800	HA-2	G7	
10	75	30	800	HA-2	G7	
11	75	30	800	HA-2	G7	
12	75	30	800	HA-2	G7	
13	75	30	800	HA-2	G7	
14	75	30	800	HA-2	G7	A08
15	75	30	800	HA-2	G7	
16	75	30	800	HA-2	G7	
17	75	30	800	HA-2	G7	
18	75	30	800	HA-2	G7	
19	75	30	800	HA-2	G7	A08
20	...	...	...	...	...	A08
21	75	30	800	HA-2	G7	
22	75	30	800	HA-2	G7	
23	75	30	800	HA-2	G7	
24	75	30	800	HA-2	G7	
25	75	30	800	HA-2	G7	
26	75	30	800	HA-2	G7	
27	75	30	800	HA-2	G7, G9	
28	75	30	800	HA-2	G7, G9	
29	75	30	800	HA-2	G7, G9	
30	75	30	800	HA-2	G7	
31	75	30	800	HA-2	G7, G9	A08
32	...	...	...	...	...	A08
33	75	30	800	HA-2	G7	
34	75	30	800	HA-2	G7, G9	
35	75	30	800	HA-2	G7	
36	75	30	800	HA-2	G7	
37	75	30	800	HA-2	G7	
38	75	30	800	HA-2	G7	
39	75	30	800	HA-2	G7	

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TABLE 2A (CONT'D)
SECTION III, CLASSES 1, TC, AND SC
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	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	2	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	3	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	4	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
A08	5	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
A08	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	7	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	8	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	9	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	10	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	11	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	12	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	13	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
A08	14	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	15	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	16	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	17	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	18	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
A08	19	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
A08	20	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	21	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	22	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	23	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	24	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	25	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	26	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	27	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	28	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	29	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	30	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
A08	31	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
A08	32	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	33	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	34	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	35	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	36	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	37	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	38	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	39	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...

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TABLE 2A (CONT'D)
SECTION III, CLASSES 1, TC, AND SC
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	18Cr–10Ni–Cb	Forgings	SA-182	F348H	S34809	...	≤ 5	8	1
	2	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348H	S34809	...	...	8	1
	3	18Cr–10Ni–Cb	Plate	SA-240	348H	S34809	...	...	8	1
	4	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348H	S34809	...	...	8	1
A08	5	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP348H	S34809	...	...	8	1
A08	6	...	...	...	...	...	...	...	...	...
	7	18Cr–10Ni–Cb	Fittings	SA-403	348H	S34809	...	...	8	1
	8	18Cr–10Ni–Cb	Wld. fittings	SA-403	348H	S34809	WP-W	...	8	1
	9	18Cr–10Ni–Cb	Bar	SA-479	348H	S34809	...	...	8	1
	10	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP348H	S34809	...	...	8	1
	11	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP348H	S34809	...	...	8	1
	12	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...	> 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
07	15	18Cr–10Ni–Ti	Forgings	SA-965	F321	S32100	...	...	8	1
	16	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...	> 5	8	1
07	17	18Cr–10Ni–Ti	Forgings	SA-965	F321H	S32109	...	...	8	1
	18	18Cr–10Ni–Ti	Forgings	SA-182	F321	S32100	...	≤ 5	8	1
	19	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321	S32100	...	...	8	1
	20	18Cr–10Ni–Ti	Plate	SA-240	321	S32100	...	...	8	1
	21	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321	S32100	...	...	8	1
A08	22	18Cr–10Ni–Ti	Smls. & wld. pipe	SA-312	TP321	S32100	...	≤ 3/8	8	1
A08	23	...	...	...	...	...	...	...	...	...
	24	18Cr–10Ni–Ti	Wld. pipe	SA-358	321	S32100	1	...	8	1
	25	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...	≤ 3/8	8	1
	26	18Cr–10Ni–Ti	Fittings	SA-403	321	S32100	...	...	8	1
	27	18Cr–10Ni–Ti	Wld. fittings	SA-403	321	S32100	WP-W	...	8	1
	28	18Cr–10Ni–Ti	Bar	SA-479	321	S32100	...	...	8	1
	29	18Cr–10Ni–Ti	Wld. pipe	SA-813	TP321	S32100	...	...	8	1
	30	18Cr–10Ni–Ti	Wld. pipe	SA-814	TP321	S32100	...	...	8	1
A08	31	18Cr–10Ni–Ti	Bar	SA/JIS G4303	SUS321	...	...	...	8	1
	32	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...	≤ 5	8	1
	33	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321H	S32109	...	...	8	1
	34	18Cr–10Ni–Ti	Plate	SA-240	321H	S32109	...	...	8	1
	35	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321H	S32109	...	...	8	1
A08	36	18Cr–10Ni–Ti	Smls. & wld. pipe	SA-312	TP321H	S32109	...	≤ 3/16	8	1
A08	37	...	...	...	...	...	...	...	...	...
	38	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321H	S32109	...	≤ 3/8	8	1
	39	18Cr–10Ni–Ti	Fittings	SA-403	321H	S32109	...	...	8	1
	40	18Cr–10Ni–Ti	Wld. fittings	SA-403	321H	S32109	WP-W	...	8	1
	41	18Cr–10Ni–Ti	Bar	SA-479	321H	S32109	...	...	8	1
	42	18Cr–10Ni–Ti	Wld. pipe	SA-813	TP321H	S32109	...	...	8	1
	43	18Cr–10Ni–Ti	Wld. pipe	SA-814	TP321H	S32109	...	...	8	1

TABLE 2A (CONT'D)
SECTION III, CLASSES 1, TC, AND SC
DESIGN STRESS INTENSITY VALUES S_m FOR FERROUS MATERIALS

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Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Max. Temp. Limit (SPT = Supports Only)	External Pressure Chart No.	Notes	
1	75	30	800	HA-2	G7	
2	75	30	800	HA-2	G7	
3	75	30	800	HA-2	G7	
4	75	30	800	HA-2	G7	
5	75	30	800	HA-2	G7	A08
6	...	...	...	...	...	A08
7	75	30	800	HA-2	G7	
8	75	30	800	HA-2	G7	
9	75	30	800	HA-2	G7	
10	75	30	800	HA-2	G7	
11	75	30	800	HA-2	G7	
12	70	25	800	HA-2	G7, G9	
13	70	25	800	HA-2	G7	
14	70	30	800	HA-2	G7, G9	
15	70	30	800	HA-2	G7, G9	07
16	70	30	800	HA-2	G7	
17	70	30	800	HA-2	G7, G9	07
18	75	30	800	HA-2	G7, G9	
19	75	30	800	HA-2	G7, G9	
20	75	30	800	HA-2	G7, G9	
21	75	30	800	HA-2	G7	
22	75	30	800	HA-2	G7, G9	A08
23	...	...	...	...	...	A08
24	75	30	800	HA-2	G7	
25	75	30	800	HA-2	G7, G9	
26	75	30	800	HA-2	G7	
27	75	30	800	HA-2	G7	
28	75	30	800	HA-2	G7	
29	75	30	800	HA-2	G7	
30	75	30	800	HA-2	G7	
31	75	30	800	HA-2	G7	A08
32	75	30	800	HA-2	G7	
33	75	30	800	HA-2	G7	
34	75	30	800	HA-2	G7	
35	75	30	800	HA-2	G7	
36	75	30	800	HA-2	G7	A08
37	...	...	...	...	...	A08
38	75	30	800	HA-2	G7	
39	75	30	800	HA-2	G7	
40	75	30	800	HA-2	G7	
41	75	30	800	HA-2	G7	
42	75	30	800	HA-2	G7	
43	75	30	800	HA-2	G7	

07

TABLE 2A (CONT'D)
SECTION III, CLASSES 1, TC, AND SC
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	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	2	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	3	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	4	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
A08	5	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
A08	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	7	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	8	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	9	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	10	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	11	20.0	...	20.0	...	20.0	20.0	20.0	19.3	19.0	18.7	18.5	18.3	...	...
	12	16.7	...	16.7	...	16.7	16.7	16.1	15.2	14.9	14.6	14.3	14.1	...	...
	13	16.7	...	16.7	...	16.7	16.7	16.1	15.2	14.9	14.6	14.3	14.1	...	...
	14	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
07	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	...	...
07	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	...	...
A08	22	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
A08	23	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	24	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
	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	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
	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	...	...
A08	31	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
	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	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
	35	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
A08	36	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
A08	37	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	38	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
	39	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
	40	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
	41	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
	42	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...
	43	20.0	...	20.0	...	20.0	20.0	19.3	18.3	17.9	17.5	17.2	16.9	...	...

TABLE 3 (CONT'D)
SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISIONS 1 and 2;† AND SECTION XII
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Part 4.16 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	...	...	...	...	...	...	...	...	...	...

TABLE 3 (CONT'D)
SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISIONS 1 and 2;† AND SECTION XII
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Part 4.16 of Section VIII, Division 2)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ 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
A08	7	...	Bolting	SB-211	6061	A96061	T6	0.125–8.000
A08	8	...	Bolting	SB-211	6061	A96061	T651	0.125–8.000
A08	9	...	...	...	...	...	...	...
A08	10	...	...	...	...	...	...	...
	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	$\le \frac{1}{2}$

TABLE 3 (CONT'D)
SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISIONS 1 and 2;† AND SECTION XII
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Part 4.16 of Section VIII, Division 2)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applicability and Max. Temperature Limits (NP = Not Permitted) III	VIII-1	VIII-2	XII	Notes	
							Nonferrous Materials	
1	65	55	400 (Cl. 3 only)	400	400	400	W4	
2	65	55	NP	400	400	400	G10, W4	
3	62	45	400 (Cl. 3 only)	400	400	400	W4	
4	62	42	400 (Cl. 3 only)	400	400	400	W4	
5	62	40	400 (Cl. 3 only)	400	400	400	W4	
6	58	38	400 (Cl. 3 only)	400	400	400	W4	
7	42	35	400 (Cl. 3 only)	400	400	400	W4	A08
8	42	35	NP	400	400	400	G10, W4	A08
9	...	...	...	...	...	...	...	A08
10	...	...	...	...	...	...	...	A08
11	30	10	NP	400	400	400	...	
12	30	10	NP	400	400	400	...	
13	70	30	500 (Cl. 3 only)	500	500	500	...	
14	70	32	500 (Cl. 3 only)	500	500	500	...	
15	75	35	500 (Cl. 3 only)	500	500	500	...	
16	80	40	500 (Cl. 3 only)	500	500	500	...	
17	75	30	400 (Cl. 3 only)	600	400	600	W1	
18	75	30	400 (Cl. 3 only)	600	400	600	W1	
19	75	30	400 (Cl. 3 only)	600	400	600	W1	
20	75	30	400 (Cl. 3 only)	600	400	600	W1	
21	75	30	400 (Cl. 3 only)	600	400	600	W1	
22	75	30	400 (Cl. 3 only)	600	400	600	W1	
23	76	37	400 (Cl. 3 only)	600	400	600	W1	
24	84	40	400 (Cl. 3 only)	600	400	600	W1	
25	88	44	400 (Cl. 3 only)	600	400	600	W1	
26	90	50	400 (Cl. 3 only)	600	400	600	W1	
27	85	42.5	700 (Cl. 3 only)	700	500	650	W4	
28	85	42.5	700 (Cl. 3 only)	700	500	650	W4	
29	90	45	700 (Cl. 3 only)	700	500	650	W4	
30	100	50	700 (Cl. 3 only)	700	500	650	W4	
31	70	25	350 (Cl. 3 only)	600	350	600	W1	
32	70	25	350 (Cl. 3 only)	600	350	600	W1	
33	70	30	350 (Cl. 3 only)	600	350	600	W4	
34	75	35	350 (Cl. 3 only)	600	350	600	W1	
35	80	42	350 (Cl. 3 only)	600	350	600	W1	
36	85	45	350 (Cl. 3 only)	600	350	600	W1	
37	90	45	350 (Cl. 3 only)	600	350	600	W1	

TABLE 3 (CONT'D)
SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISIONS 1 and 2;† AND SECTION XII
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Part 4.16 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	...	...	...	...	...	...	...	...	...	...
A08	7	8.4	8.4	8.4	8.4	8.4	6.3	4.4	...	...	...	...	...	...	...	...	...	...
A08	8	8.4	8.4	8.4	8.4	8.4	6.3	4.4	...	...	...	...	...	...	...	...	...	...
A08	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
A08	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	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	...	...	...	...	...	...

TABLE 3 (CONT'D)
SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISIONS 1 and 2;† AND SECTION XII
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Part 4.16 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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

TABLE 3 (CONT'D)
SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISIONS 1 and 2;† AND SECTION XII
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Part 4.16 of Section VIII, Division 2)

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ 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	Hot worked	...
	17	67Ni–30Cu	Bolting	SB-164	...	N04400	Hot worked	...
	18	67Ni–30Cu	Bolting	SB-164	...	N04400	CD-str. rel.	...
	19	67Ni–30Cu	Bolting	SB-164	...	N04400	Cold worked	...
	20	67Ni–30Cu	Bolting	SB-164	...	N04400	CD-str. rel.	...
	21	67Ni–30Cu–S	Bolting	SB-164	...	N04405	Annealed	...
	22	67Ni–30Cu–S	Bolting	SB-164	...	N04405	Annealed	...
	23	67Ni–30Cu–S	Bolting	SB-164	...	N04405	Hot worked	...
	24	67Ni–30Cu–S	Bolting	SB-164	...	N04405	Hot worked	...
	25	67Ni–30Cu–S	Bolting	SB-164	...	N04405	Cold worked	...
A08	26	67Ni–28Cu–3Al	Bolting	SF-468	...	N05500	Ann./aged	1.000–1.500
A08	27	67Ni–28Cu–3Al	Bolting	SF-468	...	N05500	Ann./aged	0.250–0.875
	28	47Ni–22Cr–9Mo–18Fe	Bolting	SB-572	...	N06002	Annealed	...
	29	47Ni–22Cr–19Fe–6Mo	Bolting	SB-581	...	N06007	Solution ann.	$> \frac{3}{4}$
	30	47Ni–22Cr–19Fe–6Mo	Bolting	SB-581	...	N06007	Solution ann.	$< \frac{3}{4}$
	31	55Ni–21Cr–13.5Mo	Bolting	SB-574	...	N06022	Solution ann.	...
	32	40Ni–29Cr–15Fe–5Mo	Bolting	SB-581	...	N06030	Solution ann.	...
	33	61Ni–16Mo–16Cr	Bolting	SB-574	...	N06455	Solution ann.	...
	34	72Ni–15Cr–8Fe	Bolting	SB-166	...	N06600	Annealed	...
	35	72Ni–15Cr–8Fe	Bolting	SB-166	...	N06600	Hot fin.	...
	36	72Ni–15Cr–8Fe	Bolting	SB-166	...	N06600	Cold drawn	...
	37	72Ni–15Cr–8Fe	Bolting	SB-166	...	N06600	Hot fin.	...
	38	72Ni–15Cr–8Fe	Bolting	SB-166	...	N06600	Hot fin.	...

TABLE 3 (CONT'D)
SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISIONS 1 and 2;† AND SECTION XII
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Part 4.16 of Section VIII, Division 2)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applicability and Max. Temperature Limits (NP = Not Permitted) III	VIII-1	VIII-2	XII	Notes	
							Nonferrous Materials (Cont'd)	
1	40	12	350 (Cl. 3 only)	350	350	350	G2	
2	75	40	350 (Cl. 3 only)	350	350	350	G2, W2	
3	75	45	350 (Cl. 3 only)	350	350	350	G2, W2	
4	85	55	350 (Cl. 3 only)	350	350	350	G2, W2	
5	52	15	350 (Cl. 3 only)	350	350	350	G2	
6	55	24	350 (Cl. 3 only)	NP	350	NP	G2, W2	
7	70	38	350 (Cl. 3 only)	NP	350	NP	G2, W2	
8	52	15	350 (Cl. 3 only)	350	350	350	G2	
9	55	24	350 (Cl. 3 only)	NP	350	NP	G2, W2	
10	70	38	350 (Cl. 3 only)	NP	350	NP	G2, W2	
11	55	15	600 (Cl. 3 only)	600	600	600	...	
12	60	15	600 (Cl. 3 only)	600	600	600	...	
13	65	40	600 (Cl. 3 only)	600	600	600	...	
14	50	10	600 (Cl. 3 only)	1200	800	650	...	
15	70	25	800	900	800	650	...	
16	75	30	800	900	800	650	...	
17	80	40	800	900	800	650	...	
18	84	50	500	500	500	500	G3	
19	85	55	500	500	500	500	G3	
20	87	60	NP	500	500	500	G3	
21	70	25	800	NP	NP	NP	...	
22	70	25	NP	900	800	650	...	
23	75	35	800	NP	NP	NP	...	
24	75	35	NP	900	800	650	...	
25	85	50	500	500	500	500	G3	
26	130	85	NP	500	NP	NP	...	A08
27	130	90	NP	500	NP	NP	...	A08
28	95	35	NP	1650	800	650	...	
29	85	30	NP	1000	800	650	...	
30	90	35	NP	1000	800	650	...	
31	100	45	NP	800	800	650	...	
32	85	35	NP	800	800	650	...	
33	100	40	NP	800	800	650	...	
34	80	35	800	1200	800	650	...	
35	85	35	800	1200	800	650	...	
36	90	40	NP	500	500	500	G3, H1	
37	90	40	800	NP	NP	NP	...	
38	90	40	NP	1200	800	650	...	

TABLE 3 (CONT'D)
SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISIONS 1 and 2;† AND SECTION XII
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Part 4.16 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	16.7	...	14.6	...	13.6	...	13.2	...	13.1	...	13.1	13.1	13.1	12.9	12.7	11.0	8.0
16	16.7	...	14.6	...	13.6	...	13.2	...	13.1	...	13.1	13.1	13.1	12.9	12.7	11.0	8.0
17	16.7	...	14.6	...	13.6	...	13.2	...	13.1	...	13.1	13.1	13.0	12.9	12.7	8.5	4.0
18	16.7	...	14.6	...	13.6	...	13.2	...	13.1	...	...	...	...	...	...	...	...
19	16.7	...	14.6	...	13.8	...	13.8	...	13.8	...	...	...	...	...	...	...	...
20	16.7	...	15.0	...	15.0	...	15.0	...	15.0	...	...	...	...	...	...	...	...
21	16.6	...	14.6	...	13.6	...	13.2	...	13.1	...	13.1	13.1	13.1	12.9	12.7	...	...
22	16.6	...	14.6	...	13.6	...	13.2	...	13.1	...	13.1	13.1	13.1	13.0	12.7	11.0	8.0
23	18.7	...	18.7	...	18.7	...	18.7	...	18.7	...	18.7	18.4	18.0	16.3	14.5	...	...
24	18.7	...	18.7	...	18.7	...	18.7	...	18.7	...	18.7	18.7	18.0	17.2	14.5	8.5	4.0
25	12.5	...	12.5	...	12.5	...	12.5	...	12.5	...	...	...	...	...	...	...	...
A08 26	21.3	...	21.3	...	21.3	...	21.3	...	21.3	...	...	...	...	...	...	...	...
A08 27	22.5	...	22.5	...	22.5	...	22.5	...	22.5	...	...	...	...	...	...	...	...
28	23.3	...	20.9	...	19.2	...	17.8	...	16.5	...	15.6	15.3	15.0	14.9	14.7	14.6	14.5
29	20.0	...	19.9	...	16.6	...	15.6	...	15.0	...	14.4	14.2	14.0	13.9	13.8	13.7	13.6
30	22.5	...	20.9	...	19.5	...	18.2	...	17.4	...	16.8	16.6	16.4	16.3	16.1	16.0	16.0
31	25.0	...	25.0	...	24.5	...	22.7	...	21.2	...	20.1	19.6	19.2	18.9	18.6	...	...
32	21.3	...	20.0	...	18.3	...	17.2	...	16.4	...	15.8	15.5	15.2	14.9	14.6	...	...
33	25.0	...	24.6	...	23.0	...	21.7	...	20.9	...	20.1	19.8	19.6	19.4	19.1	...	...
34	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	20.0	19.8	19.6	19.4	19.1	18.7	16.0
35	21.2	...	21.2	...	21.2	...	21.2	...	21.2	...	21.2	21.2	21.1	21.0	20.4	20.2	19.5
36	20.0	...	20.0	...	20.0	...	20.0	...	20.0	...	...	...	...	...	...	...	...
37	10.0	...	9.5	...	9.2	...	9.1	...	9.1	...	9.1	9.0	8.9	8.9	8.8	...	...
38	21.2	...	21.2	...	21.2	...	21.2	...	21.2	...	21.2	21.2	21.1	21.0	20.4	20.2	19.5

TABLE 3 (CONT'D)
SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISIONS 1 and 2;† AND SECTION XII
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Part 4.16 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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
28	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	
29	13.6	13.5	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	15.9	15.8	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	10.6	7.0	4.5	3.0	2.2	2.2	...	...	...	...	...	...	...	...	...	
35	19.3	14.5	10.3	7.2	5.8	5.5	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
38	19.3	14.5	10.3	7.2	5.8	5.5	...	...	...	...	...	...	...	...	...	

TABLE 3 (CONT'D)
SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISIONS 1 and 2;† AND SECTION XII
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Part 4.16 of Section VIII, Division 2)

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ Temper	Size/ Thickness, in.
	Nonferrous Materials (Cont'd)						
1	60Ni–22Cr–9Mo–3.5Cb	Bolting	SB-446	1	N06625	Annealed	...
2	49Ni–25Cr–18Fe–6Mo	Bolting	SB-581	...	N06975	Solution ann.	...
3	53Ni–19Cr–19Fe–Cb–Mo	Bolting	SB-637	...	N07718	Solution ann.	≤ 6
4	70Ni–16Cr–7Fe–Ti–Al	Bolting	SB-637	2	N07750	Solution ann.	...
5	26Ni–43Fe–22Cr–5Mo	Bolting	SB-621	...	N08320	Solution ann.	...
6	46Fe–24Ni–21Cr–6Mo–Cu–N	Bolting	SB-691	...	N08367	Solution ann.	...
7	33Ni–42Fe–21Cr	Bolting	SB-408	...	N08800	Annealed	...
8	33Ni–42Fe–21Cr	Bolting	SB-408	...	N08810	Annealed	...
9	42Ni–21.5Cr–3Mo–2.3Cu	Bolting	SB-425	...	N08825	Annealed	...
10	62Ni–28Mo–5Fe	Bolting	SB-335	...	N10001	Annealed	$1\frac{1}{2} < t \leq 3\frac{1}{2}$
11	62Ni–28Mo–5Fe	Bolting	SB-335	...	N10001	Annealed	$\leq 1\frac{1}{2}$
12	70Ni–16Mo–7Cr–5Fe	Bolting	SB-573	...	N10003	Annealed	...
07 13	54Ni–16Mo–15Cr	Bolting	SB-574	...	N10276	Solution ann.	...
14	65Ni–28Mo–2Fe	Bolting	SB-335	...	N10665	Solution ann.	...
15	21Ni–30Fe–22Cr–18Co–3Mo–3W	Bolting	SB-572	...	R30556	Annealed	...

TABLE 3 (CONT'D)
SECTION III, CLASSES 2 AND 3;* SECTION VIII, DIVISIONS 1 and 2;† AND SECTION XII
MAXIMUM ALLOWABLE STRESS VALUES *S* FOR BOLTING MATERIALS
(*See Maximum Temperature Limits for Restrictions on Class)
(†Use with Part 4.16 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	23.9	23.7	23.6	23.4	21.0	13.2	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	32.6	32.3	32.0	30.7	29.5	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	14.9	14.7	14.5	13.0	9.8	6.6	4.2	2.2	1.6	1.1	1.0	0.80	...	...	...
8	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
9	16.7	16.6	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	17.3	17.0	15.5	12.4	9.3	6.6	4.8	3.5	...	...	...	...	...	...	...
13	16.5	16.5	16.5	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	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

07 (a) The stress values in this Table may be interpolated to determine values for intermediate temperatures. The values at intermediate temperatures shall be rounded to the same number of decimal places as the value at the higher temperature between which values are being interpolated. The rounding rule is: when the next digit beyond the last place to be retained is less than 5, retain unchanged the digit in the last place retained; when the digit next beyond the last place to be retained is 5 or greater, increase by 1 the digit in the last place retained.

(b) 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.

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

(d) 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.

(e) Stress values for –20 to 100°F are applicable for colder temperatures when toughness requirements of Section III or Section VIII are met.

(f) 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.

(g) The following abbreviations are used: ann., annealed; CD, Cold drawn; fin., finished; rel., relieved; str., stress; and wld., welded.

(h) Where specifications, grades, classes, and types are listed in this Table, and where the material specification in Section II, Part A or Part B is a dual-unit specification (e.g., SA-193/SA-193M), the values listed in this Table shall be applicable to either the customary U.S. version of the material specification or the SI units version of the material specification. For example, the values listed for SA-193 Grade B6 shall be used when SA-193M Grade B6 is used in construction.

A08 (i) An alternative typeface is used for stress values obtained from time-dependent properties (see Note T1).

NOTES — GENERAL REQUIREMENTS

G1 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.

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 him/herself 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.

A08 07 G10 For stress relieved tempers, stress values for T3 temper can be used for T351, T3510, and T3511; stress values for T4 temper can be used for T451, T4510, and T4511; and stress values for T6 temper can be used for T651, T6510, and T6511.

G11 The shipping lot testing method of SA-574, 10.3, is prohibited.

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 — TIME-DEPENDENT PROPERTIES

07 T1 Allowable stresses for temperatures of 1100°F and above are values obtained from time-dependent properties.

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.

A08 W5 DELETED.

W6 Except for nonstructural tack welds used as a locking device, welding is prohibited for Section VIII, Division 1 use.

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 Part 5 and Annex 5.F when the bolting requirements are determined in accordance with 5.7.1 and 5.7.2. 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; rel., relieved; Sol., Solution; str., stress; and treat., treated.

(d) Where specifications, grades, classes, and types are listed in this Table, and where the material specification in Section II, Part A or Part B is a dual-unit specification (e.g., SA-193/SA-193M), the values listed in this Table shall be applicable to either the customary U.S. version of the material specification or the SI units version of the material specification. For example, the values listed for SA-193 Grade B6 shall be used when SA-193M Grade B6 is used in construction.

07 (e) The values in this Table may be interpolated to determine values for intermediate temperatures. The values at intermediate temperatures shall be rounded to the same number of decimal places as the value at the higher temperature between which values are being interpolated. The rounding rule is: when the next digit beyond the last place to be retained is less than 5, retain unchanged the digit in the last place retained; when the digit next beyond the last place to be retained is 5 or greater, increase by 1 the digit in the last place retained.

07 ### NOTES — GENERAL REQUIREMENTS:

G1 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.

G2 This material has reduced toughness at room temperature after exposure for about 5000 hr at 600°F and after shorter exposure above 650°F.

G3 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.

G4 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.

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TABLE 5A
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ 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	Smls. pipe	SA-106	A	K02501	...	...	1	1
4	Carbon steel	Bar, shapes	SA-675	50	...	...	...	1	1
5	Carbon steel	Plate	SA-283	B	...	...	...	1	1
6	Carbon steel	Plate	SA-285	B	K02200	...	$t \le 2$	1	1
7	Carbon steel	Bar, shapes	SA-675	55	...	...	...	1	1
8	Carbon steel	Plate	SA-285	C	K02801	...	$t \le 2$	1	1
9	Carbon steel	Smls. pipe	SA-333	1	K03008	...	...	1	1
10	Carbon steel	Smls. tube	SA-334	1	K03008	...	...	1	1
11	Carbon steel	Plate	SA-516	55	K01800	...	...	1	1
12	Carbon steel	Smls. pipe	SA-524	II	K02104	...	...	1	1
13	Carbon steel	Plate, bar, shapes	SA-36	...	K02600	...	...	1	1
14	Carbon steel	Plate	SA-662	A	K01701	...	...	1	1
15	Carbon steel	Forgings	SA-181	...	K03502	60	...	1	1
16	Carbon steel	Castings	SA-216	WCA	J02502	...	...	1	1
17	Carbon steel	Forgings	SA-266	1	K03506	...	...	1	1
18	Carbon steel	Forgings	SA-350	LF1	K03009	1	...	1	1
19	Carbon steel	Bar, shapes	SA-675	60	...	...	...	1	1
20	Carbon steel	Forgings	SA-765	I	K03046	...	...	1	1
21	Carbon steel	Plate	SA-515	60	K02401	...	...	1	1
22	Carbon steel	Plate	SA-516	60	K02100	...	...	1	1
23	Carbon steel	Plate	SA-283	D	K02702	...	...	1	1
24	Carbon steel	Smls. pipe	SA-106	B	K03006	...	...	1	1
25	Carbon steel	Fittings	SA-234	WPB	K03006	...	...	1	1
26	Carbon steel	Smls. pipe	SA-333	6	K03006	...	...	1	1
27	Carbon steel	Forgings	SA-372	A	K03002	...	...	1	1
28	Carbon steel	Fittings	SA-420	WPL6	...	...	...	1	1
29	Carbon steel	Smls. pipe	SA-524	I	K02104	...	...	1	1
30	Carbon steel	Forgings	SA-727	...	K02506	...	...	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	Bar, shapes	SA-675	65	...	...	...	1	1
34	Carbon steel	Castings	SA-352	LCB	J03003	...	...	1	1
35	Carbon steel	Plate	SA-515	65	K02800	...	...	1	1
36	Carbon steel	Plate	SA-516	65	K02403	...	...	1	1
37	Carbon steel	Plate	SA-662	B	K02203	...	...	1	1
38	Carbon steel	Plate	SA-537	...	K12437	1	$2\frac{1}{2} < t \le 4$	1	2
39	Carbon steel	Bar, shapes	SA-675	70	...	...	...	1	1
40	Carbon steel	Forgings	SA-105	...	K03504	...	...	1	2
41	Carbon steel	Forgings	SA-181	...	K03502	70	...	1	2
42	Carbon steel	Castings	SA-216	WCB	J03002	...	...	1	2

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TABLE 5A
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Maximum Use Temperature, °F	External Pressure Chart No.	Notes
1	45	22.5	900	CS-6	G13, G15, T4
2	45	24	900	CS-1	G13, G15, T3
3	48	30	1000	CS-2	G13, T1
4	50	25	900	CS-1	G13, G15, T3
5	50	27	700	CS-1	...
6	50	27	900	CS-1	G13, G15, T3
7	55	27.5	900	CS-1	G13, G15, T4
8	55	30	1000	CS-2	G13, G15, T3
9	55	30	1000	CS-2	T4
10	55	30	700	CS-2	...
11	55	30	1000	CS-2	G13, T3
12	55	30	1000	CS-2	G13, T3
13	58	36	650	CS-2	G13, G15
14	58	40	700	CS-2	...
15	60	30	1000	CS-2	G13, G15, T4
16	60	30	1000	CS-2	G13, T4
17	60	30	1000	CS-2	G13, T4
18	60	30	700	CS-2	G13
19	60	30	900	CS-2	G13, G15, T4
20	60	30	1000	CS-2	G13, T4
21	60	32	1000	CS-2	G13, T3
22	60	32	1000	CS-2	G13, T3
23	60	33	700	CS-2	...
24	60	35	700	CS-2	G13
25	60	35	1000	CS-2	G13, T3
26	60	35	1000	CS-2	G13, T3
27	60	35	650	CS-2	G9, H5
28	60	35	850	CS-2	G13, T3
29	60	35	1000	CS-2	G13, T3
30	60	36	1000	CS-2	G13, T3
31	60	37	1000	CS-2	G6, G13, G15, T2
32	60	37	1000	CS-2	G13, T3
33	65	32.5	1000	CS-2	G13, G15, T3
34	65	35	650	CS-2	...
35	65	35	1000	CS-2	G13, T3
36	65	35	1000	CS-2	G13, T3
37	65	40	700	CS-2	...
38	65	45	700	CS-2	...
39	70	35	1000	CS-2	G13, G15, T3
40	70	36	1000	CS-2	G13, G15, T3
41	70	36	1000	CS-2	G13, G15, T3
42	70	36	1000	CS-2	G13, T3

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TABLE 5A
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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	15.0	14.1	13.7	13.5	13.3	13.1	12.8	12.5	12.2	11.9	11.5	11.1	10.7	10.4	*9.2*	*7.9*	*5.9*
2	16.0	15.0	14.7	14.4	14.2	13.9	13.7	13.4	13.0	12.7	12.3	11.9	11.5	*10.7*	*9.2*	*7.9*	*5.9*
3	20.0	18.8	18.3	18.0	17.7	17.4	17.1	16.7	16.3	15.8	15.3	*14.6*	*14.4*	*10.7*	*9.2*	*7.9*	*5.9*
4	16.7	15.7	15.3	15.0	14.7	14.5	14.2	13.9	13.6	13.2	12.8	12.4	11.9	*10.7*	*9.2*	*7.9*	*5.9*
5	18.0	16.9	16.5	16.2	15.9	15.7	15.4	15.0	14.7	14.2	13.8	13.3	13.0	...	...	...	...
6	18.0	16.9	16.5	16.2	15.9	15.7	15.4	15.0	14.7	14.2	13.8	13.3	13.0	*10.7*	*9.2*	*7.9*	*5.9*
7	18.3	17.2	16.8	16.5	16.2	16.0	15.7	15.3	14.9	14.5	14.1	13.6	13.1	12.7	*10.8*	*8.7*	*5.9*
8	20.0	18.8	18.3	18.0	17.7	17.4	17.1	16.7	16.3	15.8	15.3	14.8	14.3	*13.0*	*10.8*	*8.7*	*5.9*
9	20.0	18.8	18.3	18.0	17.7	17.4	17.1	16.7	16.3	15.8	15.3	14.8	14.3	13.8	*11.4*	*8.7*	*5.9*
10	20.0	18.8	18.3	18.0	17.7	17.4	17.1	16.7	16.3	15.8	15.3	14.8	14.3	...	...	...	...
11	20.0	18.8	18.3	18.0	17.7	17.4	17.1	16.7	16.3	15.8	15.3	14.8	14.3	*13.0*	*10.8*	*8.7*	*5.9*
12	20.0	18.8	18.3	18.0	17.7	17.4	17.1	16.7	16.3	15.8	15.3	14.8	14.3	*13.0*	*10.8*	*8.7*	*5.9*
13	24.0	22.6	22.0	21.6	21.2	20.9	20.5	20.1	19.6	19.0	18.4	17.8	...	...	...	...	...
14	24.2	24.2	24.2	24.0	23.6	23.2	22.8	22.3	21.7	21.1	20.4	19.3	19.2	...	...	...	...
15	20.0	18.8	18.3	18.0	17.7	17.4	17.1	16.7	16.3	15.8	15.3	14.8	14.3	13.8	*11.4*	*8.7*	*5.9*
16	20.0	18.8	18.3	18.0	17.7	17.4	17.1	16.7	16.3	15.8	15.3	14.8	14.3	13.8	*11.4*	*8.7*	*5.9*
17	20.0	18.8	18.3	18.0	17.7	17.4	17.1	16.7	16.3	15.8	15.3	14.8	14.3	13.8	*11.4*	*8.7*	*5.9*
18	20.0	18.8	18.3	18.0	17.7	17.4	17.1	16.7	16.3	15.8	15.3	14.8	14.3	...	...	...	...
19	20.0	18.8	18.3	18.0	17.7	17.4	17.1	16.7	16.3	15.8	15.3	14.8	14.3	13.8	*11.4*	*8.7*	*5.9*
20	20.0	18.8	18.3	18.0	17.7	17.4	17.1	16.7	16.3	15.8	15.3	14.8	14.3	13.8	*11.4*	*8.7*	*5.9*
21	21.3	20.0	19.5	19.2	18.9	18.6	18.2	17.8	17.4	16.9	16.4	15.8	15.3	*13.9*	*11.4*	*8.7*	*5.9*
22	21.3	20.0	19.5	19.2	18.9	18.6	18.2	17.8	17.4	16.9	16.4	15.8	15.3	*13.9*	*11.4*	*8.7*	*5.9*
23	22.0	20.7	20.2	19.8	19.5	19.1	18.8	18.4	17.9	17.4	16.9	16.3	15.4	...	...	...	...
24	23.3	21.9	21.4	21.0	20.6	20.3	19.9	19.5	19.0	18.5	17.9	17.3	16.8	...	...	...	...
25	23.3	21.9	21.4	21.0	20.6	20.3	19.9	19.5	19.0	18.5	17.9	17.3	16.8	*13.9*	*11.4*	*8.7*	*5.9*
26	23.3	21.9	21.4	21.0	20.6	20.3	19.9	19.5	19.0	18.5	17.9	17.3	16.8	*13.9*	*11.4*	*8.7*	*5.9*
27	23.3	22.4	21.4	20.3	19.3	18.4	17.6	16.9	16.5	16.1	15.8	15.6	...	...	...	...	...
28	23.3	21.9	21.4	21.0	20.6	20.3	19.9	19.5	19.0	18.5	17.9	17.3	16.8	*13.9*	*11.4*	*8.7*	...
29	23.3	21.9	21.4	21.0	20.6	20.3	19.9	19.5	19.0	18.5	17.9	17.3	16.8	*13.9*	*11.4*	*8.7*	*5.9*
30	24.0	22.6	22.0	21.6	21.2	20.9	20.5	20.1	19.6	19.0	18.4	17.8	17.3	*13.9*	*11.4*	*8.7*	*5.9*
31	21.0	19.7	19.2	18.8	18.5	18.2	17.9	17.5	17.1	16.6	16.1	15.5	*14.4*	*11.8*	*9.7*	*7.4*	*5.0*
32	24.7	23.2	22.6	22.2	21.8	21.5	21.1	20.6	20.1	19.5	18.9	18.3	17.8	*13.9*	*11.4*	*8.7*	*5.9*
33	21.7	20.4	19.8	19.5	19.2	18.9	18.5	18.1	17.7	17.1	16.6	16.1	15.5	*13.9*	*11.4*	*9.0*	*6.3*
34	23.3	21.9	21.4	21.0	20.6	20.3	19.9	19.5	19.0	18.5	17.9	17.3	...	...	...	...	...
35	23.3	21.9	21.4	21.0	20.6	20.3	19.9	19.5	19.0	18.5	17.9	17.3	16.7	*13.9*	*11.4*	*9.0*	*6.3*
36	23.3	21.9	21.4	21.0	20.6	20.3	19.9	19.5	19.0	18.5	17.9	17.3	16.7	*13.9*	*11.4*	*9.0*	*6.3*
37	26.7	25.1	24.4	24.0	23.6	23.2	22.8	22.3	21.7	21.1	20.4	19.8	19.2	...	...	...	...
38	27.1	27.1	26.5	25.3	24.3	23.4	22.6	21.9	21.2	20.7	20.5	20.5	19.6	...	...	...	...
39	23.3	21.9	21.4	21.0	20.6	20.3	19.9	19.5	19.0	18.5	17.9	17.3	16.7	*14.8*	*12.0*	*9.3*	*6.7*
40	24.0	22.6	22.0	21.6	21.2	20.9	20.5	20.1	19.6	19.0	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
41	24.0	22.6	22.0	21.6	21.2	20.9	20.5	20.1	19.6	19.0	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
42	24.0	22.6	22.0	21.6	21.2	20.9	20.5	20.1	19.6	19.0	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*

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TABLE 5A
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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
1	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...
3	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...
8	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
9	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...
11	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
12	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...
15	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
16	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
17	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...
20	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
21	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
22	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...
25	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
26	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...
29	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
30	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
31	*3.4*	*2.1*	...	...	...	...	...	...	...	...	...	...
32	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
33	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...
35	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
36	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...
39	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
40	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
41	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
42	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ 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	K03020	...	...	1	2
8	Carbon steel	Forgings	SA-765	II	K03047	...	...	1	2
9	Carbon steel	Plate	SA-515	70	K03101	...	...	1	2
10	Carbon steel	Plate	SA-516	70	K02700	...	...	1	2
11	Carbon steel	Smls. pipe	SA-106	C	K03501	...	...	1	2
12	Carbon steel	Smls. tube	SA-210	C	K03501	...	...	1	2
13	Carbon steel	Castings	SA-216	WCC	K02503	...	...	1	2
14	Carbon steel	Fittings	SA-234	WPC	K03501	...	...	1	2
15	Carbon steel	Plate	SA-537	...	K12437	3	$4 < t \le 6$	1	3
16	Carbon steel	Plate	SA-662	C	K02007	...	...	1	2
17	Carbon steel	Plate	SA-537	...	K12437	2	$4 < t \le 6$	1	3
18	Carbon steel	Plate	SA-738	C	K02008	...	$4 < t \le 6$	1	3
19	Carbon steel	Plate	SA-537	...	K12437	1	$t \le 2\frac{1}{2}$	1	2
20	Carbon steel	Forgings	SA-266	3	K05001	...	...	1	2
21	Carbon steel	Plate	SA-299	...	K02803	...	$t > 1$	1	2
22	Carbon steel	Plate	SA-299	...	K02803	...	$t \le 1$	1	2
23	Carbon steel	Forgings	SA-372	B	K04001	...	...	1	2
24	Carbon steel	Plate	SA-738	A	K12447	...	$t \le 2\frac{1}{2}$	1	2
25	Carbon steel	Plate	SA-738	A	K12447	...	...	1	2
26	Carbon steel	Plate	SA-537	...	K12437	3	$2\frac{1}{2} < t \le 4$	1	3
27	Carbon steel	Plate	SA-537	...	K12437	2	$2\frac{1}{2} < t \le 4$	1	3
28	Carbon steel	Plate	SA-738	C	K02008	...	$2\frac{1}{2} < t \le 4$	1	3
29	Carbon steel	Forgings	SA-765	IV	K02009	...	...	1	3
30	Carbon steel	Plate	SA-537	...	K12437	3	$t \le 2\frac{1}{2}$	1	3
31	Carbon steel	Plate	SA-537	...	K12437	2	$t \le 2\frac{1}{2}$	1	3
32	Carbon steel	Plate	SA-738	C	K02008	...	$t \le 2\frac{1}{2}$	1	3
33	Carbon steel	Plate	SA-612	...	K02900	...	$\frac{1}{2} < t \le 1$	1	1
34	Carbon steel	Plate	SA-612	...	K02900	...	$t \le \frac{1}{2}$	1	1
35	Carbon steel	Plate	SA-738	B	K12007	...	...	1	3
36	Carbon steel	Forgings	SA-372	C	K04801	...	...	...	...
37	Carbon steel	Plate	SA-724	A	K11831	...	...	1	4
38	Carbon steel	Plate	SA-724	C	K12037	...	...	1	4
39	Carbon steel	Plate	SA-724	B	K12031	...	...	1	4
40	C–Mn–Si–Cb	Plate	SA-737	B	K12001	...	...	1	2
41	C–Mn–Si–V	Plate	SA-737	C	K12202	...	...	1	3

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Maximum Use Temperature, °F	External Pressure Chart No.	Notes
1	70	36	1000	CS-2	G13, T3
2	70	36	1000	CS-2	G13, T3
3	70	36	1000	CS-2	G13, T2
4	70	36	1000	CS-2	G13, T3
5	70	36	1000	CS-2	G13, T3
6	70	36	1000	CS-2	G13, T3
7	70	36	1000	CS-2	G13, T3
8	70	36	1000	CS-2	G13, T3
9	70	38	1000	CS-2	G13, T3
10	70	38	1000	CS-2	G13, T3
11	70	40	1000	CS-2	G13, T3
12	70	40	1000	CS-2	G13, T3
13	70	40	1000	CS-2	G13, T3
14	70	40	800	CS-2	G13, T3
15	70	40	700	CS-2	...
16	70	43	700	CS-3	...
17	70	46	650	CS-3	...
18	70	46	650	CS-3	T1
19	70	50	700	CS-3	T1
20	75	37.5	1000	CS-2	G13, T3, W1, W6
21	75	40	1000	CS-2	G13, T3
22	75	42	1000	CS-2	G13, T3
23	75	45	650	CS-3	G9, H5, W2, W6
24	75	45	700	CS-2	H7
25	75	45	700	CS-2	H3
26	75	50	700	CS-5	T1
27	75	55	650	CS-5	T1
28	75	55	650	CS-5	T1
29	80	50	700	CS-3	T1
30	80	55	700	CS-5	...
31	80	60	650	CS-5	...
32	80	60	650	CS-5	...
33	81	50	650	CS-3	H7
34	83	50	650	CS-3	H7
35	85	60	650	CS-5	T1
36	90	55	650	CS-3	G9, H5, T1, W2, W6
37	90	70	700	CS-5	...
38	90	70	700	CS-5	...
39	95	75	700	CS-5	...
40	70	50	700	CS-3	...
41	80	60	700	CS-3	...

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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	24.0	22.6	22.0	21.6	21.2	20.9	20.5	20.1	19.6	19.0	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
2	24.0	22.6	22.0	21.6	21.2	20.9	20.5	20.1	19.6	19.0	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
3	24.0	22.6	22.0	21.6	21.2	20.9	20.5	20.1	19.6	19.0	18.4	17.8	*16.9*	*13.9*	*11.4*	*8.7*	*5.9*
4	24.0	22.6	22.0	21.6	21.2	20.9	20.5	20.1	19.6	19.0	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
5	24.0	22.6	22.0	21.6	21.2	20.9	20.5	20.1	19.6	19.0	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
6	24.0	22.6	22.0	21.6	21.2	20.9	20.5	20.1	19.6	19.0	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
7	24.0	22.6	22.0	21.6	21.2	20.9	20.5	20.1	19.6	19.0	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
8	24.0	22.6	22.0	21.6	21.2	20.9	20.5	20.1	19.6	19.0	18.4	17.8	17.2	*14.8*	*12.0*	*9.3*	*6.7*
9	25.3	23.8	23.2	22.8	22.4	22.1	21.6	21.2	20.6	20.1	19.4	18.8	18.1	*14.8*	*12.0*	*9.3*	*6.7*
10	25.3	23.8	23.2	22.8	22.4	22.1	21.6	21.2	20.6	20.1	19.4	18.8	18.1	*14.8*	*12.0*	*9.3*	*6.7*
11	26.7	25.1	24.4	24.0	23.6	23.2	22.8	22.3	21.7	21.1	20.4	19.8	19.2	*14.8*	*12.0*	*9.3*	*6.7*
12	26.7	25.1	24.4	24.0	23.6	23.2	22.8	22.3	21.7	21.1	20.4	19.8	19.2	*14.8*	*12.0*	*9.3*	*6.7*
13	26.7	25.1	24.4	24.0	23.6	23.2	22.8	22.3	21.7	21.1	20.4	19.8	19.2	*14.8*	*12.0*	*9.3*	*6.7*
14	26.7	25.1	24.4	24.0	23.6	23.2	22.8	22.3	21.7	21.1	20.4	19.8	19.2	*14.8*	*12.0*	...	...
15	26.7	25.3	24.5	23.8	23.2	22.7	22.2	21.7	21.3	20.9	20.6	20.2	19.2	...	...	...	...
16	28.7	26.9	26.3	25.8	25.4	25.0	24.5	24.0	23.4	22.7	22.0	21.2	20.7	...	...	...	...
17	29.2	28.4	27.1	25.9	24.8	23.9	23.1	22.4	21.7	21.2	20.7	20.2	...	...	...	...	...
18	29.2	28.8	28.1	27.6	27.1	26.7	26.2	25.6	25.0	24.3	23.5	*22.5*	...	...	...	...	...
19	29.2	29.2	29.2	29.2	29.0	28.3	27.7	27.2	26.7	26.2	25.7	*22.5*	*18.3*	...	...	...	...
20	25.0	23.5	22.9	22.5	22.1	21.8	21.4	20.9	20.4	19.8	19.2	18.5	17.9	*15.7*	*12.6*	*9.3*	*6.7*
21	26.7	25.1	24.4	24.0	23.6	23.2	22.8	22.3	21.7	21.1	20.4	19.8	19.1	*15.7*	*12.6*	*9.3*	*6.7*
22	28.0	26.3	25.7	25.2	24.8	24.4	23.9	23.4	22.8	22.2	21.5	20.8	20.2	*15.7*	*12.6*	*9.3*	*6.7*
23	30.0	28.2	27.5	27.0	26.5	26.1	25.6	25.1	24.4	23.7	23.0	22.2	...	...	...	...	...
24	30.0	27.8	26.5	25.3	24.3	23.4	22.6	21.9	21.2	20.7	20.2	19.7	19.3	...	...	...	...
25	30.0	27.8	26.5	25.3	24.3	23.4	22.6	21.9	21.2	20.7	20.2	19.7	19.3	...	...	...	...
26	31.3	31.3	30.7	29.8	29.0	28.3	27.7	27.2	26.7	26.2	25.7	*24.4*	*21.4*	...	...	...	...
27	31.3	31.3	31.3	31.3	31.3	31.2	30.5	29.9	29.3	28.8	28.3	*24.4*	...	...	...	...	...
28	31.3	31.3	31.3	31.3	31.3	31.2	30.5	29.9	29.3	28.8	28.3	*24.4*	...	...	...	...	...
29	33.3	31.3	30.5	30.0	29.5	29.0	28.5	27.9	27.2	26.4	25.6	*24.4*	*19.6*	...	...	...	...
30	33.3	33.3	33.3	32.8	31.9	31.2	30.5	29.9	29.3	28.8	28.3	25.1	24.7	...	...	...	...
31	33.3	33.3	33.3	33.3	33.3	33.3	33.3	32.6	32.0	31.4	30.8	26.0	...	...	...	...	...
32	33.3	33.3	33.3	33.3	33.3	33.3	33.3	32.6	32.0	31.4	30.8	26.0	...	...	...	...	...
33	33.3	31.9	30.6	29.1	27.6	26.2	25.1	24.2	23.5	23.0	22.6	22.3	...	...	...	...	...
34	33.3	31.9	30.6	29.1	27.6	26.2	25.1	24.2	23.5	23.0	22.6	22.3	...	...	...	...	...
35	35.4	35.4	35.4	35.4	34.8	34.0	33.3	32.6	32.0	31.4	30.8	*24.4*	...	...	...	...	...
36	36.7	35.1	33.6	32.0	30.3	28.9	27.6	26.6	25.9	25.3	24.9	*24.4*	...	...	...	...	...
37	37.5	37.5	37.5	37.5	37.5	36.7	35.2	33.9	32.9	32.2	31.7	26.2	25.9	...	...	...	...
38	37.5	37.5	37.5	37.5	37.5	36.7	35.2	33.9	32.9	32.2	31.7	26.2	25.9	...	...	...	...
39	39.6	39.6	39.6	39.6	39.6	39.4	37.7	36.3	35.3	34.5	33.9	26.2	25.9	...	...	...	...
40	29.2	29.2	29.2	29.1	27.6	26.2	25.1	24.2	23.5	23.0	22.6	22.3	22.1	...	...	...	...
41	33.3	33.3	33.3	33.3	33.1	31.5	30.1	29.1	28.2	27.6	27.1	26.2	25.9	...	...	...	...

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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
1	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
2	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
3	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
4	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
5	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
6	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
7	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
8	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
9	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
10	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
11	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
12	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
13	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...
20	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
21	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
22	*4.0*	*2.5*	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...
39	...	...	...	...	...	...	...	...	...	...	...	...
40	...	...	...	...	...	...	...	...	...	...	...	...
41	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	C–½Mo	Smls. tube	SA-209	T1b	K11422	...	...	3	1
	2	C–½Mo	Smls. tube	SA-209	T1	K11522	...	...	3	1
	3	C–½Mo	Fittings	SA-234	WP1	K12821	...	...	3	1
	4	C–½Mo	Smls. pipe	SA-335	P1	K11522	...	...	3	1
	5	C–½Mo	Forged pipe	SA-369	FP1	K11522	...	...	3	1
	6	C–½Mo	Smls. tube	SA-209	T1a	K12023	...	...	3	1
	7	C–½Mo	Castings	SA-217	WC1	J12524	...	...	3	1
	8	C–½Mo	Castings	SA-352	LC1	J12522	...	...	3	1
	9	C–½Mo	Plate	SA-204	A	K11820	...	...	3	1
	10	C–½Mo	Forgings	SA-182	F1	K12822	...	...	3	2
	11	C–½Mo	Plate	SA-204	B	K12020	...	...	3	2
	12	C–½Mo	Forgings	SA-336	F1	K12520	...	...	3	2
A08	13	...	...	...	...	...	...	...	...	...
	14	C–½Mo	Plate	SA-204	C	K12320	...	...	3	2
	15	C–½Mo	Plate	SA-517	J	K11625	...	$t \le 1\frac{1}{4}$	11B	6
	16	½Cr–⅕Mo	Forgings	SA-372	G	K13049	70	...	11B	...
	17	½Cr–⅕Mo	Forgings	SA-372	H	K13547	70	...	11B	...
	18	½Cr–⅕Mo–V	Plate	SA-517	B	K11630	...	$t \le 1\frac{1}{4}$	11B	4
	19	½Cr–¼Mo–Si	Plate	SA-517	A	K11856	...	$t \le 1\frac{1}{4}$	11B	1
	20	½Cr–¼Mo–Si	Forgings	SA-592	A	K11856	...	$t \le 2\frac{1}{2}$	11B	1
	21	½Cr–½Mo	Smls. pipe	SA-335	P2	K11547	...	...	3	1
	22	½Cr–½Mo	Forged pipe	SA-369	FP2	K11547	...	...	3	1
	23	½Cr–½Mo	Plate	SA-387	2	K12143	1	...	3	1
	24	½Cr–½Mo	Smls. tube	SA-213	T2	K11547	...	...	3	1
	25	½Cr–½Mo	Forgings	SA-182	F2	K12122	...	...	3	2
	26	½Cr–½Mo	Plate	SA-387	2	K12143	2	...	3	2
	27	¾Cr–½Ni–Cu	Smls. tube	SA-423	1	K11535	...	...	4	2
	28	¾Cr–¾Ni–Cu–Al	Smls. pipe	SA-333	4	K11267	...	...	4	2
	29	1Cr–⅕Mo	Forgings	SA-372	E	K13047	70	...	11B	1
	30	1Cr–⅕Mo	Forgings	SA-372	F	G41350	70	...	11B	1
	31	1Cr–⅕Mo	Forgings	SA-372	J	K13548	70	...	11B	1
	32	1Cr–⅕Mo	Forgings	SA-372	J	G41370	110	...	11B	1
	33	1Cr–½Mo	Plate	SA-387	12	K11757	1	...	4	1
	34	1Cr–½Mo	Forgings	SA-182	F12	K11562	1	...	4	1
	35	1Cr–½Mo	Smls. tube	SA-213	T12	K11562	...	...	4	1
	36	1Cr–½Mo	Fittings	SA-234	WP12	K12062	1	...	4	1
	37	1Cr–½Mo	Smls. pipe	SA-335	P12	K11562	...	...	4	1
	38	1Cr–½Mo	Forged pipe	SA-369	FP12	K11562	...	...	4	1
	39	1Cr–½Mo	Plate	SA-387	12	K11757	2	...	4	1
	40	1Cr–½Mo	Forgings	SA-182	F12	K11564	2	...	4	1
	41	1Cr–½Mo	Forgings	SA-336	F12	K11564	...	...	4	1

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Maximum Use Temperature, °F	External Pressure Chart No.	Notes
1	53	28	1000	CS-1	G14, T7
2	55	30	1000	CS-2	G14, T6
3	55	30	1000	CS-2	G14, T6
4	55	30	1000	CS-2	G14, T6
5	55	30	1000	CS-2	G14, T6
6	60	32	1000	CS-2	G14, T6
7	65	35	1000	CS-2	G14, T6
8	65	35	650	CS-2	...
9	65	37	1000	CS-2	G14, T6
10	70	40	1000	CS-2	G14, T6
11	70	40	1000	CS-2	G14, T6
12	70	40	1000	CS-2	G14, T6
13	...	...	...	...	... A08
14	75	43	1000	CS-2	G14, T6
15	115	100	650	HT-1	...
16	120	70	200	CS-3	G9, H4, W2, W6
17	120	70	200	CS-3	G9, H4, W2, W6
18	115	100	650	HT-1	...
19	115	100	650	HT-1	...
20	115	100	650	HT-1	...
21	55	30	1000	CS-2	T7
22	55	30	1000	CS-2	T7
23	55	33	1000	CS-2	T6
24	60	30	1000	CS-2	T7
25	70	40	1000	CS-2	G14, T6
26	70	45	1000	CS-3	H2, T6
27	60	37	650	CS-2	...
28	60	35	650	CS-2	...
29	120	70	650	CS-5	G9, H4, W2, W6
30	120	70	650	CS-5	G9, H4, W2, W6
31	120	70	650	CS-5	G9, H4, W2, W6
32	135	110	650	HT-1	H4, W2, W6
33	55	33	1200	CS-2	T7
34	60	32	1200	CS-2	T7
35	60	32	1200	CS-2	T7
36	60	32	1200	CS-2	T7
37	60	32	1200	CS-2	T7
38	60	32	1200	CS-2	T7
39	65	40	1200	CS-2	T6
40	70	40	1200	CS-2	T6
41	70	40	1200	CS-2	T6

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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	18.7	18.0	17.5	17.2	16.8	16.5	16.3	16.0	15.8	15.5	15.3	15.0	14.7	14.3	14.0	13.5	13.0
2	20.0	19.2	18.8	18.4	18.0	17.7	17.4	17.1	16.9	16.6	16.4	16.1	15.7	15.4	14.9	14.5	*13.7*
3	20.0	19.2	18.8	18.4	18.0	17.7	17.4	17.1	16.9	16.6	16.4	16.1	15.7	15.4	14.9	14.5	*13.7*
4	20.0	19.2	18.8	18.4	18.0	17.7	17.4	17.1	16.9	16.6	16.4	16.1	15.7	15.4	14.9	14.5	*13.7*
5	20.0	19.2	18.8	18.4	18.0	17.7	17.4	17.1	16.9	16.6	16.4	16.1	15.7	15.4	14.9	14.5	*13.7*
6	21.3	20.5	20.1	19.6	19.2	18.9	18.6	18.3	18.0	17.7	17.4	17.1	16.8	16.4	15.9	15.4	*13.7*
7	23.3	22.5	21.9	21.5	21.0	20.7	20.3	20.0	19.7	19.4	19.1	18.7	18.4	17.9	17.4	16.9	*13.7*
8	23.3	22.5	21.9	21.5	21.0	20.7	20.3	20.0	19.7	19.4	19.1	18.7	...	...	...	...	...
9	24.7	23.7	23.2	22.7	22.2	21.8	21.5	21.1	20.8	20.5	20.2	19.8	19.4	19.0	18.4	17.9	*13.7*
10	26.7	25.7	25.1	24.5	24.0	23.6	23.2	22.9	22.5	22.2	21.8	21.4	21.0	20.5	19.9	19.3	*13.7*
11	26.7	25.7	25.1	24.5	24.0	23.6	23.2	22.9	22.5	22.2	21.8	21.4	21.0	20.5	19.9	19.3	*13.7*
12	26.7	25.7	25.1	24.5	24.0	23.6	23.2	22.9	22.5	22.2	21.8	21.4	21.0	20.5	19.9	19.3	*13.7*
A08 13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	28.7	27.6	26.9	26.4	25.9	25.4	25.0	24.6	24.2	23.8	23.4	23.0	22.6	22.0	21.4	20.7	*13.7*
15	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	...	...	...	...	...
16	46.7	46.7	46.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	46.7	46.7	46.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	...	...	...	...	...
19	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	...	...	...	...	...
20	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	...	...	...	...	...
21	20.0	19.2	18.8	18.4	18.0	17.7	17.4	17.1	16.9	16.6	16.4	16.1	15.7	15.4	14.9	14.5	13.9
22	20.0	19.2	18.8	18.4	18.0	17.7	17.4	17.1	16.9	16.6	16.4	16.1	15.7	15.4	14.9	14.5	13.9
23	22.0	21.2	20.7	20.2	19.8	19.5	19.2	18.9	18.6	18.3	18.0	17.7	17.3	16.9	16.4	15.9	*14.3*
24	20.0	19.2	18.8	18.4	18.0	17.7	17.4	17.1	16.9	16.6	16.4	16.1	15.7	15.4	14.9	14.5	13.9
25	26.7	25.7	25.1	24.5	24.0	23.6	23.2	22.9	22.5	22.2	21.8	21.4	21.0	20.5	19.9	19.3	*15.0*
26	29.2	28.9	28.2	27.6	27.1	26.6	26.1	25.7	25.3	24.9	24.5	24.1	23.6	23.1	22.4	21.7	*14.5*
27	24.7	23.3	22.7	22.3	22.0	21.8	21.5	21.3	21.1	20.9	20.6	20.3	...	...	...	...	...
28	23.3	22.1	21.5	21.1	20.8	20.6	20.4	20.2	20.0	19.7	19.5	19.2	...	...	...	...	...
29	46.7	44.5	43.5	42.6	41.9	41.2	40.6	40.0	39.4	38.7	37.9	36.9	...	...	...	...	...
30	46.7	44.5	43.5	42.6	41.9	41.2	40.6	40.0	39.4	38.7	37.9	36.9	...	...	...	...	...
31	46.7	44.5	43.5	42.6	41.9	41.2	40.6	40.0	39.4	38.7	37.9	36.9	...	...	...	...	...
32	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	...	...	...	...	...
33	22.0	20.6	19.9	19.2	18.7	18.2	17.9	17.5	17.2	17.0	16.8	16.5	16.3	16.0	15.7	15.4	15.0
34	21.3	20.0	19.3	18.7	18.1	17.7	17.3	17.0	16.7	16.5	16.3	16.0	15.8	15.5	15.3	14.9	14.5
35	21.3	20.0	19.3	18.7	18.1	17.7	17.3	17.0	16.7	16.5	16.3	16.0	15.8	15.5	15.3	14.9	14.5
36	21.3	20.0	19.3	18.7	18.1	17.7	17.3	17.0	16.7	16.5	16.3	16.0	15.8	15.5	15.3	14.9	14.5
37	21.3	20.0	19.3	18.7	18.1	17.7	17.3	17.0	16.7	16.5	16.3	16.0	15.8	15.5	15.3	14.9	14.5
38	21.3	20.0	19.3	18.7	18.1	17.7	17.3	17.0	16.7	16.5	16.3	16.0	15.8	15.5	15.3	14.9	14.5
39	26.7	25.0	24.1	23.3	22.7	22.1	21.7	21.3	20.9	20.6	20.3	20.0	19.7	19.4	19.1	18.6	*18.0*
40	26.7	25.0	24.1	23.3	22.7	22.1	21.7	21.3	20.9	20.6	20.3	20.0	19.7	19.4	19.1	18.6	*18.0*
41	26.7	25.0	24.1	23.3	22.7	22.1	21.7	21.3	20.9	20.6	20.3	20.0	19.7	19.4	19.1	18.6	*18.0*

TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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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
1	8.2	4.8	...	...	...	...	...	...	...	...	...	...
2	8.2	4.8	...	...	...	...	...	...	...	...	...	...
3	8.2	4.8	...	...	...	...	...	...	...	...	...	...
4	8.2	4.8	...	...	...	...	...	...	...	...	...	...
5	8.2	4.8	...	...	...	...	...	...	...	...	...	...
6	8.2	4.8	...	...	...	...	...	...	...	...	...	...
7	8.2	4.8	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...
9	8.2	4.8	...	...	...	...	...	...	...	...	...	...
10	8.2	4.8	...	...	...	...	...	...	...	...	...	...
11	8.2	4.8	...	...	...	...	...	...	...	...	...	...
12	8.2	4.8	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...
14	8.2	4.8	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...
21	9.2	5.9	...	...	...	...	...	...	...	...	...	...
22	9.2	5.9	...	...	...	...	...	...	...	...	...	...
23	9.2	5.9	...	...	...	...	...	...	...	...	...	...
24	9.2	5.9	...	...	...	...	...	...	...	...	...	...
25	9.2	5.9	...	...	...	...	...	...	...	...	...	...
26	10.0	6.3	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...
33	11.3	7.2	4.5	2.8	1.8	1.1	...	...	...	...	...	...
34	11.3	7.2	4.5	2.8	1.8	1.1	...	...	...	...	...	...
35	11.3	7.2	4.5	2.8	1.8	1.1	...	...	...	...	...	...
36	11.3	7.2	4.5	2.8	1.8	1.1	...	...	...	...	...	...
37	11.3	7.2	4.5	2.8	1.8	1.1	...	...	...	...	...	...
38	11.3	7.2	4.5	2.8	1.8	1.1	...	...	...	...	...	...
39	11.3	7.2	4.5	2.8	1.8	1.1	...	...	...	...	...	...
40	11.3	7.2	4.5	2.8	1.8	1.1	...	...	...	...	...	...
41	11.3	7.2	4.5	2.8	1.8	1.1	...	...	...	...	...	...

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
1	1¼Cr–½Mo	Castings	SA-217	WC6	J12072	...	...	4	1
2	1¼Cr–½Mo	Bar	SA-739	B11	K11797	...	...	4	1
3	1¼Cr–½Mo–Si	Forgings	SA-182	F11	K11597	1	...	4	1
4	1¼Cr–½Mo–Si	Smls. tube	SA-213	T11	K11597	...	...	4	1
5	1¼Cr–½Mo–Si	Fittings	SA-234	WP11	...	1	...	4	1
6	1¼Cr–½Mo–Si	Smls. pipe	SA-335	P11	K11597	...	...	4	1
7	1¼Cr–½Mo–Si	Forged pipe	SA-369	FP11	K11597	...	...	4	1
8	1¼Cr–½Mo–Si	Plate	SA-387	11	K11789	1	...	4	1
9	1¼Cr–½Mo–Si	Forgings	SA-182	F11	K11572	2	...	4	1
10	1¼Cr–½Mo–Si	Forgings	SA-336	F11	K11572	2	...	4	1
11	1¼Cr–½Mo–Si	Forgings	SA-336	F11	K11572	3	...	4	1
12	1¼Cr–½Mo–Si	Plate	SA-387	11	K11789	2	...	4	1
13	1¾Cr–½Mo–Cu	Forgings	SA-592	E	K11695	...	$2\frac{1}{2} < t \le 4$	11B	2
14	1¾Cr–½Mo–Cu	Forgings	SA-592	E	K11695	...	$t \le 2\frac{1}{2}$	11B	2
15	1¾Cr–½Mo–Ti	Plate	SA-517	E	K21604	...	$2\frac{1}{2} < t \le 6$	11B	2
16	1¾Cr–½Mo–Ti	Plate	SA-517	E	K21604	...	$t \le 2\frac{1}{2}$	11B	2
17	2¼Cr–1Mo	Forgings	SA-182	F22	K21590	1	...	5A	1
18	2¼Cr–1Mo	Smls. tube	SA-213	T22	K21590	...	...	5A	1
19	2¼Cr–1Mo	Fittings	SA-234	WP22	K21590	1	...	5A	1
20	2¼Cr–1Mo	Smls. pipe	SA-335	P22	K21590	...	...	5A	1
21	2¼Cr–1Mo	Forgings	SA-336	F22	K21590	1	...	5A	1
22	2¼Cr–1Mo	Forged pipe	SA-369	FP22	K21590	...	...	5A	1
23	2¼Cr–1Mo	Plate	SA-387	22	K21590	1	...	5A	1
24	2¼Cr–1Mo	Castings	SA-217	WC9	J21890	...	...	5A	1
25	2¼Cr–1Mo	Forgings	SA-182	F22	K21590	3	...	5A	1
26	2¼Cr–1Mo	Forgings	SA-336	F22	K21590	3	...	5A	1
27	2¼Cr–1Mo	Plate	SA-387	22	K21590	2	...	5A	1
28	2¼Cr–1Mo	Bar	SA-739	B22	K21390	...	...	5A	1
29	2¼Cr–1Mo	Castings	SA-487	8	J22091	A	...	5C	1
30	2¼Cr–1Mo	Forgings	SA-508	22	K21590	3	...	5C	1
31	2¼Cr–1Mo	Forgings	SA-541	22	K21390	3	...	5C	1
32	2¼Cr–1Mo	Plate	SA-542	B	K21590	4	...	5C	1
33	2¼Cr–1Mo–V	Forgings	SA-182	F22V	K31835	...	...	5C	1
34	2¼Cr–1Mo–V	Forgings	SA-336	F22V	K31835	...	...	5C	1
35	2¼Cr–1Mo–V	Forgings	SA-541	22V	K31835	...	...	5C	1
36	2¼Cr–1Mo–V	Plate	SA-542	D	K31835	4a	...	5C	1
37	2¼Cr–1Mo–V	Plate	SA-832	22V	K31835	...	...	5C	1
38	3Cr–1Mo	Smls. tube	SA-213	T21	K31545	...	...	5A	1
39	3Cr–1Mo	Smls. pipe	SA-335	P21	K31545	...	...	5A	1
40	3Cr–1Mo	Forgings	SA-336	F21	K31545	1	...	5A	1
41	3Cr–1Mo	Forged pipe	SA-369	FP21	K31545	...	...	5A	1
42	3Cr–1Mo	Plate	SA-387	21	K31545	1	...	5A	1

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Maximum Use Temperature, °F	External Pressure Chart No.	Notes
1	70	40	1100	CS-2	T6
2	70	45	1200	CS-3	T5
3	60	30	1200	CS-2	T7
4	60	30	1200	CS-2	T7
5	60	30	1200	CS-2	T7
6	60	30	1200	CS-2	T7
7	60	30	1200	CS-2	T7
8	60	35	1200	CS-2	T6
9	70	40	1200	CS-2	T7
10	70	40	1200	CS-2	T7
11	75	45	1200	CS-3	T5
12	75	45	1200	CS-3	T5
13	105	90	650	CS-5	S1
14	115	100	650	HT-1	...
15	105	90	650	CS-5	...
16	115	100	650	HT-1	...
17	60	30	1200	CS-2	T5, W5
18	60	30	1200	CS-2	T5, W5
19	60	30	1200	CS-2	T5, W5
20	60	30	1200	CS-2	T5, W5
21	60	30	1200	CS-2	T5, W5
22	60	30	1200	CS-2	T5, W5
23	60	30	1200	CS-2	H1, T5, W5
24	70	40	1200	CS-2	T7, W5
25	75	45	1200	CS-3	T5, W5
26	75	45	1200	CS-3	T5, W5
27	75	45	1200	CS-3	T5, W5
28	75	45	1200	CS-3	T5, W5
29	85	55	1000	CS-3	T5, W5
30	85	55	850	CS-2	G12, T5
31	85	55	850	CS-2	G12, T5
32	85	55	850	CS-2	G12, T5
33	85	60	900	CS-2	G12, T5
34	85	60	900	CS-2	G12, T5
35	85	60	900	CS-2	G12, T5
36	85	60	900	CS-2	G12, T5
37	85	60	900	CS-2	G12, T5
38	60	30	1200	CS-2	T5
39	60	30	1200	CS-2	T5
40	60	30	1200	CS-2	T5
41	60	30	1200	CS-2	T5
42	60	30	1200	CS-2	T5

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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	25.4	24.6	24.0	23.4	22.9	22.5	22.0	21.7	21.3	20.9	20.5	20.1	19.7	19.2	18.7	*13.7*
2	29.2	28.5	27.7	27.0	26.3	25.8	25.3	24.8	24.4	23.9	23.5	23.1	22.6	22.2	21.6	*20.2*	*13.7*
3	20.0	19.0	18.5	18.0	17.6	17.2	16.8	16.5	16.2	16.0	15.7	15.4	15.1	14.8	14.4	14.0	13.6
4	20.0	19.0	18.5	18.0	17.6	17.2	16.8	16.5	16.2	16.0	15.7	15.4	15.1	14.8	14.4	14.0	13.6
5	20.0	19.0	18.5	18.0	17.6	17.2	16.8	16.5	16.2	16.0	15.7	15.4	15.1	14.8	14.4	14.0	13.6
6	20.0	19.0	18.5	18.0	17.6	17.2	16.8	16.5	16.2	16.0	15.7	15.4	15.1	14.8	14.4	14.0	13.6
7	20.0	19.0	18.5	18.0	17.6	17.2	16.8	16.5	16.2	16.0	15.7	15.4	15.1	14.8	14.4	14.0	13.6
8	23.3	22.2	21.5	21.0	20.5	20.0	19.6	19.3	18.9	18.6	18.3	18.0	17.6	17.2	16.8	16.4	*13.7*
9	26.7	25.4	24.6	24.0	23.4	22.9	22.5	22.0	21.7	21.3	20.9	20.5	20.1	19.7	19.2	18.7	14.5
10	26.7	25.4	24.6	24.0	23.4	22.9	22.5	22.0	21.7	21.3	20.9	20.5	20.1	19.7	19.2	18.7	14.5
11	30.0	28.5	27.7	27.0	26.3	25.8	25.3	24.8	24.4	23.9	23.5	23.1	22.6	22.2	21.6	*20.2*	*13.7*
12	30.0	28.5	27.7	27.0	26.3	25.8	25.3	24.8	24.4	23.9	23.5	23.1	22.6	22.2	21.6	*20.2*	*13.7*
13	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	...	...	...	...	...
14	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	...	...	...	...	...
15	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	...	...	...	...	...
16	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	...	...	...	...	...
17	20.0	19.1	18.7	18.4	18.2	18.0	18.0	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.7	*17.1*	*13.6*
18	20.0	19.1	18.7	18.4	18.2	18.0	18.0	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.7	*17.1*	*13.6*
19	20.0	19.1	18.7	18.4	18.2	18.0	18.0	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.7	*17.1*	*13.6*
20	20.0	19.1	18.7	18.4	18.2	18.0	18.0	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.7	*17.1*	*13.6*
21	20.0	19.1	18.7	18.4	18.2	18.0	18.0	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.7	*17.1*	*13.6*
22	20.0	19.1	18.7	18.4	18.2	18.0	18.0	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.7	*17.1*	*13.6*
23	20.0	19.1	18.7	18.4	18.2	18.0	18.0	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.7	*17.1*	*13.6*
24	26.7	25.3	24.7	24.2	23.9	23.6	23.4	23.2	23.0	22.7	22.5	22.2	21.9	21.6	21.2	20.7	16.0
25	30.0	28.3	27.5	26.8	26.2	25.8	25.4	25.1	24.8	24.6	24.3	24.0	23.7	23.3	22.9	*21.9*	*17.0*
26	30.0	28.3	27.5	26.8	26.2	25.8	25.4	25.1	24.8	24.6	24.3	24.0	23.7	23.3	22.9	*21.9*	*17.0*
27	30.0	28.3	27.5	26.8	26.2	25.8	25.4	25.1	24.8	24.6	24.3	24.0	23.7	23.3	22.9	*21.9*	*17.0*
28	30.0	28.3	27.5	26.8	26.2	25.8	25.4	25.1	24.8	24.6	24.3	24.0	23.7	23.3	22.9	*21.9*	*17.0*
29	35.4	34.7	33.9	33.3	32.8	32.4	32.1	31.9	31.6	31.3	31.0	30.6	30.2	29.7	29.2	*21.9*	*15.8*
30	35.4	34.7	33.9	33.3	32.8	32.4	32.1	31.9	31.6	31.3	31.0	30.6	30.2	29.7	29.2	*21.9*	...
31	35.4	34.7	33.9	33.3	32.8	32.4	32.1	31.9	31.6	31.3	31.0	30.6	30.2	29.7	29.2	*21.9*	...
32	35.4	34.7	33.9	33.3	32.8	32.4	32.1	31.9	31.6	31.3	31.0	30.6	30.2	29.7	29.2	*21.9*	...
33	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	34.9	34.2	33.4	*28.9*	*23.8*
34	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	34.9	34.2	33.4	*28.9*	*23.8*
35	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	34.9	34.2	33.4	*28.9*	*23.8*
36	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	34.9	34.2	33.4	*28.9*	*23.8*
37	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	34.9	34.2	33.4	*28.9*	*23.8*
38	20.0	19.1	18.7	18.4	18.2	18.0	18.0	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.7	*16.0*	*12.0*
39	20.0	19.1	18.7	18.4	18.2	18.0	18.0	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.7	*16.0*	*12.0*
40	20.0	19.1	18.7	18.4	18.2	18.0	18.0	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.7	*16.0*	*12.0*
41	20.0	19.1	18.7	18.4	18.2	18.0	18.0	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.7	*16.0*	*12.0*
42	20.0	19.1	18.7	18.4	18.2	18.0	18.0	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.7	*16.0*	*12.0*

TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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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
1	9.3	6.3	4.2	2.8	...	...	...	...	...	...	...	...
2	9.3	6.3	4.2	2.8	1.9	1.2	...	...	...	...	...	...
3	9.3	6.3	4.2	2.8	1.9	1.2	...	...	...	...	...	...
4	9.3	6.3	4.2	2.8	1.9	1.2	...	...	...	...	...	...
5	9.3	6.3	4.2	2.8	1.9	1.2	...	...	...	...	...	...
6	9.3	6.3	4.2	2.8	1.9	1.2	...	...	...	...	...	...
7	9.3	6.3	4.2	2.8	1.9	1.2	...	...	...	...	...	...
8	9.3	6.3	4.2	2.8	1.9	1.2	...	...	...	...	...	...
9	9.3	6.3	4.2	2.8	1.9	1.2	...	...	...	...	...	...
10	9.3	6.3	4.2	2.8	1.9	1.2	...	...	...	...	...	...
11	9.3	6.3	4.2	2.8	1.9	1.2	...	...	...	...	...	...
12	9.3	6.3	4.2	2.8	1.9	1.2	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...
17	10.8	8.0	5.7	3.8	2.4	1.4	...	...	...	...	...	...
18	10.8	8.0	5.7	3.8	2.4	1.4	...	...	...	...	...	...
19	10.8	8.0	5.7	3.8	2.4	1.4	...	...	...	...	...	...
20	10.8	8.0	5.7	3.8	2.4	1.4	...	...	...	...	...	...
21	10.8	8.0	5.7	3.8	2.4	1.4	...	...	...	...	...	...
22	10.8	8.0	5.7	3.8	2.4	1.4	...	...	...	...	...	...
23	10.8	8.0	5.7	3.8	2.4	1.4	...	...	...	...	...	...
24	11.4	7.8	5.1	3.2	2.0	1.2	...	...	...	...	...	...
25	11.4	7.8	5.1	3.2	2.0	1.2	...	...	...	...	...	...
26	11.4	7.8	5.1	3.2	2.0	1.2	...	...	...	...	...	...
27	11.4	7.8	5.1	3.2	2.0	1.2	...	...	...	...	...	...
28	11.4	7.8	5.1	3.2	2.0	1.2	...	...	...	...	...	...
29	11.4	7.8	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...
38	9.0	7.0	5.5	4.0	2.7	1.5	...	...	...	...	...	...
39	9.0	7.0	5.5	4.0	2.7	1.5	...	...	...	...	...	...
40	9.0	7.0	5.5	4.0	2.7	1.5	...	...	...	...	...	...
41	9.0	7.0	5.5	4.0	2.7	1.5	...	...	...	...	...	...
42	9.0	7.0	5.5	4.0	2.7	1.5	...	...	...	...	...	...

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
1	3Cr–1Mo	Forgings	SA-182	F21	K31545	...	...	5A	1
2	3Cr–1Mo	Forgings	SA-336	F21	K31545	3	...	5A	1
3	3Cr–1Mo	Plate	SA-387	21	K31545	2	...	5A	1
4	3Cr–1Mo–¼V–Ti–B	Forgings	SA-182	F3V	K31830	...	...	5C	1
5	3Cr–1Mo–¼V–Ti–B	Forgings	SA-336	F3V	K31830	...	...	5C	1
6	3Cr–1Mo–¼V–Ti–B	Forgings	SA-508	3V	K31830	...	...	5C	1
7	3Cr–1Mo–¼V–Ti–B	Forgings	SA-541	3V	K31830	...	...	5C	1
8	3Cr–1Mo–¼V–Ti–B	Plate	SA-542	C	K31830	4a	...	5C	1
9	3Cr–1Mo–¼V–Ti–B	Plate	SA-832	21V	K31830	...	...	5C	1
10	5Cr–½Mo	Smls. tube	SA-213	T5	K41545	...	...	5B	1
11	5Cr–½Mo	Fittings	SA-234	WP5	K41545	...	...	5B	1
12	5Cr–½Mo	Smls. pipe	SA-335	P5	K41545	...	...	5B	1
13	5Cr–½Mo	Forged pipe	SA-369	FP5	K41545	...	...	5B	1
14	5Cr–½Mo	Plate	SA-387	5	K41545	1	...	5B	1
15	5Cr–½Mo	Forgings	SA-336	F5	K41545	...	...	5B	1
16	5Cr–½Mo	Forgings	SA-182	F5	K41545	...	...	5B	1
17	5Cr–½Mo	Plate	SA-387	5	K41545	2	...	5B	1
18	5Cr–½Mo	Forgings	SA-336	F5A	K42544	...	...	5B	1
19	5Cr–½Mo	Castings	SA-217	C5	J42045	...	...	5B	1
20	5Cr–½Mo	Forgings	SA-182	F5a	K42544	...	...	5B	1
21	5Cr–½Mo–Si	Smls. tube	SA-213	T5b	K51545	...	...	5B	1
22	5Cr–½Mo–Si	Smls. pipe	SA-335	P5b	K51545	...	...	5B	1
23	5Cr–½Mo–Ti	Smls. tube	SA-213	T5c	K41245	...	...	5B	1
24	5Cr–½Mo–Ti	Smls. pipe	SA-335	P5c	K41245	...	...	5B	1
A08 25	...	...	...	...	...	...	...	...	...
26	9Cr–1Mo	Smls. tube	SA-213	T9	K90941	...	...	5B	1
27	9Cr–1Mo	Fittings	SA-234	WP9	K90941	...	...	5B	1
28	9Cr–1Mo	Smls. pipe	SA-335	P9	K90941	...	...	5B	1
29	9Cr–1Mo	Forged pipe	SA-369	FP9	K90941	...	...	5B	1
30	9Cr–1Mo	Forgings	SA-182	F9	K90941	...	...	5B	1
31	9Cr–1Mo	Forgings	SA-336	F9	K90941	...	...	5B	1
32	9Cr–1Mo	Castings	SA-217	C12	J82090	...	...	5B	1
33	9Cr–1Mo–V	Forgings	SA-182	F91	K90901	...	...	5B	2
34	9Cr–1Mo–V	Smls. tube	SA-213	T91	K90901	...	...	5B	2
35	9Cr–1Mo–V	Smls. pipe	SA-335	P91	K90901	...	...	5B	2
36	9Cr–1Mo–V	Plate	SA-387	91	K90901	2	...	5B	2
37	12Cr–Al	Plate	SA-240	405	S40500	...	...	7	1
38	12Cr–Al	Smls. tube	SA-268	TP405	S40500	...	...	7	1
39	13Cr	Plate	SA-240	410S	S41008	...	...	7	1
40	13Cr	Smls. tube	SA-268	TP410	S41000	...	...	6	1
41	13Cr	Plate	SA-240	410	S41000	...	...	6	1

TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Maximum Use Temperature, °F	External Pressure Chart No.	Notes
1	75	45	1200	CS-3	T6
2	75	45	1200	CS-3	T6
3	75	45	1200	CS-3	T6
4	85	60	900	CS-3	G12, T4
5	85	60	900	CS-3	G12, T4
6	85	60	900	CS-3	G12, T4
7	85	60	900	CS-3	G12, T4
8	85	60	900	CS-3	G12, T4
9	85	60	900	CS-3	G12, T4
10	60	30	1200	CS-2	T5
11	60	30	1200	CS-2	T5
12	60	30	1200	CS-2	T5
13	60	30	1200	CS-2	T5
14	60	30	1200	CS-2	T5
15	60	36	1200	CS-2	T5
16	70	40	1200	CS-2	T5
17	75	45	1200	CS-3	T5
18	80	50	1200	CS-3	T5
19	90	60	1200	CS-3	H2, T5
20	90	65	1200	CS-5	T5
21	60	30	1200	CS-2	T5
22	60	30	1200	CS-2	T5
23	60	30	1200	CS-2	T5
24	60	30	1200	CS-2	T5
25	...	...	...	...	... A08
26	60	30	1200	CS-2	T7
27	60	30	1200	CS-2	T7
28	60	30	1200	CS-2	T7
29	60	30	1200	CS-2	T7
30	85	55	1200	CS-3	T6
31	85	55	1200	CS-3	T6
32	90	60	1200	CS-3	H2, T6
33	85	60	1200	CS-3	T7
34	85	60	1200	CS-3	T7
35	85	60	1200	CS-3	T7
36	85	60	1200	CS-3	T7
37	60	25	1000	CS-1	G8, T7
38	60	30	1000	CS-2	G8, T7
39	60	30	1200	CS-2	T6
40	60	30	1200	CS-2	T6
41	65	30	1200	CS-2	T6

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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	30.0	28.3	27.5	26.8	26.2	25.8	25.4	25.1	24.8	24.6	24.3	24.0	23.7	23.3	22.9	19.0	*13.1*
2	30.0	28.3	27.5	26.8	26.2	25.8	25.4	25.1	24.8	24.6	24.3	24.0	23.7	23.3	22.9	19.0	*13.1*
3	30.0	28.3	27.5	26.8	26.2	25.8	25.4	25.1	24.8	24.6	24.3	24.0	23.7	23.3	22.9	19.0	*13.1*
4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	34.8	34.1	33.3	*31.2*	*25.8*	*21.0*
5	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	34.8	34.1	33.3	*31.2*	*25.8*	*21.0*
6	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	34.8	34.1	33.3	*31.2*	*25.8*	*21.0*
7	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	34.8	34.1	33.3	*31.2*	*25.8*	*21.0*
8	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	34.8	34.1	33.3	*31.2*	*25.8*	*21.0*
9	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	34.8	34.1	33.3	*31.2*	*25.8*	*21.0*
10	20.0	18.7	18.1	17.7	17.4	17.3	17.2	17.1	17.1	17.0	16.8	16.6	16.3	15.9	15.4	*14.3*	*10.9*
11	20.0	18.7	18.1	17.7	17.4	17.3	17.2	17.1	17.1	17.0	16.8	16.6	16.3	15.9	15.4	*14.3*	*10.9*
12	20.0	18.7	18.1	17.7	17.4	17.3	17.2	17.1	17.1	17.0	16.8	16.6	16.3	15.9	15.4	*14.3*	*10.9*
13	20.0	18.7	18.1	17.7	17.4	17.3	17.2	17.1	17.1	17.0	16.8	16.6	16.3	15.9	15.4	*14.3*	*10.9*
14	20.0	18.7	18.1	17.7	17.4	17.3	17.2	17.1	17.1	17.0	16.8	16.6	16.3	15.9	15.4	*14.3*	*10.9*
15	24.0	22.4	21.7	21.2	20.9	20.7	20.6	20.5	20.5	20.4	20.2	19.9	19.6	19.1	18.5	*14.3*	*10.9*
16	26.7	24.9	24.1	23.6	23.2	23.0	22.9	22.8	22.7	22.6	22.4	22.1	21.7	21.2	20.5	*14.3*	*10.9*
17	30.0	28.0	27.1	26.5	26.1	25.9	25.8	25.7	25.6	25.4	25.2	24.9	24.5	23.9	23.1	*14.3*	*10.9*
18	33.3	31.1	30.1	29.5	29.0	28.8	28.6	28.5	28.4	28.3	28.0	27.7	27.2	26.5	25.7	*14.3*	*10.9*
19	37.5	37.3	36.2	35.4	34.8	34.5	34.4	34.2	34.1	33.9	33.6	33.2	32.6	31.8	30.8	*14.3*	*10.9*
20	37.5	37.5	37.5	37.5	37.5	37.4	37.2	37.1	36.9	36.7	36.4	36.0	35.3	34.5	33.4	*14.3*	*10.9*
21	20.0	18.7	18.1	17.7	17.4	17.3	17.2	17.1	17.1	17.0	16.8	16.6	16.3	15.9	15.4	*14.3*	*10.9*
22	20.0	18.7	18.1	17.7	17.4	17.3	17.2	17.1	17.1	17.0	16.8	16.6	16.3	15.9	15.4	*14.3*	*10.9*
23	20.0	18.7	18.1	17.7	17.4	17.3	17.2	17.1	17.1	17.0	16.8	16.6	16.3	15.9	15.4	*14.3*	*10.9*
24	20.0	18.7	18.1	17.7	17.4	17.3	17.2	17.1	17.1	17.0	16.8	16.6	16.3	15.9	15.4	*14.3*	*10.9*
A08 25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	20.0	18.7	18.1	17.7	17.4	17.3	17.2	17.1	17.1	17.0	16.8	16.6	16.3	15.9	15.4	14.8	14.1
27	20.0	18.7	18.1	17.7	17.4	17.3	17.2	17.1	17.1	17.0	16.8	16.6	16.3	15.9	15.4	14.8	14.1
28	20.0	18.7	18.1	17.7	17.4	17.3	17.2	17.1	17.1	17.0	16.8	16.6	16.3	15.9	15.4	14.8	14.1
29	20.0	18.7	18.1	17.7	17.4	17.3	17.2	17.1	17.1	17.0	16.8	16.6	16.3	15.9	15.4	14.8	14.1
30	35.4	34.2	33.1	32.4	31.9	31.7	31.5	31.4	31.3	31.1	30.8	30.4	29.9	29.2	28.2	27.1	*16.4*
31	35.4	34.2	33.1	32.4	31.9	31.7	31.5	31.4	31.3	31.1	30.8	30.4	29.9	29.2	28.2	27.1	*16.4*
32	37.5	37.3	36.2	35.4	34.8	34.5	34.4	34.2	34.1	33.9	33.6	33.2	32.6	31.8	30.8	29.6	*16.4*
33	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	34.7	33.6	32.3	30.8
34	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	34.7	33.6	32.3	30.8
35	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	34.7	33.6	32.3	30.8
36	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	34.7	33.6	32.3	30.8
37	16.7	15.8	15.3	15.0	14.8	14.6	14.5	14.4	14.3	14.2	14.0	13.8	13.5	13.1	12.6	12.0	11.3
38	20.0	18.9	18.4	18.0	17.8	17.6	17.4	17.3	17.2	17.0	16.8	16.6	16.2	15.7	15.1	14.4	13.5
39	20.0	18.9	18.4	18.0	17.8	17.6	17.4	17.3	17.2	17.0	16.8	16.6	16.2	15.7	15.1	14.4	*12.3*
40	20.0	18.9	18.4	18.0	17.8	17.6	17.4	17.3	17.2	17.0	16.8	16.6	16.2	15.7	15.1	14.4	*12.3*
41	20.0	18.9	18.4	18.0	17.8	17.6	17.4	17.3	17.2	17.0	16.8	16.6	16.2	15.7	15.1	14.4	*12.3*

TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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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
1	9.5	6.8	4.9	3.2	2.4	1.3	...	...	...	...	...	...
2	9.5	6.8	4.9	3.2	2.4	1.3	...	...	...	...	...	...
3	9.5	6.8	4.9	3.2	2.4	1.3	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...
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	8.0	5.8	4.2	2.9	1.8	1.0	...	...	...	...	...	...
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	8.0	5.8	4.2	2.9	1.8	1.0	...	...	...	...	...	...
20	8.0	5.8	4.2	2.9	1.8	1.0	...	...	...	...	...	...
21	8.0	5.8	4.2	2.9	1.8	1.0	...	...	...	...	...	...
22	8.0	5.8	4.2	2.9	1.8	1.0	...	...	...	...	...	...
23	8.0	5.8	4.2	2.9	1.8	1.0	...	...	...	...	...	...
24	8.0	5.8	4.2	2.9	1.8	1.0	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...
26	10.6	7.4	5.0	3.3	2.2	1.5	...	...	...	...	...	...
27	10.6	7.4	5.0	3.3	2.2	1.5	...	...	...	...	...	...
28	10.6	7.4	5.0	3.3	2.2	1.5	...	...	...	...	...	...
29	10.6	7.4	5.0	3.3	2.2	1.5	...	...	...	...	...	...
30	11.0	7.4	5.0	3.3	2.2	1.5	...	...	...	...	...	...
31	11.0	7.4	5.0	3.3	2.2	1.5	...	...	...	...	...	...
32	11.0	7.4	5.0	3.3	2.2	1.5	...	...	...	...	...	...
33	25.9	19.0	14.0	10.3	7.0	4.3	...	...	...	...	...	...
34	25.9	19.0	14.0	10.3	7.0	4.3	...	...	...	...	...	...
35	25.9	19.0	14.0	10.3	7.0	4.3	...	...	...	...	...	...
36	25.9	19.0	14.0	10.3	7.0	4.3	...	...	...	...	...	...
37	8.4	4.0	...	...	...	...	...	...	...	...	...	...
38	8.4	4.0	...	...	...	...	...	...	...	...	...	...
39	8.8	6.4	4.4	2.9	1.8	1.0	...	...	...	...	...	...
40	8.8	6.4	4.4	2.9	1.8	1.0	...	...	...	...	...	...
41	8.8	6.4	4.4	2.9	1.8	1.0	...	...	...	...	...	...

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
1	13Cr	Forgings	SA-182	F6a	S41000	1	...	6	3
2	13Cr	Forgings	SA-182	F6a	S41000	2	...	6	3
3	13Cr	Forgings	SA-336	F6	S41000	...	...	6	3
4	13Cr	Castings	SA-217	CA15	J91150	...	...	6	3
5	15Cr	Smls. tube	SA-268	TP429	S42900	...	...	6	2
6	15Cr	Plate	SA-240	429	S42900	...	...	6	2
7	17Cr	Smls. tube	SA-268	TP430	S43000	...	...	7	2
8	17Cr	Plate	SA-240	430	S43000	...	...	7	2
9	26Cr–3Ni–3Mo	Plate	SA-240	26-3-3	S44660	...	$t \le 2/10$	10K	1
10	26Cr–3Ni–3Mo	Smls. tube	SA-268	26-3-3	S44660	...	$t \le 2/10$	10K	1
11	26Cr–3Ni–3Mo	Wld. tube	SA-268	26-3-3	S44660	...	$t \le 2/10$	10K	1
12	26Cr–3Ni–3Mo	Wld. tube	SA-803	26-3-3	S44660	...	$t \le 2/10$	10K	1
13	29Cr–4Mo–Ti	Smls. tube	SA-268	...	S44735	...	...	10J	1
14	Mn–¼Mo	Forgings	SA-372	D	K14508	...	...	11A	4
15	Mn–¼Mo	Forgings	SA-372	D	K10508	...	...	11A	4
16	Mn–½Mo	Plate	SA-302	A	K12021	...	...	3	2
17	Mn–½Mo	Plate	SA-302	B	K12022	...	...	3	3
18	Mn–½Mo	Plate	SA-533	A	K12521	1	...	3	3
19	Mn–½Mo	Plate	SA-533	A	K12521	2	...	3	3
20	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	2	...	3	3
21	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	3	...	11A	4
22	Mn–½Mo–½Ni	Plate	SA-302	C	K12039	...	...	3	3
23	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	1	...	3	3
24	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	2	...	3	3
25	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	3	...	11A	4
26	Mn–½Mo–¾Ni	Plate	SA-302	D	K12054	...	...	3	3
27	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	1	...	3	3
28	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	2	...	3	3
29	Mn–½Mo–¾Ni	Plate	SA-533	B, Cl. 3	K12554	...	...	3	3
30	Mn–½Ni–V	Plate	SA-225	C	K12524	...	...	10A	1
31	Mn–V	Castings	SA-487	1	J13002	A	...	10A	1
32	½Ni–½Cr–¼Mo–V	Castings	SA-487	4	J13047	A	...	3	3
33	½Ni–½Mo–V	Forgings	SA-541	3	K12045	1	...	3	3
34	½Ni–½Mo–V	Forgings	SA-541	3	K12045	2	...	3	3
35	¾Ni–½Cr–½Mo–V	Forgings	SA-592	F	K11576	...	$2\frac{1}{2} < t \le 4$	11B	3
36	¾Ni–½Cr–½Mo–V	Plate	SA-517	F	K11576	...	$t \le 2\frac{1}{2}$	11B	3
37	¾Ni–½Cr–½Mo–V	Forgings	SA-592	F	K11576	...	$t \le 2\frac{1}{2}$	11B	3
38	¾Ni–½Cu–Mo	Smls. tube	SA-423	2	K11540	...	...	4	2
39	¾Ni–½Mo–⅓Cr–V	Forgings	SA-508	2	K12766	1	...	3	3
40	¾Ni–½Mo–⅓Cr–V	Forgings	SA-541	2	K12765	1	...	3	3
41	¾Ni–½Mo–⅓Cr–V	Forgings	SA-508	2	K12766	2	...	3	3
42	¾Ni–½Mo–⅓Cr–V	Forgings	SA-541	2	K12765	2	...	3	3

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Maximum Use Temperature, °F	External Pressure Chart No.	Notes
1	70	40	1200	CS-3	T4
2	80	55	1200	CS-3	T4
3	85	55	1200	CS-3	T4
4	90	65	1200	CS-5	T4
5	60	35	1200	CS-2	G8, T5
6	65	30	1200	CS-2	G8, T6
7	60	35	1200	CS-2	G8, T5
8	65	30	1200	CS-2	G8, T6
9	85	65	700	HA-5	G8, H6
10	85	65	700	HA-5	G8, H6
11	85	65	700	HA-5	G6, G8, H6
12	85	65	600	HA-5	G6, G8, H6
13	75	60	800	HA-6	G8
14	105	65	650	CS-5	G9, H3, T1, W2, W6
15	105	65	650	CS-5	G9, H5, W2, W6
16	75	45	1000	CS-3	G14, T5
17	80	50	1000	CS-3	G14, T5
18	80	50	1000	CS-5	T5
19	90	70	800	CS-5	...
20	90	70	800	CS-5	...
21	100	83	750	CS-5	...
22	80	50	1000	CS-3	G14, T5
23	80	50	800	CS-5	...
24	90	70	800	CS-5	...
25	100	83	800	CS-5	...
26	80	50	1000	CS-3	G14, T5
27	80	50	800	CS-5	...
28	90	70	800	CS-5	...
29	100	83	800	CS-5	...
30	105	70	700	CS-5	T1
31	85	55	650	CS-3	H2, T1
32	90	60	650	CS-3	H2
33	80	50	800	CS-5	...
34	90	65	700	CS-5	...
35	105	90	650	CS-5	S1
36	115	100	650	HT-1	...
37	115	100	650	HT-1	...
38	60	37	650	CS-2	...
39	80	50	800	CS-5	...
40	80	50	800	CS-5	...
41	90	65	700	CS-5	...
42	90	65	700	CS-5	...

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	*24.0*	*17.2*	*12.3*
2	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	*24.0*	*17.2*	*12.3*
3	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	*24.0*	*17.2*	*12.3*
4	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	*24.0*	*17.2*	*12.3*
5	23.3	22.1	21.5	21.0	20.7	20.5	20.3	20.2	20.1	19.9	19.6	19.3	18.9	18.3	17.6	*15.7*	*12.0*
6	20.0	18.9	18.4	18.0	17.8	17.6	17.4	17.3	17.2	17.0	16.8	16.6	16.2	15.7	15.1	14.4	*12.0*
7	23.3	22.1	21.5	21.0	20.7	20.5	20.3	20.2	20.1	19.9	19.6	19.3	18.9	18.3	17.6	*15.7*	*12.0*
8	20.0	18.9	18.4	18.0	17.8	17.6	17.4	17.3	17.2	17.0	16.8	16.6	16.2	15.7	15.1	14.4	*12.0*
9	35.4	35.4	35.4	35.4	35.4	35.4	34.8	34.2	33.8	33.4	33.2	33.0	32.8	...	...	...	...
10	35.4	35.4	35.4	35.4	35.4	35.4	34.8	34.2	33.8	33.4	33.2	33.0	32.8	...	...	...	...
11	30.1	30.1	30.1	30.1	30.1	30.1	29.6	29.1	28.7	28.4	28.2	28.0	27.9	...	...	...	...
12	30.1	30.1	30.1	30.1	30.1	30.1	29.6	29.1	28.7	28.4	28.2	...	...	...	...	...	...
13	31.3	31.3	31.3	31.3	29.6	28.1	26.8	25.7	24.9	24.3	23.9	23.7	23.6	23.3	22.7	...	...
14	43.3	41.8	41.2	40.4	39.4	38.2	36.9	35.7	34.7	33.9	33.5	*24.4*	...	...	...	...	...
15	43.3	41.6	40.8	40.0	39.4	38.8	38.3	37.9	37.4	36.9	36.5	35.9	...	...	...	...	...
16	30.0	28.8	28.2	27.7	27.3	26.9	26.5	26.2	25.9	25.6	25.2	24.9	24.4	23.9	23.2	*20.0*	*13.7*
17	33.3	32.0	31.4	30.8	30.3	29.9	29.5	29.1	28.8	28.4	28.0	27.6	27.1	26.5	25.7	*20.0*	*13.7*
18	33.3	32.0	31.4	30.8	30.3	29.9	29.5	29.1	28.8	28.4	28.0	27.6	27.1	26.5	25.7	*20.0*	*13.7*
19	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.2	36.0	...	...
20	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.2	36.0	...	...
21	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	...	...	...
22	33.3	32.0	31.4	30.8	30.3	29.9	29.5	29.1	28.8	28.4	28.0	27.6	27.1	26.5	25.7	*20.0*	*13.7*
23	33.3	32.0	31.4	30.8	30.3	29.9	29.5	29.1	28.8	28.4	28.0	27.6	27.1	26.5	25.7	...	...
24	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.2	36.0	...	...
25	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	...	...
26	33.3	32.0	31.4	30.8	30.3	29.9	29.5	29.1	28.8	28.4	28.0	27.6	27.1	26.5	25.7	*20.0*	*13.7*
27	33.3	32.0	31.4	30.8	30.3	29.9	29.5	29.1	28.8	28.4	28.0	27.6	27.1	26.5	25.7	...	...
28	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.2	36.0	...	...
29	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	...	...
30	43.8	43.3	42.5	42.1	41.6	40.9	39.9	38.6	37.3	36.0	34.9	*24.4*	*19.6*	...	...	...	...
31	35.4	35.2	34.5	33.9	33.3	32.9	32.4	32.0	31.6	31.3	30.9	*24.4*	...	...	...	...	...
32	37.5	37.5	37.5	37.0	36.3	35.8	35.5	35.2	34.6	33.7	32.4	31.0	...	...	...	...	...
33	33.3	32.6	31.7	30.8	30.2	29.9	29.6	29.3	28.9	28.1	27.0	25.8	24.9	24.9	24.9	...	...
34	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	36.5	35.1	33.6	32.3	...	...	...	...
35	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	...	...	...	...	...
36	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	...	...	...	...	...
37	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	...	...	...	...	...
38	24.7	23.3	22.7	22.3	22.0	21.8	21.5	21.3	21.1	20.9	20.6	20.3	...	...	...	...	...
39	33.3	32.0	31.4	30.8	30.3	29.9	29.5	29.1	28.8	28.4	28.0	27.6	27.1	26.5	25.7	...	...
40	33.3	32.0	31.4	30.8	30.3	29.9	29.5	29.1	28.8	28.4	28.0	27.6	27.1	26.5	25.7	...	...
41	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.4	36.9	36.5	35.9	35.3	...	...	...	...
42	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.4	36.9	36.5	35.9	35.3	...	...	...	...

TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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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
1	*8.8*	*6.4*	*4.4*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...
2	*8.8*	*6.4*	*4.4*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...
3	*8.8*	*6.4*	*4.4*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...
4	*8.8*	*6.4*	*4.4*	*2.9*	*1.8*	*1.0*	...	...	...	...	...	...
5	*9.2*	*6.5*	*4.5*	*3.2*	*2.4*	*1.8*	...	...	...	...	...	...
6	*9.2*	*6.5*	*4.5*	*3.2*	*2.4*	*1.8*	...	...	...	...	...	...
7	*9.2*	*6.5*	*4.5*	*3.2*	*2.4*	*1.8*	...	...	...	...	...	...
8	*9.2*	*6.5*	*4.5*	*3.2*	*2.4*	*1.8*	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...
16	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...
17	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...
18	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...
22	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...
26	*8.2*	*4.8*	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...
39	...	...	...	...	...	...	...	...	...	...	...	...
40	...	...	...	...	...	...	...	...	...	...	...	...
41	...	...	...	...	...	...	...	...	...	...	...	...
42	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	3/4Ni–1/2Mo–Cr–V	Forgings	SA-508	3	K12042	1	...	3	3
	2	3/4Ni–1/2Mo–Cr–V	Forgings	SA-508	3	K12042	2	...	3	3
	3	3/4Ni–1Mo–3/4Cr	Castings	SA-217	WC5	J22000	...	...	4	1
	4	1Ni–1/2Cr–1/2Mo	Castings	SA-217	WC4	J12082	...	...	4	1
	5	1 1/4Ni–1Cr–1/2Mo	Plate	SA-517	P	K21650	...	$2\frac{1}{2} < t \leq 4$	11B	8
	6	1 1/4Ni–1Cr–1/2Mo	Plate	SA-517	P	K21650	...	$t \leq 2\frac{1}{2}$	11B	8
	7	2Ni–1Cu	Forgings	SA-182	FR	K22035	...	...	9A	1
	8	2Ni–1Cu	Smls. pipe	SA-333	9	K22035	...	...	9A	1
	9	2Ni–1Cu	Smls. pipe	SA-334	9	K22035	...	...	9A	1
	10	2Ni–1Cu	Forgings	SA-350	LF9	K22036	...	...	9A	1
	11	2Ni–1Cu	Fittings	SA-420	WPL9	K22035	...	...	9A	1
	12	2Ni–1 1/2Cr–1/4Mo–V	Forgings	SA-723	1	K23550	1	...	11B	10
A08	13	2Ni–1 1/2Cr–1/4Mo–V	Forgings	SA-723	1	K23550	2	...	11B	10
	14	2 1/2Ni	Plate	SA-203	A	K21703	...	...	9A	1
	15	2 1/2Ni	Plate	SA-203	B	K22103	...	...	9A	1
	16	2 1/2Ni	Castings	SA-352	LC2	J22500	...	...	9A	1
	17	2 3/4Ni–1 1/2Cr–1/2Mo	Plate	SA-543	C	K34035	3	...	3	3
	18	2 3/4Ni–1 1/2Cr–1/2Mo	Plate	SA-543	C	K34035	1	...	11A	5
	19	2 3/4Ni–1 1/2Cr–1/2Mo	Plate	SA-543	C	K34035	2	...	11B	10
	20	2 3/4Ni–1 1/2Cr–1/2Mo–V	Forgings	SA-723	2	K34035	1	...	11B	10
A08	21	2 3/4Ni–1 1/2Cr–1/2Mo–V	Forgings	SA-723	2	K34035	2	...	11B	10
	22	3Ni–1 3/4Cr–1/2Mo	Plate	SA-543	B	K42339	3	...	3	3
	23	3Ni–1 3/4Cr–1/2Mo	Plate	SA-543	B	K42339	1	...	11A	5
	24	3Ni–1 3/4Cr–1/2Mo	Plate	SA-543	B	K42339	2	...	11B	10
	25	3 1/2Ni	Smls. pipe	SA-333	3	K31918	...	...	9B	1
	26	3 1/2Ni	Smls. tube	SA-334	3	K31918	...	...	9B	1
	27	3 1/2Ni	Fittings	SA-420	WPL3	...	...	...	9B	1
	28	3 1/2Ni	Plate	SA-203	D	K31718	...	...	9B	1
	29	3 1/2Ni	Forgings	SA-350	LF3	K32025	...	...	9B	1
	30	3 1/2Ni	Forgings	SA-765	III	K32026	...	...	9B	1
	31	3 1/2Ni	Plate	SA-203	E	K32018	...	...	9B	1
	32	3 1/2Ni	Castings	SA-352	LC3	J31550	...	...	9B	1
	33	3 1/2Ni	Plate	SA-203	F	...	...	$t > 2$	9B	1
	34	3 1/2Ni	Plate	SA-203	F	...	...	$t \leq 2$	9B	1
	35	3 1/2Ni–1 3/4Cr–1/2Mo–V	Forgings	SA-508	4N	K22375	3	...	3	3
	36	3 1/2Ni–1 3/4Cr–1/2Mo–V	Forgings	SA-508	4N	K22375	1	...	11A	5
	37	3 1/2Ni–1 3/4Cr–1/2Mo–V	Forgings	SA-508	4N	K22375	2	...	11B	10
	38	4Ni–1 1/2Cr–1/2Mo–V	Forgings	SA-723	3	K44045	1	...	11B	10
A08	39	4Ni–1 1/2Cr–1/2Mo–V	Forgings	SA-723	3	K44045	2	...	11B	10
	40	5Ni–1/4Mo	Plate	SA-645	...	K41583	...	...	11A	2
	41	8Ni	Plate	SA-553	II	K71340	...	...	11A	1
	42	8Ni	Plate	SA-553	II	K71340	...	...	11A	1

TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Maximum Use Temperature, °F	External Pressure Chart No.	Notes	
1	80	50	800	CS-5	...	
2	90	65	700	CS-5	...	
3	70	40	1100	CS-2	T6	
4	70	40	1000	CS-2	T6	
5	105	90	650	CS-5	...	
6	115	100	650	HT-1	...	
7	63	46	100	CS-3	...	
8	63	46	100	CS-3	...	
9	63	46	100	CS-3	...	
10	63	46	100	CS-3	...	
11	63	46	100	CS-3	...	
12	115	100	650	HT-1	G10, G11, W1	
13	135	120	650	HT-1	G11, W1	A08
14	65	37	1000	CS-2	T3	
15	70	40	1000	CS-2	T2	
16	70	40	650	CS-2	...	
17	90	70	650	CS-5	...	
18	105	85	650	CS-5	...	
19	115	100	650	HT-1	...	
20	115	100	650	HT-1	G10, G11, W1	
21	135	120	650	HT-1	G11, W1	A08
22	90	70	650	CS-5	...	
23	105	85	650	CS-5	W7	
24	115	100	650	HT-1	...	
25	65	35	650	CS-2	...	
26	65	35	650	CS-2	...	
27	65	35	650	CS-2	...	
28	65	37	1000	CS-2	T3	
29	70	37.5	650	CS-2	...	
30	70	37.5	650	CS-2	...	
31	70	40	1000	CS-2	T3	
32	70	40	650	CS-2	...	
33	75	50	650	CS-3	T1	
34	80	55	650	CS-3	...	
35	90	70	650	CS-5	...	
36	105	85	650	CS-5	W7	
37	115	100	650	HT-1	...	
38	115	100	650	HT-1	G10, G11, W1	
39	135	120	650	HT-1	G11, W1	A08
40	95	65	250	CS-3	W4	
41	100	85	250	CS-3	W3	
42	100	85	250	CS-3	W4	

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

		Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	Line No.	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
	1	33.3	32.0	31.4	30.8	30.3	29.9	29.5	29.1	28.8	28.4	28.0	27.6	27.1	26.5	25.7	...	...
	2	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.4	36.9	36.5	35.9	35.3	...	...	...	...
	3	26.7	25.6	25.1	24.6	24.3	23.9	23.6	23.3	23.0	22.7	22.4	22.1	21.7	21.2	20.6	19.8	*16.3*
	4	26.7	25.6	25.1	24.6	24.3	23.9	23.6	23.3	23.0	22.7	22.4	22.1	21.7	21.2	20.6	19.8	*15.0*
	5	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	...	...	...	...	...
	6	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	...	...	...	...	...
	7	26.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	8	26.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	9	26.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	10	26.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	11	26.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	12	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	...	...	...	...	...
A08	13	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	...	...	...	...	...
	14	24.7	23.2	22.6	22.2	21.8	21.5	21.1	20.6	20.0	19.3	18.5	17.6	16.6	*13.9*	*11.4*	*9.0*	*6.5*
	15	26.7	25.1	24.4	24.0	23.6	23.2	22.8	22.3	21.6	20.9	20.0	19.0	*16.9*	*13.9*	*11.4*	*9.0*	*6.5*
	16	26.7	25.1	24.4	24.0	23.6	23.2	22.8	22.3	21.6	20.9	20.0	19.0	...	...	...	...	...
	17	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	...	...	...	...	...
	18	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	...	...	...	...	...
	19	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	...	...	...	...	...
	20	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	...	...	...	...	...
A08	21	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	...	...	...	...	...
	22	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	...	...	...	...	...
	23	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	...	...	...	...	...
	24	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	...	...	...	...	...
	25	23.3	21.9	21.4	21.0	20.6	20.3	19.9	19.5	18.9	18.3	17.5	16.7	...	...	...	...	...
	26	23.3	21.9	21.4	21.0	20.6	20.3	19.9	19.5	18.9	18.3	17.5	16.7	...	...	...	...	...
	27	23.3	21.9	21.4	21.0	20.6	20.3	19.9	19.5	18.9	18.3	17.5	16.7	...	...	...	...	...
	28	24.7	23.2	22.6	22.2	21.8	21.5	21.1	20.6	20.0	19.3	18.5	17.6	16.6	*13.9*	*11.4*	*9.0*	*6.5*
	29	25.0	23.5	22.9	22.5	22.1	21.8	21.4	20.9	20.3	19.6	18.8	17.9	...	...	...	...	...
	30	25.0	23.5	22.9	22.5	22.1	21.8	21.4	20.9	20.3	19.6	18.8	17.9	...	...	...	...	...
	31	26.7	25.1	24.4	24.0	23.6	23.2	22.8	22.3	21.6	20.9	20.0	19.0	18.0	*14.8*	*12.0*	*9.3*	*6.5*
	32	26.7	25.1	24.4	24.0	23.6	23.2	22.8	22.3	21.6	20.9	20.0	19.0	...	...	...	...	...
	33	31.3	31.3	30.5	29.9	29.5	29.0	28.5	27.8	27.1	26.1	25.0	*22.5*	...	...	...	...	...
	34	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	...	...	...	...	...
	35	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	...	...	...	...	...
	36	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	...	...	...	...	...
	37	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	...	...	...	...	...
	38	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	...	...	...	...	...
A08	39	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	56.3	...	...	...	...	...
	40	39.6	39.6	39.6	39.6	...	...	...	...	...	...	...	...	...	...	...	...	...
	41	41.7	41.7	41.7	41.7	...	...	...	...	...	...	...	...	...	...	...	...	...
	42	39.6	39.6	39.6	39.6	...	...	...	...	...	...	...	...	...	...	...	...	...

TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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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	
1	...	...	...	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	...	...	
3	*11.0*	*6.9*	*4.6*	*2.8*	...	...	...	...	...	...	...	...	
4	*9.2*	*5.9*	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	A08
14	*4.5*	*2.5*	...	...	...	...	...	...	...	...	...	...	
15	*4.5*	*2.5*	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	A08
22	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	...	...	
28	*4.5*	*2.5*	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	...	...	
31	*4.5*	*2.5*	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	...	...	
39	...	...	...	...	...	...	...	...	...	...	...	...	A08
40	...	...	...	...	...	...	...	...	...	...	...	...	
41	...	...	...	...	...	...	...	...	...	...	...	...	
42	...	...	...	...	...	...	...	...	...	...	...	...	

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ 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
	11	9Ni	Plate	SA-553	I	K81340	...	...	11A	1
	12	9Ni	Plate	SA-553	I	K81340	...	...	11A	1
A08	13	16Cr–4Ni–6Mn	Plate	SA-240	201LN	S20153	...	...	8	3
A08	14	16Cr–4Ni–6Mn	Plate	SA-240	201LN	S20153	...	...	8	3
	15	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...	$t > 5$	8	1
	16	16Cr–12Ni–2Mo	Forgings	SA-965	F316L	S31603	...	...	8	1
	17	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...	$t \le 5$	8	1
	18	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316L	S31603	...	...	8	1
	19	16Cr–12Ni–2Mo	Plate	SA-240	316L	S31603	...	...	8	1
	20	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316L	S31603	...	...	8	1
	21	16Cr–12Ni–2Mo	Smls. pipe	SA-312	TP316L	S31603	...	...	8	1
	22	16Cr–12Ni–2Mo	Wld. pipe	SA-312	TP316L	S31603	...	...	8	1
	23	16Cr–12Ni–2Mo	Fittings	SA-403	316L	S31603	CR	...	8	1
	24	16Cr–12Ni–2Mo	Wld. fittings	SA-403	316L	S31603	WP-W	...	8	1
	25	16Cr–12Ni–2Mo	Wld. fittings	SA-403	316L	S31603	WP-WX	...	8	1
	26	16Cr–12Ni–2Mo	Wld. pipe	SA-688	TP316L	S31603	...	...	8	1
	27	16Cr–12Ni–2Mo	Castings	SA-351	CF8M	J92900	...	...	8	1
	28	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...	$t > 5$	8	1
	29	16Cr–12Ni–2Mo	Forgings	SA-965	F316	S31600	...	...	8	1
	30	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...	$t > 5$	8	1
	31	16Cr–12Ni–2Mo	Forgings	SA-965	F316H	S31609	...	...	8	1
	32	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...	$t \le 5$	8	1
	33	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316	S31600	...	...	8	1
	34	16Cr–12Ni–2Mo	Plate	SA-240	316	S31600	...	...	8	1
	35	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316	S31600	...	...	8	1
	36	16Cr–12Ni–2Mo	Smls. pipe	SA-312	TP316	S31600	...	...	8	1
A08	37	16Cr–12Ni–2Mo	Wld. pipe	SA-312	TP316	S31600	...	...	8	1
	38	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316	S31600	...	...	8	1
	39	16Cr–12Ni–2Mo	Fittings	SA-403	316	S31600	WP-S	...	8	1
	40	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316	S31600	...	...	8	1

TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Maximum Use Temperature, °F	External Pressure Chart No.	Notes	
1	100	75	250	CS-3	W3	
2	100	75	250	CS-3	W4	
3	100	75	250	CS-3	W3	
4	100	75	250	CS-3	W4	
5	100	75	250	CS-3	W3	
6	100	75	250	CS-3	W4	
7	100	75	250	CS-3	W3	
8	100	75	250	CS-3	W4	
9	100	75	250	CS-3	G9, S2, W3	
10	100	75	250	CS-3	G9, S2, W4	
11	100	85	250	CS-3	W3	
12	100	85	250	CS-3	W4	
13	95	45	800	HA-6	...	A08
14	95	45	800	HA-6	G2	A08
15	65	25	850	HA-4	G2	
16	65	25	850	HA-4	G2	
17	70	25	850	HA-4	G2	
18	70	25	850	HA-4	G2	
19	70	25	850	HA-4	G2	
20	70	25	850	HA-4	G2, G6	
21	70	25	850	HA-4	G2	
22	70	25	850	HA-4	G2, G6	
23	70	25	850	HA-4	G2, G6	
24	70	25	850	HA-4	G2, G6	
25	70	25	850	HA-4	G2, G6	
26	70	25	850	HA-4	G2, G6	
27	70	30	1500	HA-2	G2, G3, G4, G8, T10	
28	70	30	1500	HA-2	G2, T10	
29	70	30	1500	HA-2	G2, G3, G4, T10	
30	70	30	1500	HA-2	G2, T10	
31	70	30	1500	HA-2	G2, T10	
32	75	30	1500	HA-2	G2, G3, T10	
33	75	30	1500	HA-2	G2, G3, T10	
34	75	30	1500	HA-2	G2, G3, G4, T10	
35	75	30	1500	HA-2	G2, G3, G6, T10	
36	75	30	1500	HA-2	G2, G3, G4, T10	
37	75	30	1500	HA-2	G2, G3, G4, G6, T10	A08
38	75	30	1500	HA-2	G2, G3, G4, T10	
39	75	30	1500	HA-2	G2, T10	
40	75	30	1500	HA-2	G2, G3, G6, T10	

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

	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	41.7	41.7	41.7	41.7	...	...	...	...	...	...	...	...	...	...	...	...	...
	2	39.6	39.6	39.6	39.6	...	...	...	...	...	...	...	...	...	...	...	...	...
	3	41.7	41.7	41.7	41.7	...	...	...	...	...	...	...	...	...	...	...	...	...
	4	39.6	39.6	39.6	39.6	...	...	...	...	...	...	...	...	...	...	...	...	...
	5	41.7	41.7	41.7	41.7	...	...	...	...	...	...	...	...	...	...	...	...	...
	6	39.6	39.6	39.6	39.6	...	...	...	...	...	...	...	...	...	...	...	...	...
	7	41.7	41.7	41.7	41.7	...	...	...	...	...	...	...	...	...	...	...	...	...
	8	39.6	39.6	39.6	39.6	...	...	...	...	...	...	...	...	...	...	...	...	...
	9	41.7	41.7	41.7	41.7	...	...	...	...	...	...	...	...	...	...	...	...	...
	10	39.6	39.6	39.6	39.6	...	...	...	...	...	...	...	...	...	...	...	...	...
	11	41.7	41.7	41.7	41.7	...	...	...	...	...	...	...	...	...	...	...	...	...
	12	39.6	39.6	39.6	39.6	...	...	...	...	...	...	...	...	...	...	...	...	...
A08	13	30.0	...	24.2	...	21.9	...	20.7	...	20.0	...	19.1	18.6	18.0	17.3	16.7	...	...
A08	14	30.0	...	30.0	...	29.6	...	28.0	...	27.0	...	25.8	25.1	24.3	23.4	22.6	...	...
	15	16.7	16.7	16.7	16.7	16.7	16.4	15.7	15.2	14.8	14.4	14.0	13.7	13.5	13.2	12.9	12.7	...
	16	16.7	16.7	16.7	16.7	16.7	16.4	15.7	15.2	14.8	14.4	14.0	13.7	13.5	13.2	12.9	12.7	...
	17	16.7	16.7	16.7	16.7	16.7	16.4	15.7	15.2	14.8	14.4	14.0	13.7	13.5	13.2	12.9	12.7	...
	18	16.7	16.7	16.7	16.7	16.7	16.4	15.7	15.2	14.8	14.4	14.0	13.7	13.5	13.2	12.9	12.7	...
	19	16.7	16.7	16.7	16.7	16.7	16.4	15.7	15.2	14.8	14.4	14.0	13.7	13.5	13.2	12.9	12.7	...
	20	14.2	14.2	14.2	14.2	14.2	13.9	13.4	12.9	12.5	12.2	11.9	11.7	11.4	11.2	11.0	10.8	...
	21	16.7	16.7	16.7	16.7	16.7	16.4	15.7	15.2	14.8	14.4	14.0	13.7	13.5	13.2	12.9	12.7	...
	22	14.2	14.2	14.2	14.2	14.2	13.9	13.4	12.9	12.5	12.2	11.9	11.7	11.4	11.2	11.0	10.8	...
	23	14.2	14.2	14.2	14.2	14.2	13.9	13.4	12.9	12.5	12.2	11.9	11.7	11.4	11.2	11.0	10.8	...
	24	14.2	14.2	14.2	14.2	14.2	13.9	13.4	12.9	12.5	12.2	11.9	11.7	11.4	11.2	11.0	10.8	...
	25	14.2	14.2	14.2	14.2	14.2	13.9	13.4	12.9	12.5	12.2	11.9	11.7	11.4	11.2	11.0	10.8	...
	26	14.2	14.2	14.2	14.2	14.2	13.9	13.4	12.9	12.5	12.2	11.9	11.7	11.4	11.2	11.0	10.8	...
	27	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.4	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	28	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.4	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	29	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.4	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	30	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.4	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	31	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.4	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	32	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.4	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	33	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.4	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	34	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.4	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	35	17.0	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.5	14.1	13.9	13.7	13.5	13.4	13.2
	36	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.4	17.0	16.6	16.3	16.1	15.9	15.7	15.6
A08	37	17.0	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.5	14.1	13.9	13.7	13.5	13.4	13.2
	38	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.4	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	39	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.4	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	40	17.0	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.5	14.1	13.9	13.7	13.5	13.4	13.2

TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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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	
1	...	...	...	...	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	...	...	
5	...	...	...	...	...	...	...	...	...	...	...	...	
6	...	...	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	...	...	
8	...	...	...	...	...	...	...	...	...	...	...	...	
9	...	...	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	...	...	
11	...	...	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	...	...	A08
14	...	...	...	...	...	...	...	...	...	...	...	...	A08
15	...	...	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	...	...	
26	...	...	...	...	...	...	...	...	...	...	...	...	
27	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.6*	*4.2*	*3.2*	*2.4*	*1.8*	*1.4*	
28	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.6*	*4.2*	*3.2*	*2.4*	*1.8*	*1.4*	
29	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.6*	*4.2*	*3.2*	*2.4*	*1.8*	*1.4*	
30	15.4	15.3	15.1	*12.4*	*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	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.6*	*4.2*	*3.2*	*2.4*	*1.8*	*1.4*	
33	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.6*	*4.2*	*3.2*	*2.4*	*1.8*	*1.4*	
34	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.6*	*4.2*	*3.2*	*2.4*	*1.8*	*1.4*	
35	13.1	13.0	12.9	*10.5*	*8.3*	*6.3*	*4.7*	*3.6*	*2.7*	*2.0*	*1.5*	*1.2*	
36	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.6*	*4.2*	*3.2*	*2.4*	*1.8*	*1.4*	
37	13.1	13.0	12.9	*10.5*	*8.3*	*6.3*	*4.7*	*3.6*	*2.7*	*2.0*	*1.5*	*1.2*	A08
38	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.6*	*4.2*	*3.2*	*2.4*	*1.8*	*1.4*	
39	15.4	15.3	15.1	*12.4*	*9.8*	*7.4*	*5.6*	*4.2*	*3.2*	*2.4*	*1.8*	*1.4*	
40	13.1	13.0	12.9	*10.5*	*8.3*	*6.3*	*4.7*	*3.6*	*2.7*	*2.0*	*1.5*	*1.2*	

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...	$t \le 5$	8	1
	2	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316H	S31609	...	...	8	1
	3	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316H	S31609	...	...	8	1
	4	16Cr–12Ni–2Mo	Smls. pipe	SA-312	TP316H	S31609	...	...	8	1
	5	16Cr–12Ni–2Mo	Wld. pipe	SA-312	TP316H	S31609	...	...	8	1
	6	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316H	S31609	...	...	8	1
	7	16Cr–12Ni–2Mo–N	Smls. tube	SA-213	TP316N	S31651	...	$t \le 5$	8	1
	8	16Cr–12Ni–2Mo–N	Plate	SA-240	316N	S31651	...	$t \le 5$	8	1
	9	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316N	S31651	...	...	8	1
	10	16Cr–12Ni–2Mo–N	Smls. pipe	SA-312	TP316N	S31651	...	$t \le 5$	8	1
	11	16Cr–12Ni–2Mo–N	Wld. pipe	SA-312	TP316N	S31651	...	$t \le 5$	8	1
	12	16Cr–12Ni–2Mo–N	Smls. pipe	SA-376	TP316N	S31651	...	...	8	1
	13	16Cr–12Ni–2Mo–N	Fittings	SA-403	316N	S31651	CR	...	8	1
	14	16Cr–12Ni–2Mo–N	Wld. fittings	SA-403	316N	S31651	WP-W	...	8	1
	15	16Cr–12Ni–2Mo–N	Wld. fittings	SA-403	316N	S31651	WP-WX	...	8	1
A08	16	16Cr–12Ni–2Mo–N	Forgings	SA-965	F316N	S31651	...	...	8	1
	17	17.5Cr–17.5Ni–5.3Si	Plate	SA-240	...	S30601	...	...	8	1
A08	18	18Cr–3Ni–12Mn	Plate	SA-240	XM-29	S24000	...	$t > 3/16$	8	3
A08	19	18Cr–3Ni–12Mn	Plate	SA-240	XM-29	S24000	...	$t \le 3/16$	8	3
	20	18Cr–5Ni–3Mo	Smls. tube	SA-789	...	S31500	...	...	10H	1
	21	18Cr–5Ni–3Mo	Wld. tube	SA-789	...	S31500	...	...	10H	1
	22	18Cr–5Ni–3Mo	Smls. pipe	SA-790	...	S31500	...	...	10H	1
	23	18Cr–5Ni–3Mo	Wld. pipe	SA-790	...	S31500	...	...	10H	1
	24	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...	$t > 5$	8	1
	25	18Cr–8Ni	Forgings	SA-965	F304L	S30403	...	...	8	1
	26	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...	$t \le 5$	8	1
	27	18Cr–8Ni	Smls. tube	SA-213	TP304L	S30403	...	...	8	1
	28	18Cr–8Ni	Plate	SA-240	304L	S30403	...	...	8	1
	29	18Cr–8Ni	Wld. tube	SA-249	TP304L	S30403	...	...	8	1
A08	30	18Cr–8Ni	Smls. pipe	SA-312	TP304L	S30403	...	...	8	1
A08	31	18Cr–8Ni	Wld. pipe	SA-312	TP304L	S30403	...	...	8	1
	32	18Cr–8Ni	Fittings	SA-403	304L	S30403	WP-S	...	8	1
	33	18Cr–8Ni	Wld. tube	SA-688	TP304L	S30403	...	...	8	1
	34	18Cr–8Ni	Castings	SA-351	CF3	J92500	...	...	8	1
	35	18Cr–8Ni	Castings	SA-351	CF10	J92590	...	...	8	1
	36	18Cr–8Ni	Castings	SA-351	CF8	J92600	...	...	8	1
	37	18Cr–8Ni	Forgings	SA-182	F304	S30400	...	$t > 5$	8	1
	38	18Cr–8Ni	Forgings	SA-965	F304	S30400	...	...	8	1
	39	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...	$t > 5$	8	1
	40	18Cr–8Ni	Forgings	SA-965	F304H	S30409	...	...	8	1

TABLE 5A (CONT'D) 07
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Maximum Use Temperature, °F	External Pressure Chart No.	Notes	
1	75	30	1500	HA-2	G2, T10	
2	75	30	1500	HA-2	G2, T10	
3	75	30	1500	HA-2	G2, G6, T10	
4	75	30	1500	HA-2	G2, T10	
5	75	30	1500	HA-2	G2, G6, T10	
6	75	30	1500	HA-2	G2, G4, T10	
7	80	35	1200	HA-2	G2, T9	
8	80	35	1200	HA-2	G2, T9	
9	80	35	1200	HA-2	G2, G6, T9	
10	80	35	1200	HA-2	G2, T9	
11	80	35	1200	HA-2	G2, G6, T9	
12	80	35	1200	HA-2	G2, G4, T9	
13	80	35	1200	HA-2	G2, G6, T9	
14	80	35	1200	HA-2	G2, G6, T9	
15	80	35	1200	HA-2	G2, G6, T9	
16	80	35	1200	HA-2	G2, T9	A08
17	78	37	400	HA-1	...	
18	100	55	800	HA-6	G2	A08
19	100	60	800	HA-6	G2	A08
20	92	64	650	HA-5	G8	
21	92	64	650	HA-5	G6, G8	
22	92	64	650	HA-5	G8	
23	92	64	650	HA-5	G6, G8	
24	65	25	1200	HA-3	G2, T9	
25	65	25	1200	HA-3	G2, T9	
26	70	25	1200	HA-3	G2, T9	
27	70	25	1200	HA-3	G2, T9	
28	70	25	1200	HA-3	G2, T9	
29	70	25	1200	HA-3	G2, G6, T9	
30	70	25	1200	HA-3	G2, T9	A08
31	70	25	1200	HA-3	G2, G6, T9	A08
32	70	25	1200	HA-3	G2, T9	
33	70	25	1200	HA-3	G2, G6, T9	
34	70	30	800	HA-3	G2, G8	
35	70	30	1500	HA-3	G2, G4, G8, T8	
36	70	30	1500	HA-1	G2, G3, G4, G8, T8	
37	70	30	1500	HA-1	G2, G3, G4, T9	
38	70	30	1500	HA-1	G2, G3, G4, T9	
39	70	30	1500	HA-1	G2, T9	
40	70	30	1500	HA-1	G2, T9	

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

	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	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.4	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	2	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.4	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	3	17.0	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.5	14.1	13.9	13.7	13.5	13.4	13.2
	4	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.4	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	5	17.0	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.5	14.1	13.9	13.7	13.5	13.4	13.2
	6	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.4	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	7	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.0	22.3	21.6	21.0	20.5	20.0	19.6	19.2	18.8	18.5
	8	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.0	22.3	21.6	21.0	20.5	20.0	19.6	19.2	18.8	18.5
	9	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.5	18.9	18.4	17.9	17.4	17.0	16.7	16.3	16.0	15.7
	10	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.0	22.3	21.6	21.0	20.5	20.0	19.6	19.2	18.8	18.5
	11	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.5	18.9	18.4	17.9	17.4	17.0	16.7	16.3	16.0	15.7
	12	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.0	22.3	21.6	21.0	20.5	20.0	19.6	19.2	18.8	18.5
	13	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.5	18.9	18.4	17.9	17.4	17.0	16.7	16.3	16.0	15.7
	14	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.5	18.9	18.4	17.9	17.4	17.0	16.7	16.3	16.0	15.7
	15	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.5	18.9	18.4	17.9	17.4	17.0	16.7	16.3	16.0	15.7
A08	16	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.0	22.3	21.6	21.0	20.5	20.0	19.6	19.2	18.8	18.5
	17	24.7	24.7	24.7	24.7	24.4	23.2	22.2	...	...	...	...	...	...	...	...	...	...
A08	18	36.7	36.7	36.7	36.6	33.8	31.5	29.6	28.2	27.2	26.4	25.9	25.4	25.0	24.5	24.0	...	...
A08	19	40.0	40.0	40.0	39.9	36.8	34.3	32.3	30.8	29.6	28.8	28.2	27.7	27.3	26.8	26.2	...	...
	20	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	...	...	...	...	...
	21	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	...	...	...	...	...
	22	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	...	...	...	...	...
	23	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	...	...	...	...	...
	24	16.7	16.7	16.7	16.7	16.7	16.5	15.8	15.2	14.7	14.3	14.0	13.7	13.5	13.3	13.0	12.8	12.6
	25	16.7	16.7	16.7	16.7	16.7	16.5	15.8	15.2	14.7	14.3	14.0	13.7	13.5	13.3	13.0	12.8	12.6
	26	16.7	16.7	16.7	16.7	16.7	16.5	15.8	15.2	14.7	14.3	14.0	13.7	13.5	13.3	13.0	12.8	12.6
	27	16.7	16.7	16.7	16.7	16.7	16.5	15.8	15.2	14.7	14.3	14.0	13.7	13.5	13.3	13.0	12.8	12.6
	28	16.7	16.7	16.7	16.7	16.7	16.5	15.8	15.2	14.7	14.3	14.0	13.7	13.5	13.3	13.0	12.8	12.6
	29	16.7	16.7	16.7	16.7	16.7	16.5	15.8	15.2	14.7	14.3	14.0	13.7	13.5	13.3	13.0	12.8	12.6
A08	30	16.7	16.7	16.7	16.7	16.7	16.5	15.8	15.2	14.7	14.3	14.0	13.7	13.5	13.3	13.0	12.8	12.6
A08	31	14.2	14.2	14.2	14.2	14.2	14.0	13.4	12.9	12.5	12.2	11.9	11.7	11.4	11.3	11.1	10.9	10.7
	32	16.7	16.7	16.7	16.7	16.7	16.5	15.8	15.2	14.7	14.3	14.0	13.7	13.5	13.3	13.0	12.8	12.6
	33	14.2	14.2	14.2	14.2	14.2	14.0	13.4	12.9	12.5	12.2	11.9	11.7	11.4	11.3	11.1	10.9	10.7
	34	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	...	...
	35	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
	36	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
	37	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
	38	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
	39	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
	40	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6

TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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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	
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	15.4	15.3	15.1	12.4	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	1.4	1.1	
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	13.1	13.0	12.9	10.5	8.3	6.3	4.7	3.5	2.6	1.9	1.4	1.1	
6	15.4	15.3	15.1	12.4	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	
7	18.1	17.8	15.8	12.3	9.8	7.4	...	...	...	...	...	...	
8	18.1	17.8	15.8	12.3	9.8	7.4	...	...	...	...	...	...	
9	15.4	15.1	13.4	10.5	8.3	6.3	...	...	...	...	...	...	
10	18.1	17.8	15.8	12.3	9.8	7.4	...	...	...	...	...	...	
11	15.4	15.1	13.4	10.5	8.3	6.3	...	...	...	...	...	...	
12	18.1	17.8	15.8	12.3	9.8	7.4	...	...	...	...	...	...	
13	15.4	15.1	13.4	10.5	8.3	6.3	...	...	...	...	...	...	
14	15.4	15.1	13.4	10.5	8.3	6.3	...	...	...	...	...	...	
15	15.4	15.1	13.4	10.5	8.3	6.3	...	...	...	...	...	...	
16	18.1	17.8	15.8	12.3	9.8	7.4	...	...	...	...	...	...	A08
17	...	...	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	...	...	A08
19	...	...	...	...	...	...	...	...	...	...	...	...	A08
20	...	...	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	...	...	
24	12.3	12.0	6.3	5.1	4.0	3.2	...	...	...	...	...	...	
25	12.3	12.0	6.3	5.1	4.0	3.2	...	...	...	...	...	...	
26	12.3	12.0	6.3	5.1	4.0	3.2	...	...	...	...	...	...	
27	12.3	12.0	6.3	5.1	4.0	3.2	...	...	...	...	...	...	
28	12.3	12.0	6.3	5.1	4.0	3.2	...	...	...	...	...	...	
29	12.3	12.0	6.3	5.1	4.0	3.2	...	...	...	...	...	...	
30	12.3	12.0	6.3	5.1	4.0	3.2	...	...	...	...	...	...	A08
31	10.5	10.2	5.4	4.3	3.4	2.7	...	...	...	...	...	...	A08
32	12.3	12.0	6.3	5.1	4.0	3.2	...	...	...	...	...	...	
33	10.5	10.2	5.4	4.3	3.4	2.7	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	...	...	
35	14.3	12.2	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	14.3	14.0	12.4	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	14.3	14.0	12.4	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	18Cr–8Ni	Plate	SA-240	302	S30200	...	...	8	1
	2	18Cr–8Ni	Forgings	SA-182	F304	S30400	...	$t \le 5$	8	1
	3	18Cr–8Ni	Smls. tube	SA-213	TP304	S30400	...	...	8	1
	4	18Cr–8Ni	Plate	SA-240	304	S30400	...	...	8	1
	5	18Cr–8Ni	Wld. tube	SA-249	TP304	S30400	...	...	8	1
	6	18Cr–8Ni	Smls. pipe	SA-312	TP304	S30400	...	...	8	1
A08	7	18Cr–8Ni	Wld. pipe	SA-312	TP304	S30400	...	...	8	1
	8	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...	...	8	1
	9	18Cr–8Ni	Fittings	SA-403	304	S30400	CR	...	8	1
	10	18Cr–8Ni	Fittings	SA-403	304	S30400	WP-S	...	8	1
	11	18Cr–8Ni	Wld. fittings	SA-403	304	S30400	WP-W	...	8	1
	12	18Cr–8Ni	Wld. fittings	SA-403	304	S30400	WP-WX	...	8	1
	13	18Cr–8Ni	Wld. tube	SA-688	TP304	S30400	...	...	8	1
	14	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...	$t \le 5$	8	1
	15	18Cr–8Ni	Smls. tube	SA-213	TP304H	S30409	...	...	8	1
	16	18Cr–8Ni	Plate	SA-240	304H	S30409	...	...	8	1
	17	18Cr–8Ni	Wld. tube	SA-249	TP304H	S30409	...	...	8	1
	18	18Cr–8Ni	Smls. pipe	SA-312	TP304H	S30409	...	...	8	1
	19	18Cr–8Ni	Wld. pipe	SA-312	TP304H	S30409	...	...	8	1
	20	18Cr–8Ni	Smls. pipe	SA-376	TP304H	S30409	...	...	8	1
	21	18Cr–8Ni	Fittings	SA-403	304H	S30409	CR	...	8	1
	22	18Cr–8Ni	Fittings	SA-403	304H	S30409	WP-S	...	8	1
	23	18Cr–8Ni	Wld. fittings	SA-403	304H	S30409	WP-W	...	8	1
	24	18Cr–8Ni	Wld. fittings	SA-403	304H	S30409	WP-WX	...	8	1
	25	18Cr–8Ni–N	Smls. tube	SA-213	TP304N	S30451	...	...	8	1
	26	18Cr–8Ni–N	Plate	SA-240	304N	S30451	...	...	8	1
	27	18Cr–8Ni–N	Wld. tube	SA-249	TP304N	S30451	...	...	8	1
	28	18Cr–8Ni–N	Smls. pipe	SA-312	TP304N	S30451	...	...	8	1
	29	18Cr–8Ni–N	Wld. pipe	SA-312	TP304N	S30451	...	...	8	1
	30	18Cr–8Ni–N	Smls. pipe	SA-376	TP304N	S30451	...	...	8	1
	31	18Cr–8Ni–N	Fittings	SA-403	304N	S30451	CR	...	8	1
	32	18Cr–8Ni–N	Wld. fittings	SA-403	304N	S30451	WP-W	...	8	1
	33	18Cr–8Ni–N	Wld. fittings	SA-403	304N	S30451	WP-WX	...	8	1
	34	18Cr–8Ni–N	Forgings	SA-965	F304N	S30451	...	...	...	...
	35	18Cr–10Ni–Cb	Castings	SA-351	CF8C	J92710	...	...	8	1
	36	18Cr–10Ni–Cb	Forgings	SA-182	F347	S34700	...	$t > 5$	8	1
	37	18Cr–10Ni–Cb	Forgings	SA-965	F347	S34700	...	...	8	1
A08	38	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...	$t > 5$	8	1
	39	18Cr–10Ni–Cb	Forgings	SA-965	F347H	S34709	...	...	8	1
	40	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...	$t > 5$	8	1
	41	18Cr–10Ni–Cb	Forgings	SA-182	F348H	S34809	...	$t > 5$	8	1

TABLE 5A (CONT'D) 07
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Maximum Use Temperature, °F	External Pressure Chart No.	Notes	
1	75	30	750	HA-1	G2, G3	
2	75	30	1500	HA-1	G2, G3, G4, T9	
3	75	30	1500	HA-1	G2, G3, T9	
4	75	30	1500	HA-1	G2, G3, G4, T9	
5	75	30	1500	HA-1	G2, G3, G6, T9	
6	75	30	1500	HA-1	G2, G3, G4, T9	
7	75	30	1500	HA-1	G2, G3, G4, G6, T9	A08
8	75	30	1500	HA-1	G2, G3, G4, S3, T9	
9	75	30	1500	HA-1	G2, G6, T9	
10	75	30	1500	HA-1	G2, T9	
11	75	30	1500	HA-1	G2, G6, T9	
12	75	30	1500	HA-1	G2, G6, T9	
13	75	30	1500	HA-1	G2, G3, G6, T9	
14	75	30	1500	HA-1	G2, T9	
15	75	30	1500	HA-1	G2, T9	
16	75	30	1500	HA-1	G2, T9	
17	75	30	1500	HA-1	G2, G6, T9	
18	75	30	1500	HA-1	G2, T9	
19	75	30	1500	HA-1	G2, G6, T9	
20	75	30	1500	HA-1	G2, G4, T9	
21	75	30	1500	HA-1	G2, G6, T9	
22	75	30	1500	HA-1	G2, T9	
23	75	30	1500	HA-1	G2, G6, T9	
24	75	30	1500	HA-1	G2, G6, T9	
25	80	35	1200	HA-1	G2, T9	
26	80	35	1200	HA-1	G2, T9	
27	80	35	1200	HA-1	G2, G6, T9	
28	80	35	1200	HA-1	G2, T9	
29	80	35	1200	HA-1	G2, G6, T9	
30	80	35	1200	HA-1	G2, G4, T9	
31	80	35	1200	HA-1	G2, G6, T9	
32	80	35	1200	HA-1	G2, G6, T9	
33	80	35	1200	HA-1	G2, G6, T9	
34	80	35	1200	HA-1	G2, T9	
35	70	30	1500	HA-2	G2, G3, G8, T8	
36	70	30	1500	HA-2	G2, G3, T8	
37	70	30	1500	HA-2	G2, G3, G4, T8	
38	70	30	1500	HA-2	G2, G16, T9	A08
39	70	30	1500	HA-2	G2, G3, G16, T9	
40	70	30	1500	HA-2	G2, G3, T8	
41	70	30	1500	HA-2	G2, T9	

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	...	...	...
2	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
3	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
4	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
5	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.4	14.1	13.8	13.5	13.2	12.9	12.6	12.4
6	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
A08 7	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.4	14.1	13.8	13.5	13.2	12.9	12.6	12.4
8	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
9	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.4	14.1	13.8	13.5	13.2	12.9	12.6	12.4
10	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
11	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.4	14.1	13.8	13.5	13.2	12.9	12.6	12.4
12	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.4	14.1	13.8	13.5	13.2	12.9	12.6	12.4
13	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.4	14.1	13.8	13.5	13.2	12.9	12.6	12.4
14	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
15	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
16	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
17	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.4	14.1	13.8	13.5	13.2	12.9	12.6	12.4
18	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
19	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.4	14.1	13.8	13.5	13.2	12.9	12.6	12.4
20	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
21	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.4	14.1	13.8	13.5	13.2	12.9	12.6	12.4
22	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
23	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.4	14.1	13.8	13.5	13.2	12.9	12.6	12.4
24	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.4	14.1	13.8	13.5	13.2	12.9	12.6	12.4
25	23.3	23.3	23.3	23.3	22.5	21.3	20.3	19.5	18.9	18.3	17.9	17.5	17.2	16.9	16.6	16.3	16.0
26	23.3	23.3	23.3	23.3	22.5	21.3	20.3	19.5	18.9	18.3	17.9	17.5	17.2	16.9	16.6	16.3	16.0
27	19.8	19.8	19.8	19.8	19.2	18.1	17.3	16.6	16.0	15.6	15.2	14.9	14.6	14.4	14.1	13.8	13.6
28	23.3	23.3	23.3	23.3	22.5	21.3	20.3	19.5	18.9	18.3	17.9	17.5	17.2	16.9	16.6	16.3	16.0
29	19.8	19.8	19.8	19.8	19.2	18.1	17.3	16.6	16.0	15.6	15.2	14.9	14.6	14.4	14.1	13.8	13.6
30	23.3	23.3	23.3	23.3	22.5	21.3	20.3	19.5	18.9	18.3	17.9	17.5	17.2	16.9	16.6	16.3	16.0
31	19.8	19.8	19.8	19.8	19.2	18.1	17.3	16.6	16.0	15.6	15.2	14.9	14.6	14.4	14.1	13.8	13.6
32	19.8	19.8	19.8	19.8	19.2	18.1	17.3	16.6	16.0	15.6	15.2	14.9	14.6	14.4	14.1	13.8	13.6
33	19.8	19.8	19.8	19.8	19.2	18.1	17.3	16.6	16.0	15.6	15.2	14.9	14.6	14.4	14.1	13.8	13.6
34	23.3	23.3	23.3	23.3	22.5	21.3	20.3	19.5	18.9	18.3	17.9	17.5	17.2	16.9	16.6	16.3	16.0
35	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
36	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
37	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
A08 38	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
39	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
40	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
41	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1

TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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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	
1	...	...	...	...	...	...	...	...	...	...	...	...	
2	14.3	14.0	12.4	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	14.3	14.0	12.4	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	
5	12.1	11.9	10.5	8.3	6.6	5.2	4.0	3.1	2.5	2.0	1.6	1.2	
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	12.1	11.9	10.5	8.3	6.6	5.2	4.0	3.1	2.5	2.0	1.6	1.2	A08
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	12.1	11.9	10.5	8.3	6.6	5.2	4.0	3.1	2.5	2.0	1.6	1.2	
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	12.1	11.9	10.5	8.3	6.6	5.2	4.0	3.1	2.5	2.0	1.6	1.2	
12	12.1	11.9	10.5	8.3	6.6	5.2	4.0	3.1	2.5	2.0	1.6	1.2	
13	12.1	11.9	10.5	8.3	6.6	5.2	4.0	3.1	2.5	2.0	1.6	1.2	
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	14.3	14.0	12.4	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	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	14.3	14.0	12.4	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	
19	12.1	11.9	10.5	8.3	6.6	5.2	4.0	3.1	2.5	2.0	1.6	1.2	
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	14.3	14.0	12.4	9.8	7.7	6.1	4.7	3.7	2.9	2.3	1.8	1.4	
23	12.1	11.9	10.5	8.3	6.6	5.2	4.0	3.1	2.5	2.0	1.6	1.2	
24	12.1	11.9	10.5	8.3	6.6	5.2	4.0	3.1	2.5	2.0	1.6	1.2	
25	15.6	15.2	12.4	9.8	7.7	6.1	...	...	...	...	...	...	
26	15.6	15.2	12.4	9.8	7.7	6.1	...	...	...	...	...	...	
27	13.3	13.0	10.5	8.3	6.6	5.2	...	...	...	...	...	...	
28	15.6	15.2	12.4	9.8	7.7	6.1	...	...	...	...	...	...	
29	13.3	13.0	10.5	8.3	6.6	5.2	...	...	...	...	...	...	
30	15.6	15.2	12.4	9.8	7.7	6.1	...	...	...	...	...	...	
31	13.3	13.0	10.5	8.3	6.6	5.2	...	...	...	...	...	...	
32	13.3	13.0	10.5	8.3	6.6	5.2	...	...	...	...	...	...	
33	13.3	13.0	10.5	8.3	6.6	5.2	...	...	...	...	...	...	
34	15.6	15.2	12.4	9.8	7.7	6.1	...	...	...	...	...	...	
35	18.1	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	
36	18.1	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	
37	18.1	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	
38	18.1	18.1	17.4	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	A08
39	18.1	18.1	17.4	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	
40	18.1	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80	
41	18.1	18.1	17.4	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
1	18Cr–10Ni–Cb	Forgings	SA-182	F347	S34700	...	$t \le 5$	8	1
2	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347	S34700	...	...	8	1
3	18Cr–10Ni–Cb	Plate	SA-240	347	S34700	...	...	8	1
4	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347	S34700	...	...	8	1
5	18Cr–10Ni–Cb	Smls. pipe	SA-312	TP347	S34700	...	...	8	1
6	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP347	S34700	...	...	8	1
7	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347	S34700	...	...	8	1
8	18Cr–10Ni–Cb	Fittings	SA-403	347	S34700	CR	...	8	1
9	18Cr–10Ni–Cb	Fittings	SA-403	347	S34700	WP-S	...	8	1
10	18Cr–10Ni–Cb	Wld. fittings	SA-403	347	S34700	WP-W	...	8	1
11	18Cr–10Ni–Cb	Wld. fittings	SA-403	347	S34700	WP-WX	...	8	1
12	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...	$t \le 5$	8	1
13	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347H	S34709	...	...	8	1
14	18Cr–10Ni–Cb	Plate	SA-240	347H	S34709	...	...	8	1
15	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347H	S34709	...	...	8	1
16	18Cr–10Ni–Cb	Smls. pipe	SA-312	TP347H	S34709	...	...	8	1
17	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP347H	S34709	...	...	8	1
18	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347H	S34709	...	...	8	1
19	18Cr–10Ni–Cb	Fittings	SA-403	347H	S34709	CR	...	8	1
20	18Cr–10Ni–Cb	Fittings	SA-403	347H	S34709	WP-S	...	8	1
21	18Cr–10Ni–Cb	Wld. fittings	SA-403	347H	S34709	WP-W	...	8	1
22	18Cr–10Ni–Cb	Wld. fittings	SA-403	347H	S34709	WP-WX	...	8	1
23	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...	$t \le 5$	8	1
24	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348	S34800	...	...	8	1
25	18Cr–10Ni–Cb	Plate	SA-240	348	S34800	...	...	8	1
26	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348	S34800	...	...	8	1
27	18Cr–10Ni–Cb	Smls. pipe	SA-312	TP348	S34800	...	...	8	1
28	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP348	S34800	...	...	8	1
29	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP348	S34800	...	...	8	1
30	18Cr–10Ni–Cb	Fittings	SA-403	348	S34800	CR	...	8	1
31	18Cr–10Ni–Cb	Fittings	SA-403	348	S34800	WP-S	...	8	1
32	18Cr–10Ni–Cb	Wld. fittings	SA-403	348	S34800	WP-W	...	8	1
33	18Cr–10Ni–Cb	Wld. fittings	SA-403	348	S34800	WP-WX	...	8	1
34	18Cr–10Ni–Cb	Forgings	SA-182	F348H	S34809	...	$t \le 5$	8	1
35	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348H	S34809	...	...	8	1
36	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348H	S34809	...	...	8	1
37	18Cr–10Ni–Cb	Smls. pipe	SA-312	TP348H	S34809	...	...	8	1
38	18Cr–10Ni–Cb	Wld. pipe	SA-312	TP348H	S34809	...	...	8	1

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Maximum Use Temperature, °F	External Pressure Chart No.	Notes
1	75	30	1500	HA-2	G2, G3, G4, T8
2	75	30	1500	HA-2	G2, G3, G4, T8
3	75	30	1500	HA-2	G2, G3, T8
4	75	30	1500	HA-2	G2, G3, G6, T8
5	75	30	1500	HA-2	G2, G3, T8
6	75	30	1500	HA-2	G2, G3, G6, T8
7	75	30	1500	HA-2	G2, G3, G4, T8
8	75	30	1500	HA-2	G2, G6, T8
9	75	30	1500	HA-2	G2, T8
10	75	30	1500	HA-2	G2, G6, T8
11	75	30	1500	HA-2	G2, G6, T8
12	75	30	1500	HA-2	G2, G16, T9
13	75	30	1500	HA-2	G2, G16, T9
14	75	30	1500	HA-2	G2, G16, T9
15	75	30	1500	HA-2	G2, G6, T9
16	75	30	1500	HA-2	G2, G16, T9
17	75	30	1500	HA-2	G2, G6, G16, T9
18	75	30	1500	HA-2	G2, G16, T9
19	75	30	1500	HA-2	G2, G6, G16, T9
20	75	30	1500	HA-2	G2, G16, T9
21	75	30	1500	HA-2	G2, G6, G16, T9
22	75	30	1500	HA-2	G2, G6, G16, T9
23	75	30	1500	HA-2	G2, G3, T8
24	75	30	1500	HA-2	G2, G3, T8
25	75	30	1500	HA-2	G2, G3, T8
26	75	30	1500	HA-2	G2, G3, G6, T8
27	75	30	1500	HA-2	G2, G3, T8
28	75	30	1500	HA-2	G2, G3, G6, T8
29	75	30	1500	HA-2	G2, G3, G4, T8
30	75	30	1500	HA-2	G2, G6, G16, T8
31	75	30	1500	HA-2	G2, G16, T8
32	75	30	1500	HA-2	G2, G6, G16, T8
33	75	30	1500	HA-2	G2, G6, G16, T8
34	75	30	1500	HA-2	G2, T9
35	75	30	1500	HA-2	G2, G16, T9
36	75	30	1500	HA-2	G2, G6, T9
37	75	30	1500	HA-2	G2, G16, T9
38	75	30	1500	HA-2	G2, G6, G16, T9

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
2	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
3	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
4	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4
5	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
6	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4
7	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
8	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4
9	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
10	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4
11	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4
12	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
13	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
14	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
15	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4
16	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
17	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4
18	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
19	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4
20	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
21	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4
22	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4
23	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
24	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
25	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
26	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4
27	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
28	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4
29	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
30	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4
31	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
32	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4
33	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4
34	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
35	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
36	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4
37	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
38	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4

TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

07

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
1	18.1	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80
2	18.1	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80
3	18.1	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80
4	15.4	13.6	10.3	7.8	5.2	3.8	2.8	1.9	1.3	1.0	0.76	0.68
5	18.1	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80
6	15.4	13.6	10.3	7.8	5.2	3.8	2.8	1.9	1.3	1.0	0.76	0.68
7	18.1	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80
8	15.4	13.6	10.3	7.8	5.2	3.8	2.8	1.9	1.3	1.0	0.76	0.68
9	18.1	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80
10	15.4	13.6	10.3	7.8	5.2	3.8	2.8	1.9	1.3	1.0	0.76	0.68
11	15.4	13.6	10.3	7.8	5.2	3.8	2.8	1.9	1.3	1.0	0.76	0.68
12	18.1	18.1	17.4	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3
13	18.1	18.1	17.4	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3
14	18.1	18.1	17.4	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3
15	15.4	15.4	14.8	12.0	8.9	6.7	5.0	3.7	2.7	2.1	1.6	1.1
16	18.1	18.1	17.4	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3
17	15.4	15.4	14.8	12.0	8.9	6.7	5.0	3.7	2.7	2.1	1.6	1.1
18	18.1	18.1	17.4	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3
19	15.4	15.4	14.8	12.0	8.9	6.7	5.0	3.7	2.7	2.1	1.6	1.1
20	18.1	18.1	17.4	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3
21	15.4	15.4	14.8	12.0	8.9	6.7	5.0	3.7	2.7	2.1	1.6	1.1
22	15.4	15.4	14.8	12.0	8.9	6.7	5.0	3.7	2.7	2.1	1.6	1.1
23	18.1	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80
24	18.1	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80
25	18.1	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80
26	15.4	13.6	10.3	7.8	5.2	3.8	2.8	1.9	1.3	1.0	0.76	0.68
27	18.1	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80
28	15.4	13.6	10.3	7.8	5.2	3.8	2.8	1.9	1.3	1.0	0.76	0.68
29	18.1	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80
30	15.4	13.6	10.3	7.8	5.2	3.8	2.8	1.9	1.3	1.0	0.76	0.68
31	18.1	16.0	12.1	9.1	6.1	4.4	3.3	2.2	1.5	1.2	0.90	0.80
32	15.4	13.6	10.3	7.8	5.2	3.8	2.8	1.9	1.3	1.0	0.76	0.68
33	15.4	13.6	10.3	7.8	5.2	3.8	2.8	1.9	1.3	1.0	0.76	0.68
34	18.1	18.1	17.4	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3
35	18.1	18.1	17.4	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3
36	15.4	15.4	14.8	12.0	8.9	6.7	5.0	3.7	2.7	2.1	1.6	1.1
37	18.1	18.1	17.4	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3
38	15.4	15.4	14.8	12.0	8.9	6.7	5.0	3.7	2.7	2.1	1.6	1.1

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
	1	18Cr–10Ni–Cb	Fittings	SA-403	348H	S34809	CR	...	8	1
	2	18Cr–10Ni–Cb	Fittings	SA-403	348H	S34809	WP-S	...	8	1
	3	18Cr–10Ni–Cb	Wld. fittings	SA-403	348H	S34809	WP-W	...	8	1
	4	18Cr–10Ni–Cb	Wld. fittings	SA-403	348H	S34809	WP-WX	...	8	1
	5	18Cr–10Ni–Ti	Smls. pipe	SA-312	TP321	S32100	...	$t > 3/8$	8	1
	6	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...	$t > 3/8$	8	1
	7	18Cr–10Ni–Ti	Smls. pipe	SA-312	TP321H	S32109	...	$t > 3/16$	8	1
	8	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321H	S32109	...	$t > 3/8$	8	1
	9	18Cr–10Ni–Ti	Forgings	SA-182	F321	S32100	...	$t > 5$	8	1
	10	18Cr–10Ni–Ti	Forgings	SA-965	F321	S32100	...	...	8	1
	11	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...	$t > 5$	8	1
	12	18Cr–10Ni–Ti	Forgings	SA-965	F321H	S32109	...	...	8	1
	13	18Cr–10Ni–Ti	Forgings	SA-182	F321	S32100	...	$t \le 5$	8	1
	14	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321	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
A08	17	18Cr–10Ni–Ti	Smls. pipe	SA-312	TP321	S32100	...	$t \le 3/8$	8	1
A08	18	18Cr–10Ni–Ti	Wld. pipe	SA-312	TP321	S32100	...	...	8	1
A08	19	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...	$t \le 3/8$	8	1
	20	18Cr–10Ni–Ti	Fittings	SA-403	321	S32100	CR	...	8	1
	21	18Cr–10Ni–Ti	Fittings	SA-403	321	S32100	WP-S	...	8	1
	22	18Cr–10Ni–Ti	Wld. fittings	SA-403	321	S32100	WP-W	...	8	1
	23	18Cr–10Ni–Ti	Wld. fittings	SA-403	321	S32100	WP-WX	...	8	1
	24	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...	$t \le 5$	8	1
	25	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321H	S32109	...	...	8	1
	26	18Cr–10Ni–Ti	Plate	SA-240	321H	S32109	...	...	8	1
	27	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321H	S32109	...	...	8	1
	28	18Cr–10Ni–Ti	Smls. pipe	SA-312	TP321H	S32109	...	$t \le 3/16$	8	1
	29	18Cr–10Ni–Ti	Wld. pipe	SA-312	TP321H	S32109	...	$t \le 3/16$	8	1
	30	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321H	S32109	...	$t \le 3/8$	8	1
	31	18Cr–10Ni–Ti	Fittings	SA-403	321H	S32109	CR	...	8	1
	32	18Cr–10Ni–Ti	Fittings	SA-403	321H	S32109	WP-S	...	8	1
	33	18Cr–10Ni–Ti	Wld. fittings	SA-403	321H	S32109	WP-W	...	8	1
	34	18Cr–10Ni–Ti	Wld. fittings	SA-403	321H	S32109	WP-WX	...	8	1
	35	18Cr–13Ni–3Mo	Plate	SA-240	317	S31700	...	$t \le 5$	8	1
	36	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317	S31700	...	...	8	1
	37	18Cr–13Ni–3Mo	Smls. pipe	SA-312	TP317	S31700	...	$t \le 5$	8	1
	38	18Cr–13Ni–3Mo	Wld. pipe	SA-312	TP317	S31700	...	$t \le 5$	8	1
	39	18Cr–13Ni–3Mo	Fittings	SA-403	317	S31700	WP-S	...	8	1
	40	18Cr–13Ni–3Mo	Plate	SA-240	317L	S31703	...	...	8	1
	41	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	WP-S	...	8	1

TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Maximum Use Temperature, °F	External Pressure Chart No.	Notes	
1	75	30	1500	HA-2	G2, G6, G16, T9	
2	75	30	1500	HA-2	G2, G16, T9	
3	75	30	1500	HA-2	G2, G6, G16, T9	
4	75	30	1500	HA-2	G2, G6, G16, T9	
5	70	25	1500	HA-2	G2, G3, T9	
6	70	25	1500	HA-2	G2, G3, G4, T9	
7	70	25	1500	HA-2	G2, T9	
8	70	25	1500	HA-2	G2, G16, T9	
9	70	30	1500	HA-2	G2, G3, T8	
10	70	30	1500	HA-2	G2, G3, T8	
11	70	30	1500	HA-2	G2, G16, T9	
12	70	30	1500	HA-2	G2, G3, G16, T9	
13	75	30	1500	HA-2	G2, G3, T8	
14	75	30	1500	HA-2	G2, G3, T8	
15	75	30	1500	HA-2	G2, G3, T8	
16	75	30	1500	HA-2	G2, G3, G6, T8	
17	75	30	1500	HA-2	G2, G3, T8	A08
18	75	30	1500	HA-2	G2, G3, G6, T8	A08
19	75	30	1500	HA-2	G2, G3, G4, T8	A08
20	75	30	1500	HA-2	G2, G6, T8	
21	75	30	1500	HA-2	G2, T8	
22	75	30	1500	HA-2	G2, G6, T8	
23	75	30	1500	HA-2	G2, G6, T8	
24	75	30	1500	HA-2	G2, G16, T9	
25	75	30	1500	HA-2	G2, G16, T9	
26	75	30	1500	HA-2	G2, G16, T9	
27	75	30	1500	HA-2	G2, G6, T9	
28	75	30	1500	HA-2	G2, T9	
29	75	30	1500	HA-2	G2, G6, T9	
30	75	30	1500	HA-2	G2, G16, T9	
31	75	30	1500	HA-2	G2, G6, G16, T9	
32	75	30	1500	HA-2	G2, G16, T9	
33	75	30	1500	HA-2	G2, G6, G16, T9	
34	75	30	1500	HA-2	G2, G6, G16, T9	
35	75	30	1500	HA-2	G2, G3, T10	
36	75	30	1500	HA-2	G2, G3, G6, T10	
37	75	30	1500	HA-2	G2, G3, T10	
38	75	30	1500	HA-2	G2, G3, G6, T10	
39	75	30	1500	HA-2	G2, T10	
40	75	30	850	HA-4	G2	
41	75	30	850	HA-4	G2	

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

		Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding																
	Line No.	–20 to 100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
	1	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4
	2	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	19.0	18.7	18.5	18.3	18.2	18.1
	3	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4
	4	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.1	15.9	15.7	15.6	15.5	15.4
	5	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.6	16.1	15.6	15.2	14.9	14.6	14.3	14.1	13.9	13.8
	6	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.6	16.1	15.6	15.2	14.9	14.6	14.3	14.1	13.9	13.8
	7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.6	16.1	15.6	15.2	14.9	14.6	14.3	14.1	13.9	13.8
	8	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.6	16.1	15.6	15.2	14.9	14.6	14.3	14.1	13.9	13.8
	9	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.8	18.3	17.9	17.5	17.2	16.9	16.7	16.5
	10	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.8	18.3	17.9	17.5	17.2	16.9	16.7	16.5
	11	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.8	18.3	17.9	17.5	17.2	16.9	16.7	16.5
	12	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.8	18.3	17.9	17.5	17.2	16.9	16.7	16.5
	13	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.8	18.3	17.9	17.5	17.2	16.9	16.7	16.5
	14	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.8	18.3	17.9	17.5	17.2	16.9	16.7	16.5
	15	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.8	18.3	17.9	17.5	17.2	16.9	16.7	16.5
	16	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.4	16.0	15.5	15.2	14.9	14.6	14.4	14.2	14.1
A08	17	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.8	18.3	17.9	17.5	17.2	16.9	16.7	16.5
A08	18	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.4	16.0	15.5	15.2	14.9	14.6	14.4	14.2	14.1
A08	19	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.8	18.3	17.9	17.5	17.2	16.9	16.7	16.5
	20	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.4	16.0	15.5	15.2	14.9	14.6	14.4	14.2	14.1
	21	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.8	18.3	17.9	17.5	17.2	16.9	16.7	16.5
	22	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.4	16.0	15.5	15.2	14.9	14.6	14.4	14.2	14.1
	23	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.4	16.0	15.5	15.2	14.9	14.6	14.4	14.2	14.1
	24	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.8	18.3	17.9	17.5	17.2	16.9	16.7	16.5
	25	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.8	18.3	17.9	17.5	17.2	16.9	16.7	16.5
	26	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.8	18.3	17.9	17.5	17.2	16.9	16.7	16.5
	27	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.4	16.0	15.5	15.2	14.9	14.6	14.4	14.2	14.1
	28	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.8	18.3	17.9	17.5	17.2	16.9	16.7	16.5
	29	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.4	16.0	15.5	15.2	14.9	14.6	14.4	14.2	14.1
	30	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.8	18.3	17.9	17.5	17.2	16.9	16.7	16.5
	31	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.4	16.0	15.5	15.2	14.9	14.6	14.4	14.2	14.1
	32	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.8	18.3	17.9	17.5	17.2	16.9	16.7	16.5
	33	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.4	16.0	15.5	15.2	14.9	14.6	14.4	14.2	14.1
	34	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.4	16.0	15.5	15.2	14.9	14.6	14.4	14.2	14.1
	35	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.4	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	36	17.0	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.5	14.1	13.9	13.7	13.5	13.4	13.2
	37	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.4	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	38	17.0	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.5	14.1	13.9	13.7	13.5	13.4	13.2
	39	20.0	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.4	17.0	16.6	16.3	16.1	15.9	15.7	15.6
	40	20.0	20.0	20.0	20.0	20.0	19.6	18.9	18.2	17.7	17.3	16.9	16.5	16.2	15.8	15.5	15.2	...
	41	20.0	20.0	20.0	20.0	20.0	19.6	18.9	18.2	17.7	17.3	16.9	16.5	16.2	15.8	15.5	15.2	...

TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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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	
1	15.4	15.4	14.8	12.0	8.9	6.7	5.0	3.7	2.7	2.1	1.6	1.1	
2	18.1	18.1	17.4	14.1	10.5	7.9	5.9	4.4	3.2	2.5	1.8	1.3	
3	15.4	15.4	14.8	12.0	8.9	6.7	5.0	3.7	2.7	2.1	1.6	1.1	
4	15.4	15.4	14.8	12.0	8.9	6.7	5.0	3.7	2.7	2.1	1.6	1.1	
5	13.6	13.5	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	
6	13.6	13.5	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	
7	13.6	13.5	12.3	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	
8	13.6	13.5	12.3	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	
9	16.4	16.2	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	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	16.4	16.2	12.3	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	
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	16.4	16.2	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	
15	16.4	16.2	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	
16	13.9	13.8	8.2	5.9	4.3	3.1	2.2	1.4	0.94	0.68	0.43	0.26	
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	A08
18	13.9	13.8	8.2	5.9	4.3	3.1	2.2	1.4	0.94	0.68	0.43	0.26	A08
19	16.4	16.2	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	A08
20	13.9	13.8	8.2	5.9	4.3	3.1	2.2	1.4	0.94	0.68	0.43	0.26	
21	16.4	16.2	9.6	6.9	5.0	3.6	2.6	1.7	1.1	0.80	0.50	0.30	
22	13.9	13.8	8.2	5.9	4.3	3.1	2.2	1.4	0.94	0.68	0.43	0.26	
23	13.9	13.8	8.2	5.9	4.3	3.1	2.2	1.4	0.94	0.68	0.43	0.26	
24	16.4	16.2	12.3	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	
25	16.4	16.2	12.3	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	
26	16.4	16.2	12.3	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	
27	13.9	13.8	10.5	7.7	5.9	4.6	3.5	2.7	2.1	1.6	1.3	0.94	
28	16.4	16.2	12.3	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	
29	13.9	13.8	10.5	7.7	5.9	4.6	3.5	2.7	2.1	1.6	1.3	0.94	
30	16.4	16.2	12.3	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	
31	13.9	13.8	10.5	7.7	5.9	4.6	3.5	2.7	2.1	1.6	1.3	0.94	
32	16.4	16.2	12.3	9.1	6.9	5.4	4.1	3.2	2.5	1.9	1.5	1.1	
33	13.9	13.8	10.5	7.7	5.9	4.6	3.5	2.7	2.1	1.6	1.3	0.94	
34	13.9	13.8	10.5	7.7	5.9	4.6	3.5	2.7	2.1	1.6	1.3	0.94	
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	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	15.4	15.3	15.1	12.4	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	
38	13.1	13.0	12.9	10.5	8.3	6.3	4.7	3.5	2.6	1.9	1.5	1.1	
39	15.4	15.3	15.1	12.4	9.8	7.4	5.5	4.1	3.1	2.3	1.7	1.3	
40	...	...	...	...	...	...	...	...	...	...	...	...	
41	...	...	...	...	...	...	...	...	...	...	...	...	

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
1	18Cr–18Ni–2Si	Smls. tube	SA-213	XM-15	S38100	...	$t \le 5$	8	1
2	18Cr–18Ni–2Si	Plate	SA-240	XM-15	S38100	...	$t \le 5$	8	1
3	18Cr–18Ni–2Si	Wld. tube	SA-249	TPXM-15	S38100	...	$t \le 5$	8	1
4	18Cr–18Ni–2Si	Smls. pipe	SA-312	TPXM-15	S38100	...	$t \le 5$	8	1
5	18Cr–18Ni–2Si	Wld. pipe	SA-312	TPXM-15	S38100	...	$t \le 5$	8	1
6	21Cr–6Ni–9Mn	Forgings	SA-182	FXM-11	S21904	...	...	8	3
7	21Cr–6Ni–9Mn	Smls. pipe	SA-312	TPXM-11	S21904	...	...	8	3
8	21Cr–6Ni–9Mn	Wld. pipe	SA-312	TPXM-11	S21904	...	...	8	3
9	21Cr–6Ni–9Mn	Plate	SA-666	XM-11	S21904	...	...	8	3
10	21Cr–6Ni–9Mn	Forgings	SA-965	FXM-11	S21904	...	...	8	3
11	22Cr–5Ni–3Mo–N	Forgings	SA-182	F51	S31803	...	...	10H	1
12	22Cr–5Ni–3Mo–N	Plate	SA-240	...	S31803	...	...	10H	1
13	22Cr–5Ni–3Mo–N	Smls. tube	SA-789	...	S31803	...	...	10H	1
14	22Cr–5Ni–3Mo–N	Wld. tube	SA-789	...	S31803	...	...	10H	1
15	22Cr–5Ni–3Mo–N	Smls. pipe	SA-790	...	S31803	...	...	10H	1
16	22Cr–5Ni–3Mo–N	Wld. pipe	SA-790	...	S31803	...	...	10H	1
17	22Cr–13Ni–5Mn	Forgings	SA-182	FXM-19	S20910	...	...	8	3
18	22Cr–13Ni–5Mn	Plate	SA-240	XM-19	S20910	...	...	8	3
19	22Cr–13Ni–5Mn	Wld. tube	SA-249	TPXM-19	S20910	...	...	8	3
20	22Cr–13Ni–5Mn	Smls. pipe	SA-312	TPXM-19	S20910	...	...	8	3
21	22Cr–13Ni–5Mn	Wld. pipe	SA-312	TPXM-19	S20910	...	...	8	3
22	22Cr–13Ni–5Mn	Fittings	SA-403	XM-19	S20910	CR	...	8	3
23	22Cr–13Ni–5Mn	Wld. fittings	SA-403	XM-19	S20910	WP-W	...	8	3
24	22Cr–13Ni–5Mn	Wld. fittings	SA-403	XM-19	S20910	WP-WX	...	8	3
25	22Cr–13Ni–5Mn	Bar	SA-479	XM-19	S20910	...	...	8	3
26	22Cr–13Ni–5Mn	Forgings	SA-965	FXM-19	S20910	...	...	8	3
27	23Cr–4Ni–Mo–Cu	Plate	SA-240	...	S32304	...	...	10H	1
28	23Cr–12Ni	Fittings	SA-403	309	S30900	...	...	8	2
29	23Cr–12Ni	Fittings	SA-403	309	S30900	WP-S	...	8	2
30	23Cr–12Ni	Wld. fittings	SA-403	309	S30900	WP-W	...	8	2
31	23Cr–12Ni	Wld. fittings	SA-403	309	S30900	WP-WX	...	8	2
32	23Cr–12Ni	Smls. tube	SA-213	TP309S	S30908	...	...	8	2
33	23Cr–12Ni	Plate	SA-240	309S	S30908	...	...	8	2
34	23Cr–12Ni	Wld. tube	SA-249	TP309S	S30908	...	...	8	2
35	23Cr–12Ni	Smls. pipe	SA-312	TP309S	S30908	...	...	8	2
36	23Cr–12Ni	Wld. pipe	SA-312	TP309S	S30908	...	...	8	2
37	23Cr–12Ni	Wld. pipe	SA-813	TP309S	S30908	...	...	8	2
38	23Cr–12Ni	Wld. pipe	SA-814	TP309S	S30908	...	...	8	2
39	23Cr–12Ni	Smls. tube	SA-213	TP309H	S30909	...	...	8	2
40	23Cr–12Ni	Plate	SA-240	309H	S30909	...	...	8	2
41	23Cr–12Ni	Wld. tube	SA-249	TP309H	S30909	...	...	8	2

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Maximum Use Temperature, °F	External Pressure Chart No.	Notes
1	75	30	1000	HA-2	G2, G3
2	75	30	1000	HA-2	G2, G3
3	75	30	1000	HA-2	G2, G3, G6
4	75	30	1000	HA-2	G2, G3
5	75	30	1000	HA-2	G2, G3, G6
6	90	50	600	HA-6	G2
7	90	50	600	HA-6	G2
8	90	50	600	HA-6	G2, G6
9	90	50	600	HA-6	G2
10	90	50	600	HA-6	G2
11	90	65	400	HA-5	G8
12	90	65	400	HA-5	G8
13	90	65	400	HA-5	G8
14	90	65	400	HA-5	G6, G8
15	90	65	400	HA-5	G8
16	90	65	400	HA-5	G6, G8
17	100	55	1200	HA-6	G2, T10
18	100	55	1200	HA-6	G2, T10
19	100	55	1200	HA-6	G2, G6, T10
20	100	55	1200	HA-6	G2, T10
21	100	55	1200	HA-6	G2, G6, T10
22	100	55	1200	HA-6	G2, G6, T10
23	100	55	1200	HA-6	G2, G6, T10
24	100	55	1200	HA-6	G2, G6, T10
25	100	55	1200	HA-6	G2, T10
26	100	55	1200	HA-6	G2, T10
27	87	58	600	HA-6	G2, G8
28	75	30	1500	HA-2	G2, G6, T7
29	75	30	1500	HA-2	G2, T7
30	75	30	1500	HA-2	G2, G6, T7
31	75	30	1500	HA-2	G2, G6, T7
32	75	30	1500	HA-2	G2, G3, T7
33	75	30	1500	HA-2	G2, G3, T7
34	75	30	1500	HA-2	G2, G6, T7
35	75	30	1500	HA-2	G2, G3, T7
36	75	30	1500	HA-2	G2, G3, G6, T7
37	75	30	1500	HA-2	G2, G3, G6, T7
38	75	30	1500	HA-2	G2, G3, G6, T7
39	75	30	1500	HA-2	G2, T8
40	75	30	1500	HA-2	G2, G4, T8
41	75	30	1500	HA-2	G2, G6, T8

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
2	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
3	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.4	14.1	13.8	13.5	13.2	12.9	12.6	12.4
4	20.0	20.0	20.0	20.0	20.0	19.3	18.6	18.0	17.5	17.0	16.6	16.2	15.8	15.5	15.2	14.9	14.6
5	17.0	17.0	17.0	17.0	17.0	16.4	15.8	15.3	14.8	14.4	14.1	13.8	13.5	13.2	12.9	12.6	12.4
6	33.3	33.3	33.3	32.0	29.7	27.9	26.4	25.3	24.4	23.7	23.1	...	...	...	...	...	...
7	33.3	33.3	33.3	32.0	29.7	27.9	26.4	25.3	24.4	23.7	23.1	...	...	...	...	...	...
8	28.3	28.3	28.3	27.2	25.3	23.7	22.5	21.5	20.7	20.1	19.7	...	...	...	...	...	...
9	33.3	33.3	33.3	32.0	29.7	27.9	26.4	25.3	24.4	23.7	23.1	...	...	...	...	...	...
10	33.3	33.3	33.3	32.0	29.7	27.9	26.4	25.3	24.4	23.7	23.1	...	...	...	...	...	...
11	37.5	37.5	37.5	37.0	35.8	34.9	34.2	...	...	...	...	...	...	...	...	...	...
12	37.5	37.5	37.5	37.0	35.8	34.9	34.2	...	...	...	...	...	...	...	...	...	...
13	37.5	37.5	37.5	37.0	35.8	34.9	34.2	...	...	...	...	...	...	...	...	...	...
14	31.9	31.9	31.9	31.5	30.5	29.7	29.0	...	...	...	...	...	...	...	...	...	...
15	37.5	37.5	37.5	37.0	35.8	34.9	34.2	...	...	...	...	...	...	...	...	...	...
16	31.9	31.9	31.9	31.9	31.9	31.9	31.9	...	...	...	...	...	...	...	...	...	...
17	36.7	36.7	36.7	36.7	36.7	36.7	36.7	35.8	35.0	34.3	33.7	33.1	32.6	32.2	31.8	31.4	31.1
18	36.7	36.7	36.7	36.7	36.7	36.7	36.7	35.8	35.0	34.3	33.7	33.1	32.6	32.2	31.8	31.4	31.1
19	31.2	31.2	31.2	31.2	31.2	31.2	31.2	30.4	29.7	29.1	28.6	28.2	27.7	27.4	27.0	26.7	26.4
20	36.7	36.7	36.7	36.7	36.7	36.7	36.7	35.8	35.0	34.3	33.7	33.1	32.6	32.2	31.8	31.4	31.1
21	31.2	31.2	31.2	31.2	31.2	31.2	31.2	30.4	29.7	29.1	28.6	28.2	27.7	27.4	27.0	26.7	26.4
22	31.2	31.2	31.2	31.2	31.2	31.2	31.2	30.4	29.7	29.1	28.6	28.2	27.7	27.4	27.0	26.7	26.4
23	31.2	31.2	31.2	31.2	31.2	31.2	31.2	30.4	29.7	29.1	28.6	28.2	27.7	27.4	27.0	26.7	26.4
24	31.2	31.2	31.2	31.2	31.2	31.2	31.2	30.4	29.7	29.1	28.6	28.2	27.7	27.4	27.0	26.7	26.4
25	36.7	36.7	36.7	36.7	36.7	36.7	36.7	35.8	35.0	34.3	33.7	33.1	32.6	32.2	31.8	31.4	31.1
26	36.7	36.7	36.7	36.7	36.7	36.7	36.7	35.8	35.0	34.3	33.7	33.1	32.6	32.2	31.8	31.4	31.1
27	36.3	35.0	33.2	31.9	30.9	30.1	29.6	29.3	28.9	28.5	28.1	...	...	...	...	...	...
28	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.9	16.5	16.2	15.9	15.7	15.5	15.3	15.1	14.8	14.6
29	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.9	19.4	19.1	18.8	18.5	18.2	18.0	17.7	17.5	17.2
30	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.9	16.5	16.2	15.9	15.7	15.5	15.3	15.1	14.8	14.6
31	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.9	16.5	16.2	15.9	15.7	15.5	15.3	15.1	14.8	14.6
32	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.9	19.4	19.1	18.8	18.5	18.2	18.0	17.7	17.5	17.2
33	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.9	19.4	19.1	18.8	18.5	18.2	18.0	17.7	17.5	17.2
34	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.9	16.5	16.2	15.9	15.7	15.5	15.3	15.1	14.8	14.6
35	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.9	19.4	19.1	18.8	18.5	18.2	18.0	17.7	17.5	17.2
36	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.9	16.5	16.2	15.9	15.7	15.5	15.3	15.1	14.8	14.6
37	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.9	16.5	16.2	15.9	15.7	15.5	15.3	15.1	14.8	14.6
38	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.9	16.5	16.2	15.9	15.7	15.5	15.3	15.1	14.8	14.6
39	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.9	19.4	19.1	18.8	18.5	18.2	18.0	17.7	17.5	17.2
40	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.9	19.4	19.1	18.8	18.5	18.2	18.0	17.7	17.5	17.2
41	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.9	16.5	16.2	15.9	15.7	15.5	15.3	15.1	14.8	14.6

TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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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
1	14.3	14.0	...	...	...	...	...	...	...	...	...	...
2	14.3	14.0	...	...	...	...	...	...	...	...	...	...
3	12.1	11.9	...	...	...	...	...	...	...	...	...	...
4	14.3	14.0	...	...	...	...	...	...	...	...	...	...
5	12.1	11.9	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...
17	30.7	30.3	29.7	*20.4*	*13.0*	*8.3*	...	...	...	...	...	...
18	30.7	30.3	29.7	*20.4*	*13.0*	*8.3*	...	...	...	...	...	...
19	26.1	25.7	25.2	*17.3*	*11.1*	*7.1*	...	...	...	...	...	...
20	30.7	30.3	29.7	*20.4*	*13.0*	*8.3*	...	...	...	...	...	...
21	26.1	25.7	25.2	*17.3*	*11.1*	*7.1*	...	...	...	...	...	...
22	26.1	25.7	25.2	*17.3*	*11.1*	*7.1*	...	...	...	...	...	...
23	26.1	25.7	25.2	*17.3*	*11.1*	*7.1*	...	...	...	...	...	...
24	26.1	25.7	25.2	*17.3*	*11.1*	*7.1*	...	...	...	...	...	...
25	30.7	30.3	29.7	*20.4*	*13.0*	*8.3*	...	...	...	...	...	...
26	30.7	30.3	29.7	*20.4*	*13.0*	*8.3*	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...
28	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*
29	*15.9*	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*
30	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*
31	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*
32	*15.9*	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*
33	*15.9*	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*
34	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*
35	*15.9*	*9.9*	*7.1*	*5.0*	*3.6*	*2.5*	*1.5*	*0.80*	*0.50*	*0.40*	*0.30*	*0.20*
36	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*
37	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*
38	*13.5*	*8.4*	*6.0*	*4.3*	*3.1*	*2.1*	*1.3*	*0.68*	*0.43*	*0.34*	*0.26*	*0.17*
39	16.9	*13.8*	*10.3*	*7.6*	*5.5*	*4.0*	*3.0*	*2.2*	*1.7*	*1.3*	*0.97*	*0.75*
40	16.9	*13.8*	*10.3*	*7.6*	*5.5*	*4.0*	*3.0*	*2.2*	*1.7*	*1.3*	*0.97*	*0.75*
41	14.4	*11.7*	*8.8*	*6.5*	*4.7*	*3.4*	*2.6*	*1.9*	*1.4*	*1.1*	*0.82*	*0.64*

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
1	23Cr–12Ni	Smls. pipe	SA-312	TP309H	S30909	...	...	8	2
2	23Cr–12Ni	Wld. pipe	SA-312	TP309H	S30909	...	...	8	2
3	23Cr–12Ni	Bar	SA-479	309H	S30909	...	...	8	2
4	23Cr–12Ni–Cb	Smls. tube	SA-213	TP309Cb	S30940	...	...	8	2
5	23Cr–12Ni–Cb	Plate	SA-240	309Cb	S30940	...	...	8	2
6	23Cr–12Ni–Cb	Wld. tube	SA-249	TP309Cb	S30940	...	...	8	2
7	23Cr–12Ni–Cb	Smls. pipe	SA-312	TP309Cb	S30940	...	...	8	2
8	23Cr–12Ni–Cb	Wld. pipe	SA-312	TP309Cb	S30940	...	...	8	2
9	23Cr–12Ni–Cb	Wld. pipe	SA-813	TP309Cb	S30940	...	...	8	2
10	23Cr–12Ni–Cb	Wld. pipe	SA-814	TP309Cb	S30940	...	...	8	2
11	25Cr–6Ni–Mo–N	Plate	SA-240	...	S31200	...	...	10H	1
12	25Cr–12Ni	Castings	SA-351	CH8	J93400	...	...	8	2
13	25Cr–12Ni	Castings	SA-351	CH20	J93402	...	...	8	2
14	25Cr–20Ni	Castings	SA-351	CK20	J94202	...	...	8	2
15	25Cr–20Ni	Forgings	SA-182	F310	S31000	...	$t \le 5$	8	2
16	25Cr–20Ni	Forgings	SA-965	F310	S31000	...	...	8	2
17	25Cr–20Ni	Smls. tube	SA-213	TP310S	S31008	...	...	8	2
18	25Cr–20Ni	Plate	SA-240	310S	S31008	...	...	8	2
19	25Cr–20Ni	Wld. tube	SA-249	TP310S	S31008	...	...	8	2
20	25Cr–20Ni	Smls. pipe	SA-312	TP310S	S31008	...	...	8	2
21	25Cr–20Ni	Wld. pipe	SA-312	TP310S	S31008	...	...	8	2
22	25Cr–20Ni	Fittings	SA-403	310S	S31008	CR	...	8	2
A08 23	25Cr–20Ni	Fittings	SA-403	310S	S31008	WP-S	...	8	2
24	25Cr–20Ni	Wld. fittings	SA-403	310S	S31008	WP-W	...	8	2
25	25Cr–20Ni	Wld. fittings	SA-403	310S	S31008	WP-WX	...	8	2
26	25Cr–20Ni	Wld. pipe	SA-813	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	Wld. tube	SA-249	TP310H	S31009	...	...	8	2
31	25Cr–20Ni	Smls. pipe	SA-312	TP310H	S31009	...	...	8	2
32	25Cr–20Ni	Wld. pipe	SA-312	TP310H	S31009	...	...	8	2
33	25Cr–20Ni–Cb	Wld. tube	SA-249	TP310Cb	S31040	...	...	8	2
34	25Cr–20Ni–Cb	Wld. pipe	SA-312	TP310Cb	S31040	...	...	8	2
35	25Cr–20Ni–Cb	Wld. pipe	SA-813	TP310Cb	S31040	...	...	8	2
36	25Cr–20Ni–Cb	Wld. pipe	SA-814	TP310Cb	S31040	...	...	8	2
37	25Cr–22Ni–2Mo–N	Forgings	SA-182	F310MoLN	S31050	...	...	8	2
38	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...	$0.25 < t \le 1.25$	8	2
39	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...	$0.25 < t \le 1.25$	8	2
40	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...	$0.25 < t \le 1.25$	8	2

TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Maximum Use Temperature, °F	External Pressure Chart No.	Notes	
1	75	30	1500	HA-2	G2, T8	
2	75	30	1500	HA-2	G2, G6, T8	
3	75	30	1500	HA-2	G2, T8	
4	75	30	1500	HA-2	G2, G3, T7	
5	75	30	1500	HA-2	G2, G3, T7	
6	75	30	1500	HA-2	G2, G3, G6, T7	
7	75	30	1500	HA-2	G2, G3, T7	
8	75	30	1500	HA-2	G2, G3, G6, T7	
9	75	30	1500	HA-2	G2, G3, G6, T7	
10	75	30	1500	HA-2	G2, G3, G6, T7	
11	100	65	650	HA-5	G2, G8	
12	65	28	1500	HA-3	G2, G3, G4, G8, T8	
13	70	30	1500	HA-2	G2, T8	
14	65	28	1500	HA-3	G2, T8	
15	75	30	1500	HA-2	G2, G3, G5, G7, T7	
16	75	30	1500	HA-2	G2, G3, G5, G7, T7	
17	75	30	1500	HA-2	G2, G3, G5, G7, T7	
18	75	30	1500	HA-2	G2, G3, G5, G7, T7	
19	75	30	1500	HA-2	G2, G3, G5, G6, G7, T7	
20	75	30	1500	HA-2	G2, G3, G5, G7, T7	
21	75	30	100	HA-2	G2, G3, G5, G6, G7	
22	75	30	1500	HA-2	G2, G6, T7	
23	75	30	1500	HA-2	G2, T7	A08
24	75	30	1500	HA-2	G2, G6, T7	
25	75	30	1500	HA-2	G2, G6, T7	
26	75	30	1500	HA-2	G2, G3, G5, G6, G7, T7	
27	75	30	1500	HA-2	G2, G3, G5, G6, G7, T7	
28	75	30	1500	HA-2	G2, T8	
29	75	30	1500	HA-2	G2, T8	
30	75	30	1500	HA-2	G2, G6, T8	
31	75	30	1500	HA-2	G2, T8	
32	75	30	1500	HA-2	G2, G6, T8	
33	75	30	1500	HA-2	G2, G3, G5, G6, G7, T7	
34	75	30	1500	HA-2	G2, G3, G5, G6, G7, T7	
35	75	30	1500	HA-2	G2, G3, G5, G6, G7, T7	
36	75	30	1500	HA-2	G2, G3, G5, G6, G7, T7	
37	78	37	900	HA-2	...	
38	78	37	900	HA-2	...	
39	78	37	900	HA-2	G6	
40	78	37	900	HA-2	G6	

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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	20.0	20.0	20.0	20.0	20.0	19.9	19.4	19.1	18.8	18.5	18.2	18.0	17.7	17.5	17.2
2	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.9	16.5	16.2	15.9	15.7	15.5	15.3	15.1	14.8	14.6
3	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.9	19.4	19.1	18.8	18.5	18.2	18.0	17.7	17.5	17.2
4	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.9	19.4	19.1	18.8	18.5	18.2	18.0	17.7	17.5	17.2
5	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.9	19.4	19.1	18.8	18.5	18.2	18.0	17.7	17.5	17.2
6	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.9	16.5	16.2	15.9	15.7	15.5	15.3	15.1	14.8	14.6
7	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.9	19.4	19.1	18.8	18.5	18.2	18.0	17.7	17.5	17.2
8	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.9	16.5	16.2	15.9	15.7	15.5	15.3	15.1	14.8	14.6
9	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.9	16.5	16.2	15.9	15.7	15.5	15.3	15.1	14.8	14.6
10	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.9	16.5	16.2	15.9	15.7	15.5	15.3	15.1	14.8	14.6
11	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	40.9	40.1	39.2	38.0	...	...	...	...	...
12	18.7	18.7	18.7	18.7	18.7	18.6	18.2	17.9	17.7	17.4	17.1	16.7	16.3	15.9	15.4	14.9	14.4
13	20.0	20.0	20.0	20.0	20.0	19.9	19.5	19.2	18.9	18.6	18.3	17.9	17.5	17.0	16.5	16.0	15.4
14	18.7	18.7	18.7	18.7	18.7	18.6	18.2	17.9	17.7	17.4	17.1	16.7	16.3	15.9	15.4	14.9	14.4
15	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	18.9	18.5	18.2	17.9	17.7	17.4	17.2	16.9
16	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	18.9	18.5	18.2	17.9	17.7	17.4	17.2	16.9
17	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	18.9	18.5	18.2	17.9	17.7	17.4	17.2	16.9
18	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	18.9	18.5	18.2	17.9	17.7	17.4	17.2	16.9
19	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.0	15.7	15.5	15.2	15.0	14.8	14.6	14.4
20	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	18.9	18.5	18.2	17.9	17.7	17.4	17.2	16.9
21	17.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.0	15.7	15.5	15.2	15.0	14.8	14.6	14.4
A08 23	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	18.9	18.5	18.2	17.9	17.7	17.4	17.2	16.9
24	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.0	15.7	15.5	15.2	15.0	14.8	14.6	14.4
25	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.0	15.7	15.5	15.2	15.0	14.8	14.6	14.4
26	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.0	15.7	15.5	15.2	15.0	14.8	14.6	14.4
27	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.0	15.7	15.5	15.2	15.0	14.8	14.6	14.4
28	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	18.9	18.5	18.2	17.9	17.7	17.4	17.2	16.9
29	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	18.9	18.5	18.2	17.9	17.7	17.4	17.2	16.9
30	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.0	15.7	15.5	15.2	15.0	14.8	14.6	14.4
31	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.3	18.9	18.5	18.2	17.9	17.7	17.4	17.2	16.9
32	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.0	15.7	15.5	15.2	15.0	14.8	14.6	14.4
33	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.0	15.7	15.5	15.2	15.0	14.8	14.6	14.4
34	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.0	15.7	15.5	15.2	15.0	14.8	14.6	14.4
35	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.0	15.7	15.5	15.2	15.0	14.8	14.6	14.4
36	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.8	16.4	16.0	15.7	15.5	15.2	15.0	14.8	14.6	14.4
37	24.7	24.7	24.7	24.7	24.7	24.7	24.0	23.3	22.7	22.1	21.5	21.0	20.4	19.9	19.4	18.9	18.5
38	24.7	24.7	24.7	24.7	24.7	24.7	24.0	23.3	22.7	22.1	21.5	21.0	20.4	19.9	19.4	18.9	18.5
39	21.0	21.0	21.0	21.0	21.0	21.0	20.4	19.8	19.3	18.8	18.3	17.8	17.4	16.9	16.5	16.1	15.7
40	21.0	21.0	21.0	21.0	21.0	21.0	20.4	19.8	19.3	18.8	18.3	17.8	17.4	16.9	16.5	16.1	15.7

TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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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
1	16.9	13.8	10.3	7.6	5.5	4.0	3.0	2.2	1.7	1.3	0.97	0.75
2	14.4	11.7	8.8	6.5	4.7	3.4	2.6	1.9	1.4	1.1	0.82	0.64
3	16.9	13.8	10.3	7.6	5.5	4.0	3.0	2.2	1.7	1.3	0.97	0.75
4	15.9	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20
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	13.5	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	13.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17
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	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	...	...	...	...	...	...	...	...	...	...	...	...
12	13.9	11.1	8.5	6.5	5.0	3.8	2.9	2.3	1.8	1.3	0.90	0.80
13	14.9	11.1	8.5	6.5	5.0	3.8	2.9	2.3	1.8	1.3	0.90	0.80
14	13.9	11.3	9.8	8.5	7.3	6.0	4.8	3.5	2.4	1.6	1.1	0.80
15	15.9	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20
16	15.9	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20
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	15.9	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	15.9	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20
21	...	...	...	...	...	...	...	...	...	...	...	...
22	13.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17
23	15.9	9.9	7.1	5.0	3.6	2.5	1.5	0.80	0.50	0.40	0.30	0.20 A08
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	13.5	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	13.5	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	14.2	11.7	8.8	6.5	4.7	3.4	2.6	1.9	1.4	1.1	0.82	0.64
31	16.7	13.8	10.3	7.6	5.5	4.0	3.0	2.2	1.7	1.3	0.97	0.75
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	13.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17
34	13.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17
35	13.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17
36	13.5	8.4	6.0	4.3	3.1	2.1	1.3	0.68	0.43	0.34	0.26	0.17
37	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...
39	...	...	...	...	...	...	...	...	...	...	...	...
40	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/ Condition/ Temper	Size/Thickness, in.	P-No.	Group No.
1	25Cr–22Ni–2Mo–N	Plate	SA-240	310MoLN	S31050	...	...	8	2
2	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...	$t \le 0.25$	8	2
3	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...	$t \le 0.25$	8	2
4	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...	$t \le 0.25$	8	2

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Maximum Use Temperature, °F	External Pressure Chart No.	Notes
1	80	35	600	HA-2	...
2	84	39	900	HA-2	...
3	84	39	900	HA-2	G6
4	84	39	900	HA-2	G6

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TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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	23.3	23.3	23.3	22.7	22.0	21.4	20.9	20.3	...	...	...	...	...	...
2	26.0	26.0	26.0	26.0	26.0	26.0	25.3	24.5	23.9	23.3	22.7	22.1	21.5	21.0	20.5	20.0	19.5
3	22.1	22.1	22.1	22.1	22.1	22.1	21.5	20.9	20.3	19.8	19.3	18.8	18.3	17.8	17.4	17.0	16.6
4	22.1	22.1	22.1	22.1	22.1	22.1	21.5	20.9	20.3	19.8	19.3	18.8	18.3	17.8	17.4	17.0	16.6

TABLE 5A (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR FERROUS MATERIALS

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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
1	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...

07 NOTES TO TABLE 5A

GENERAL NOTES

(a) The following abbreviations are used: Smls., Seamless; Temp., Temperature; and Wld., Welded.

(b) An alternative typeface is used for stress values obtained from time-dependent properties (see Notes T1 through T10).

(c) Where specifications, grades, classes, and types are listed in this Table, and where the material specification in Section II, Part A or Part B is a dual-unit specification (e.g., SA-516/SA-516M), the values listed in this Table shall be applicable to either the customary U.S. version of the material specification or the SI units version of the material specification. For example, the values listed for SA-516 Grade 70 shall be used when SA-516M Grade 485 is used in construction.

(d) The values in this Table may be interpolated to determine values for intermediate temperatures. The values at intermediate temperatures shall be rounded to the same number of decimal places as the value at the higher temperature between which values are being interpolated. The rounding rule is: when the next digit beyond the last place to be retained is less than 5, retain unchanged the digit in the last place retained; when the digit next beyond the last place to be retained is 5 or greater, increase by 1 the digit in the last place retained.

NOTES — GENERAL REQUIREMENTS

A08 G1 DELETED.

G2 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 that, 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.

G3 At temperatures over 1000°F, these stress values apply only when the carbon is 0.04% or higher. This note is applicable only when stresses above 1000°F are published.

G4 For temperatures above 1000°F, these stress 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 1000°F are published.

G5 These stress 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 1000°F are published.

G6 A quality factor of 0.85 has been applied in arriving at the maximum allowable stress values for this material.

G7 These stress values shall be considered basic values to be used when no effort is made to control or check the grain size of the steel.

G8 This steel may be expected to develop embrittlement after service at moderately elevated temperature; see Appendix A, A-340 and A-360.

G9 The tensile strength shall not be in excess of 20,000 psi above the specified minimum.

G10 All forgings shall have a maximum tensile strength not in excess of 25 ksi above the specified minimum.

G11 SA-723 is exempt from the requirement in Section VIII, Division 2, 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.

G12 See Section VIII, Division 2, Appendix 26.

A08 G13 Upon prolonged exposure to temperatures above 800°F, the carbide phase of carbon steel may be converted to graphite. See Appendix A, A-240.

A08 G14 Upon prolonged exposure to temperatures above 875°F, the carbide phase of carbon – molybdenum steel may be converted to graphite. See Appendix A, A-240.

G15 See Appendix A.

G16 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, and quenching in water or rapidly cooling by other means.

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 For applications involving consideration of heat treatment after forming or welding, see Section VIII, Division 2, Table AF-402.1 for P-No. 10K, Group No. 1 materials.

H7 Normalized.

NOTES — SIZE REQUIREMENTS

S1 The maximum thickness of forgings shall not exceed $3\frac{3}{4}$ 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.

NOTES — TIME-DEPENDENT PROPERTIES

T1 Allowable stresses for temperatures of 650°F and above are values obtained from time-dependent properties.

T2 Allowable stresses for temperatures of 700°F and above are values obtained from time-dependent properties.

T3 Allowable stresses for temperatures of 750°F and above are values obtained from time-dependent properties.

T4 Allowable stresses for temperatures of 800°F and above are values obtained from time-dependent properties.

T5 Allowable stresses for temperatures of 850°F and above are values obtained from time-dependent properties.

T6 Allowable stresses for temperatures of 900°F and above are values obtained from time-dependent properties.

T7 Allowable stresses for temperatures of 950°F and above are values obtained from time-dependent properties.

T8 Allowable stresses for temperatures of 1000°F and above are values obtained from time-dependent properties.

T9 Allowable stresses for temperatures of 1050°F and above are values obtained from time-dependent properties.

T10 Allowable stresses for temperatures of 1100°F and above are values obtained from time-dependent properties.

NOTES TO TABLE 5A (CONT'D)

NOTES — WELDING REQUIREMENTS

W1 Not for welded construction.

W2 Welding is not permitted when carbon content exceeds 0.35% by ladle analysis except for limited types of welding, as allowed in Section VIII, Division 2, Part AF.

W3 Nonwelded, or welded if the tensile strength of the Section IX reduced section tension test is not less than 100 ksi.

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 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 Section VIII, Division 2, Part AF.

W7 The following, in addition to the variables in Section IX, QW-250, shall be considered as essential variables requiring requalification of the welding procedure.

(a) An increase in the maximum or a decrease in the minimum specified preheat or interpass temperatures. The specified range of preheat temperatures shall not exceed 150°F.

(b) A change in the thickness T of the welding procedure qualification test plate as follows:

(1) For welded joints that are quenched and tempered after welding, any increase in thickness (the minimum thickness qualified in all cases is $\frac{1}{4}$ in.).

(2) For welded joints that are not quenched and tempered after welding, any change as follows:

(a) for T less than $\frac{5}{8}$ in., any decrease in thickness (the maximum thickness qualified is 2 T);

(b) for T equal to $\frac{5}{8}$ in. and over, any departure from the range of $\frac{5}{8}$ in. to 2 T.

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TABLE 5B
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Alloy Designation/ UNS No.	Class/ Condition/ Temper
1	...	Drawn smls. tube	SB-210	Alclad 3003	0
2	...	Drawn smls. tube	SB-210	Alclad 3003	H113
3	...	Smls. extr. tube	SB-241	Alclad 3003	0
4	...	Smls. extr. tube	SB-241	Alclad 3003	H112
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	...	Drawn smls. tube	SB-210	A93003	0
10	...	Drawn smls. tube	SB-210	A93003	H113
11	...	Bar, rod, shapes	SB-221	A93003	0
12	...	Bar, rod, shapes	SB-221	A93003	H112
13	...	Smls. extr. tube	SB-241	A93003	0
14	...	Smls. pipe	SB-241	A93003	H112
15	...	Smls. extr. tube	SB-241	A93003	H112
16	...	Plate, sheet	SB-209	A93004	0
17	...	Plate, sheet	SB-209	A93004	H112
18	...	Plate, sheet	SB-209	A95052	0
19	...	Plate, sheet	SB-209	A95052	H112
20	...	Plate, sheet	SB-209	A95052	H112
21	...	Plate, sheet	SB-209	A95083	0
22	...	Plate, sheet	SB-209	A95083	0
23	...	Plate, sheet	SB-209	A95083	0
24	...	Plate, sheet	SB-209	A95083	0
25	...	Plate, sheet	SB-209	A95083	0
26	...	Plate, sheet	SB-209	A95083	H112
27	...	Plate, sheet	SB-209	A95083	H112
28	...	Bar, rod, shapes	SB-221	A95083	H111
29	...	Smls. extr. tube	SB-241	A95083	H111
30	...	Plate, sheet	SB-209	A95086	0
31	...	Plate, sheet	SB-209	A95086	H112
32	...	Plate, sheet	SB-209	A95086	H112
33	...	Plate, sheet	SB-209	A95086	H112
34	...	Plate, sheet	SB-209	A95086	H112
35	...	Plate, sheet	SB-209	A95454	0
36	...	Plate, sheet	SB-209	A95454	H112
37	...	Plate, sheet	SB-209	A95454	H112
38	...	Bar, rod, shapes	SB-221	A95454	0
39	...	Bar, rod, shapes	SB-221	A95454	H112
40	...	Smls. extr. tube	SB-241	A95454	0
41	...	Smls. extr. tube	SB-241	A95454	H112

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TABLE 5B
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Size/Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Max. Use Temperature, °F	External Pressure Chart No.	Notes
1	$0.010 \le t \le 0.5$	21	13	4.5	400	NFA-7	G4, T3
2	$0.050 \le t \le 0.5$	21	13	4.5	400	NFA-7	G4, T3, W2
3	...	21	13	4.5	400	NFA-7	G4, T3
4	...	21	13	4.5	400	NFA-7	G4, T3, W2
5	$0.006 \le t \le 3$	21	14.5	6	400	NFA-1	G4, T2
6	$0.250 \le t < 0.5$	21	14	5	400	NFA-1	G4, T4, W2
7	$0.5 \le t \le 2$	21	17	10	400	NFA-1	G4, T2, W2
8	$2 < t \le 3$	21	15	6	400	NFA-1	G4, T2, W2
9	$0.010 \le t \le 0.5$	21	14	5	400	NFA-1	G4, T2
10	$0.010 \le t \le 0.5$	21	14	5	400	NFA-1	G4, T2, W2
11	...	21	14	5	400	NFA-1	G2, G4, T2
12	...	21	14	5	400	NFA-1	G2, G4, T2, W2
13	...	21	14	5	400	NFA-1	G4, T2
14	$t \ge 1$	21	14	5	400	NFA-1	G4, T2
15	...	21	14	5	400	NFA-1	G4, T2, W2
16	$0.006 \le t \le 3$	22	22	8.5	400	NFA-3	G4, T3
17	$0.250 \le t \le 3$	22	23	9	400	NFA-3	G4, T2, W2
18	$0.051 \le t \le 3$	22	25	9.5	400	NFA-8	G4, T2
19	$0.25 \le t < 0.5$	22	28	16	400	NFA-8	G4, T2, W2
20	$0.5 \le t \le 3$	22	25	9.5	400	NFA-8	G4, T2, W2
21	$0.051 \le t \le 1.5$	25	40	18	150	NFA-11	G4, G6
22	$1.5 < t \le 3$	25	39	17	150	NFA-11	G4, G6
23	$3 < t \le 5$	25	38	16	150	NFA-11	G4, G6
24	$5 < t \le 7$	25	37	15	150	NFA-11	G4, G6
25	$7 < t \le 8$	25	36	14	150	NFA-11	G4, G6
26	$0.25 \le t \le 1.5$	25	40	18	150	NFA-11	G4, G6, W2
27	$1.5 < t \le 3$	25	39	17	150	NFA-11	G4, G6, W2
28	$t \le 5$	25	40	24	150	NFA-11	G2, G4, G6, W2
29	...	25	40	24	150	NFA-11	G4, G6, W2
30	$0.051 \le t \le 2$	25	35	14	150	NFA-9	G4, G6
31	$0.063 \le t < 0.5$	25	36	18	150	NFA-9	G4, G6, W2
32	$0.5 \le t < 1$	25	35	16	150	NFA-9	G4, G6, W2
33	$1 < t \le 2$	25	35	14	150	NFA-9	G4, G6, W2
34	$2 < t \le 3$	25	34	14	150	NFA-9	G4, G6, W2
35	$0.051 \le t \le 3$	22	31	12	400	NFA-6	G4, T1
36	$0.250 \le t < 0.5$	22	32	18	400	NFA-6	G4, T2, W2
37	$0.5 \le t \le 3$	22	31	12	400	NFA-6	G4, T1, W2
38	$t \le 5$	22	31	12	400	NFA-6	G2, G4, T1
39	$t \le 5$	22	31	12	400	NFA-6	G2, G4, T1, W2
40	$t \le 5$	22	31	12	400	NFA-6	G4, T1
41	$t \le 5$	22	31	12	400	NFA-6	G4, T1, W2

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TABLE 5B
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

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	2.9	2.8	2.7	2.5	*1.9*	*1.5*	...	...	...	...	...	...	...	...	...	...
2	3.0	2.9	2.8	2.7	2.5	*1.9*	*1.5*	...	...	...	...	...	...	...	...	...	...
3	3.0	2.9	2.8	2.7	2.5	*1.9*	*1.5*	...	...	...	...	...	...	...	...	...	...
4	3.0	2.9	2.8	2.7	2.5	*1.9*	*1.5*	...	...	...	...	...	...	...	...	...	...
5	4.0	3.8	3.8	3.6	*2.7*	*1.9*	*1.5*	...	...	...	...	...	...	...	...	...	...
6	3.3	3.2	3.1	3.0	2.8	2.6	*2.3*	...	...	...	...	...	...	...	...	...	...
7	6.7	6.4	6.3	6.0	*2.7*	*1.9*	*1.5*	...	...	...	...	...	...	...	...	...	...
8	4.0	3.9	3.8	3.6	*2.7*	*1.9*	*1.5*	...	...	...	...	...	...	...	...	...	...
9	3.3	3.2	3.1	3.0	*2.7*	*1.9*	*1.5*	...	...	...	...	...	...	...	...	...	...
10	3.3	3.2	3.1	3.0	*2.7*	*1.9*	*1.5*	...	...	...	...	...	...	...	...	...	...
11	3.3	3.2	3.1	3.0	*2.7*	*1.9*	*1.5*	...	...	...	...	...	...	...	...	...	...
12	3.3	3.2	3.1	3.0	*2.7*	*1.9*	*1.5*	...	...	...	...	...	...	...	...	...	...
13	3.3	3.2	3.1	3.0	*2.7*	*1.9*	*1.5*	...	...	...	...	...	...	...	...	...	...
14	3.3	3.2	3.1	3.0	*2.7*	*1.9*	*1.5*	...	...	...	...	...	...	...	...	...	...
15	3.3	3.2	3.1	3.0	*2.7*	*1.9*	*1.5*	...	...	...	...	...	...	...	...	...	...
16	5.7	5.7	5.7	5.7	5.7	*3.8*	*2.3*	...	...	...	...	...	...	...	...	...	...
17	6.0	6.0	6.0	6.0	*5.7*	*3.8*	*2.3*	...	...	...	...	...	...	...	...	...	...
18	6.3	6.3	6.3	6.3	*6.1*	*4.1*	*2.3*	...	...	...	...	...	...	...	...	...	...
19	10.7	10.7	10.7	10.7	*6.1*	*4.1*	*2.3*	...	...	...	...	...	...	...	...	...	...
20	6.3	6.3	6.3	6.3	*6.1*	*4.1*	*2.3*	...	...	...	...	...	...	...	...	...	...
21	12.0	12.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	11.3	11.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
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	16.0	16.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	16.0	16.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	9.3	9.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	12.0	12.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	10.7	10.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	9.3	9.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	9.3	9.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	8.0	8.0	8.0	*7.5*	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...
36	12.0	12.0	12.0	12.0	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...
37	8.0	8.0	8.0	*7.5*	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...
38	8.0	8.0	8.0	*7.5*	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...
39	8.0	8.0	8.0	*7.5*	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...
40	8.0	8.0	8.0	*7.5*	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...
41	8.0	8.0	8.0	*7.5*	*5.5*	*4.1*	*3.0*	...	...	...	...	...	...	...	...	...	...

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TABLE 5B
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
41	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

	Line No.	Nominal Composition	Product Form	Spec No.	Alloy Designation/ UNS No.	Class/ Condition/ Temper
	1	...	Plate, sheet	SB-209	A96061	T4
	2	...	Plate, sheet	SB-209	A96061	T451
	3	...	Plate, sheet	SB-209	A96061	T6
	4	...	Plate, sheet	SB-209	A96061	T651
	5	...	Plate, sheet	SB-209	A96061	T651
	6	...	Drawn smls. tube	SB-210	A96061	T4
	7	...	Drawn smls. tube	SB-210	A96061	T6
	8	...	Bar, rod, shapes	SB-221	A96061	T4
	9	...	Bar, rod, shapes	SB-221	A96061	T6
	10	...	Smls. extr. tube/pipe	SB-241	A96061	T4
	11	...	Smls. extr. tube/pipe	SB-241	A96061	T6
	12	...	Smls. drawn pipe	SB-241	A96061	T6
	13	...	Smls. drawn pipe	SB-241	A96061	T6
	14	...	Shapes	SB-308	A96061	T6
	15	...	Drawn smls. tube	SB-210	A96063	T6
	16	...	Bar, rod, shapes	SB-221	A96063	T5
	17	...	Bar, rod, shapes	SB-221	A96063	T5
	18	...	Bar, rod, shapes	SB-221	A96063	T6
	19	...	Smls. extr. tube	SB-241	A96063	T5
	20	...	Smls. extr. tube	SB-241	A96063	T5
	21	...	Smls. extr. tube	SB-241	A96063	T6
	22	...	Bar, rod	SB-187	C10200	060
A08	23	...	Bar, rod	SB-187	C11000	060
	24	...	Smls. tube	SB-111	C28000	061
	25	...	Smls. tube	SB-111	C44300	061
	26	...	Smls. tube	SB-111	C44400	061
	27	...	Smls. tube	SB-111	C44500	061
	28	...	Plate	SB-171	C46400	M20 or 025
	29	...	Plate	SB-171	C46400	M20 or 025
	30	...	Smls. tube	SB-111	C60800	061
	31	...	Plate, sheet	SB-169	C61400	025 or 060
	32	...	Plate, sheet	SB-169	C61400	025 or 060
	33	...	Plate, sheet	SB-96	C65500	061
A08	34	...	Plate	SB-171	C70600	M20 or 025
	35	...	Cond. tube	SB-111	C70600	061
	36	...	Smls. U-bend tube	SB-395	C70600	061
	37	...	Plate	SB-171	C71500	M20 or 025
	38	...	Plate	SB-171	C71500	M20 or 025
	39	...	Cond. tube	SB-111	C71500	061
	40	...	Smls. U-bend tube	SB-395	C71500	061

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TABLE 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Size/Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Max. Use Temperature, °F	External Pressure Chart No.	Notes	
1	$0.051 \le t < 0.25$	23	30	16	400	NFA-13	G4, G8, T4, W3	
2	$0.25 \le t \le 3$	23	30	16	400	NFA-13	G4, G8, T4, W3	
3	$0.051 \le t < 0.25$	23	42	35	400	NFA-12	G4, G8, T2, W3	
4	$0.25 \le t \le 4$	23	42	35	400	NFA-12,13	G4, G8, T2, W3	
5	$4 < t \le 6$	23	40	35	400	NFA-12,13	G4, G8, T3, W3	
6	$0.025 \le t \le 0.5$	23	30	16	400	NFA-13	G4, T4, W3	
7	$0.025 \le t \le 0.5$	23	42	35	400	NFA-12,13	G4, T2, W3	
8	...	23	26	16	400	NFA-13	G2, G4, G8, T4, W3	
9	...	23	38	35	400	NFA-12,13	G2, G4, G8, T3, W3	
10	...	23	26	16	400	NFA-13	G4, G8, T4, W3	
11	...	23	38	35	400	NFA-12,13	G4, G8, T3, W3	
12	NPS < 1	23	42	35	400	NFA-12,13	G4, T2, W3	
13	NPS ≥ 1	23	38	35	400	NFA-12,13	G4, T3, W3	
14	...	23	38	35	400	NFA-12,13	G2, G4, T3, W3	
15	$0.025 \le t \le 0.5$	23	33	28	400	NFA-1	G4, T1, W3	
16	$t \le 0.5$	23	22	16	400	NFA-1	G2, G4, T1, W3	
17	$0.501 \le t \le 1$	23	21	15	400	NFA-1	G2, G4, T1, W3	
18	$t \le 1$	23	30	25	400	NFA-1	G2, G4, T1, W3	
19	$t \le 0.5$	23	22	16	400	NFA-1	G4, T1, W3	
20	$0.501 \le t \le 1$	23	21	15	400	NFA-1	G4, T1, W3	
21	$t \le 1$	23	30	25	400	NFA-1	G4, T1, W3	
22	...	31	28	8	400	NFC-1	G3, T3	
23	...	31	28	8	400	NFC-1	G3, T3	A08
24	...	32	50	20	400	NFC-3	G3, G5, T3	
25	...	32	45	15	400	NFC-2	G3, G5, T3	
26	...	32	45	15	400	NFC-2	G3, G5, T3	
27	...	32	45	15	400	NFC-2	G3, G5, T3	
28	$3 < t \le 5$	32	50	18	400	NFC-2	G3, T3	
29	$t \le 3$	32	50	20	400	NFC-2	G3, T3	
30	...	35	50	19	500	NFC-3	G3, G5, T3	
31	$2 < t \le 5$	35	65	28	500	NFC-8	G3	
32	$t \le 2$	35	70	30	500	NFC-8	G3	
33	...	33	50	18	350	NFC-2	G3, G9, T3	
34	$t \le 2\frac{1}{2}$	34	40	15	600	NFC-3	G3, T5	A08
35	...	34	40	15	600	NFC-3	G3, T5	
36	...	34	40	15	600	NFC-3	G3, T5	
37	$2\frac{1}{2} < t \le 5$	34	45	18	700	NFC-4	G1, G3, T5	
38	$t \le 2\frac{1}{2}$	34	50	20	700	NFC-4	G1, G3, T6	
39	...	34	52	18	700	NFC-4	G3, T5	
40	...	34	52	18	700	NFC-4	G3, T5	

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TABLE 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

	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	10.7	10.5	10.4	10.2	10.2	10.2	*5.2*	...	...	...	...	...	...	...	...	...	...
	2	10.7	10.5	10.4	10.2	10.2	10.2	*5.2*	...	...	...	...	...	...	...	...	...	...
	3	17.5	17.5	17.5	17.5	*16.7*	*10.7*	*5.2*	...	...	...	...	...	...	...	...	...	...
	4	17.5	17.5	17.5	17.5	*16.7*	*10.7*	*5.2*	...	...	...	...	...	...	...	...	...	...
	5	16.7	16.7	16.7	16.7	16.7	*10.7*	*5.2*	...	...	...	...	...	...	...	...	...	...
	6	10.7	10.5	10.4	10.2	10.2	10.2	*5.2*	...	...	...	...	...	...	...	...	...	...
	7	17.5	17.5	17.5	17.5	*16.7*	*10.7*	*5.2*	...	...	...	...	...	...	...	...	...	...
	8	10.7	10.6	10.2	10.2	10.2	10.2	*5.2*	...	...	...	...	...	...	...	...	...	...
	9	15.8	15.8	15.8	15.8	15.8	*10.7*	*5.2*	...	...	...	...	...	...	...	...	...	...
	10	10.7	10.6	10.2	10.2	10.2	10.2	*5.2*	...	...	...	...	...	...	...	...	...	...
	11	15.8	15.8	15.8	15.8	15.8	*10.7*	*5.2*	...	...	...	...	...	...	...	...	...	...
	12	17.5	17.5	17.5	17.5	*16.7*	*10.7*	*5.2*	...	...	...	...	...	...	...	...	...	...
	13	15.8	15.8	15.8	15.8	15.8	*10.7*	*5.2*	...	...	...	...	...	...	...	...	...	...
	14	15.8	15.8	15.8	15.8	15.8	*10.7*	*5.2*	...	...	...	...	...	...	...	...	...	...
	15	13.8	13.8	13.8	*9.6*	*7.3*	*3.8*	*2.0*	...	...	...	...	...	...	...	...	...	...
	16	9.2	9.2	9.2	*8.8*	*4.6*	*3.4*	*2.0*	...	...	...	...	...	...	...	...	...	...
	17	8.8	8.8	8.8	*8.8*	*4.6*	*3.4*	*2.0*	...	...	...	...	...	...	...	...	...	...
	18	12.5	12.5	12.5	*9.6*	*7.3*	*3.8*	*2.0*	...	...	...	...	...	...	...	...	...	...
	19	9.2	9.2	9.2	*8.8*	*4.6*	*3.4*	*2.0*	...	...	...	...	...	...	...	...	...	...
	20	8.8	8.8	8.8	*8.8*	*4.6*	*3.4*	*2.0*	...	...	...	...	...	...	...	...	...	...
	21	12.5	12.5	12.5	*9.6*	*7.3*	*3.8*	*2.0*	...	...	...	...	...	...	...	...	...	...
	22	5.3	4.5	4.3	4.2	4.2	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...
A08	23	5.3	4.5	4.3	4.2	4.2	*4.0*	*3.0*	...	...	...	...	...	...	...	...	...	...
	24	13.3	13.3	13.3	13.3	13.3	*10.8*	*5.3*	...	...	...	...	...	...	...	...	...	...
	25	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	...	...	...	...	...	...	...	...	...	...
	26	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	...	...	...	...	...	...	...	...	...	...
	27	10.0	10.0	10.0	10.0	10.0	*9.8*	*3.5*	...	...	...	...	...	...	...	...	...	...
	28	12.0	12.0	12.0	11.9	11.9	*6.3*	*2.5*	...	...	...	...	...	...	...	...	...	...
	29	13.3	13.3	13.3	13.3	13.3	*6.3*	*2.5*	...	...	...	...	...	...	...	...	...	...
	30	12.7	12.2	12.2	12.2	12.0	*10.0*	*6.0*	*4.0*	*2.0*	...	...	...	...	...	...	...	...
	31	18.7	18.6	18.5	18.4	18.2	18.1	17.9	17.7	17.6	...	...	...	...	...	...	...	...
	32	20.0	19.9	19.8	19.7	19.5	19.4	19.2	19.0	18.8	...	...	...	...	...	...	...	...
	33	12.0	11.9	11.9	11.7	11.6	*5.0*	...	...	...	...	...	...	...	...	...	...	...
A08	34	10.0	9.7	9.5	9.3	9.0	8.8	8.7	8.5	*8.0*	*7.0*	*6.0*	...	...	...	...	...	...
	35	10.0	9.7	9.5	9.3	9.0	8.8	8.7	8.5	*8.0*	*7.0*	*6.0*	...	...	...	...	...	...
	36	10.0	9.7	9.5	9.3	9.0	8.8	8.7	8.5	*8.0*	*7.0*	*6.0*	...	...	...	...	...	...
	37	12.0	11.6	11.3	11.0	10.8	10.5	10.3	10.1	*8.2*	*8.1*	*8.0*	*7.9*	*7.8*	...	...	...	...
	38	13.3	12.9	12.6	12.3	12.0	11.7	11.5	11.2	11.0	10.8	10.7	10.5	*10.4*	...	...	...	...
	39	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*	...	...	...	...
	40	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*	...	...	...	...

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TABLE 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Alloy Designation/ UNS No.	Class/ Condition/ Temper
1	99Ni	Smls. pipe & tube	SB-161	N02200	Annealed
2	99Ni	Bar, rod	SB-160	N02200	Annealed
3	99Ni	Smls. pipe & tube	SB-161	N02200	Annealed
4	99Ni	Plate, sheet, strip	SB-162	N02200	Annealed
5	99Ni	Smls. tube	SB-163	N02200	Annealed
6	99Ni	Plate, sheet, strip	SB-162	N02200	As rolled
7	99Ni–Low C	Bar, rod	SB-160	N02201	Annealed
8	99Ni–Low C	Smls. pipe & tube	SB-161	N02201	Annealed
9	99Ni–Low C	Bar, rod	SB-160	N02201	Hot fin.
10	99Ni–Low C	Smls. pipe & tube	SB-161	N02201	Annealed
11	99Ni–Low C	Plate, sheet, strip	SB-162	N02201	Annealed
12	99Ni–Low C	Smls. tube	SB-163	N02201	Annealed
13	67Ni–30Cu	Bar, rod	SB-164	N04400	Annealed
14	67Ni–30Cu	Smls. pipe & tube	SB-165	N04400	Annealed
15	67Ni–30Cu	Forgings	SB-564	N04400	Annealed
16	67Ni–30Cu	Plate	SB-127	N04400	Annealed
17	67Ni–30Cu	Smls. tube	SB-163	N04400	Annealed
18	67Ni–30Cu	Smls. pipe & tube	SB-165	N04400	Annealed
19	67Ni–30Cu	Plate	SB-127	N04400	As rolled
20	67Ni–30Cu	Smls. tube	SB-163	N04400	Stress rel.
21	67Ni–30Cu–S	Bar, rod	SB-164	N04405	Annealed
22	47Ni–22Cr–9Mo–18Fe	Plate	SB-435	N06002	Annealed
23	47Ni–22Cr–9Mo–18Fe	Sheet	SB-435	N06002	Annealed
24	47Ni–22Cr–9Mo–18Fe	Rod	SB-572	N06002	Solution ann.
25	47Ni–22Cr–9Mo–18Fe	Wld. pipe	SB-619	N06002	Solution ann.
26	47Ni–22Cr–9Mo–18Fe	Smls. pipe & tube	SB-622	N06002	Solution ann.
27	47Ni–22Cr–9Mo–18Fe	Wld. tube	SB-626	N06002	Solution ann.
28	47Ni–22Cr–19Fe–6Mo	Rod	SB-581	N06007	Solution ann.
29	47Ni–22Cr–19Fe–6Mo	Plate, sheet, strip	SB-582	N06007	Solution ann.
30	47Ni–22Cr–19Fe–6Mo	Rod	SB-581	N06007	Solution ann.
31	47Ni–22Cr–19Fe–6Mo	Plate, sheet, strip	SB-582	N06007	Solution ann.
32	47Ni–22Cr–19Fe–6Mo	Wld. pipe	SB-619	N06007	Solution ann.
33	47Ni–22Cr–19Fe–6Mo	Smls. pipe & tube	SB-622	N06007	Solution ann.
34	47Ni–22Cr–19Fe–6Mo	Wld. tube	SB-626	N06007	Solution ann.
35	55Ni–21Cr–13.5Mo	Smls. & wld. fittings	SB-366	N06022	Solution ann.
36	55Ni–21Cr–13.5Mo	Forgings	SB-462	N06022	Solution ann.
37	55Ni–21Cr–13.5Mo	Forgings	SB-564	N06022	Solution ann.
38	55Ni–21Cr–13.5Mo	Rod	SB-574	N06022	Solution ann.
39	55Ni–21Cr–13.5Mo	Plate, sheet, strip	SB-575	N06022	Solution ann.

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TABLE 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Size/Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Max. Use Temperature, °F	External Pressure Chart No.	Notes
1	O.D. ≤ 5	41	55	12	600	NFN-2	G3
2	...	41	55	15	600	NFN-2	G2, G3
3	O.D. > 5	41	55	15	600	NFN-2	G3
4	...	41	55	15	600	NFN-2	G3
5	...	41	55	15	600	NFN-2	G3
6	...	41	55	20	600	NFN-2	G3
7	...	41	50	10	600	NFN-1	G2, G3
8	O.D. ≤ 5	41	50	10	1200	NFN-1	G3, T9
9	...	41	50	10	600	NFN-1	G2, G3
10	O.D. > 5	41	50	12	1200	NFN-1	G3, T8
11	...	41	50	12	600	NFN-1	G3
12	...	41	50	12	1200	NFN-1	G3, T8
13	...	42	70	25	900	NFN-3	G1, G2, G3, T8
14	O.D. > 5	42	70	25	900	NFN-3	G1, G3, T8
15	...	42	70	25	900	NFN-3	G1, G2, G3, T8
16	...	42	70	28	900	NFN-3	G1, G3, T8
17	...	42	70	28	900	NFN-3	G1, G3, T8
18	O.D. ≤ 5	42	70	28	900	NFN-3	G1, G3, T8
19	...	42	75	40	900	NFN-3	G1, G3, T7
20	...	42	85	55	800	NFN-3	G1, G3, T7, W1
21	...	42	70	25	900	NFN-3	G1, G2, G3, T8
22	$3/16 < t \le 2\,1/2$	43	95	35	900	NFN-15	G1, G3, G13
23	$1/16 < t \le 3/16$	43	95	35	900	NFN-15	G1, G3, G13
24	$t > 3/16$	43	95	35	900	NFN-15	G1, G2, G3, G13
25	...	43	100	40	1650	NFN-15	G1, G3, G7, G13, T10
26	...	43	100	40	1650	NFN-15	G1, G3, G13, T10
27	...	43	100	40	1650	NFN-15	G1, G3, G7, G13, T10
28	$t > 3/4$	45	85	30	1000	NFN-11	G1, G2, G3
29	$t > 3/4$	45	85	30	1000	NFN-11	G1, G3
30	$5/16 < t \le 3/4$	45	90	35	1000	NFN-11	G1, G2, G3, T10
31	$3/16 < t \le 3/4$	45	90	35	1000	NFN-11	G1, G3, T10
32	...	45	90	35	1000	NFN-11	G1, G3, G7, T10
33	...	45	90	35	1000	NFN-11	G1, G3, T10
34	...	45	90	35	1000	NFN-11	G1, G3, G7, T10
35	...	43	100	45	1250	NFN-10	G1, G12, T13
36	...	43	100	45	1250	NFN-10	G1, G12, T13
37	...	43	100	45	1250	NFN-10	G1, G12, T13
38	...	43	100	45	1250	NFN-10	G1, G12, T13
39	...	43	100	45	1250	NFN-10	G1, G12, T13

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TABLE 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

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	8.0	8.0	8.0	8.0	8.0	...	...	...	...	...	...
2	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	...	...	...	...	...	...
3	10.0	10.0	10.0	10.0	10.0	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	10.0	10.0	10.0	10.0	10.0	...	...	...	...	...	...
5	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	...	...	...	...	...	...
6	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	...	...	...	...	...	...
7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	...	...	...	...	...	...
8	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	*5.8*	*4.5*
9	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	...	...	...	...	...	...
10	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	*7.2*	*5.8*	*4.5*
11	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	...	...	...	...	...	...
12	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	*7.2*	*5.8*	*4.5*
13	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	*15.0*	*11.0*	*8.0*
14	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	*15.0*	*11.0*	*8.0*
15	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	*15.0*	*11.0*	*8.0*
16	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	*15.0*	*11.0*	*8.0*
17	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	*15.0*	*11.0*	*8.0*
18	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	*15.0*	*11.0*	*8.0*
19	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	*20.9*	*14.5*	*8.5*	*4.0*
20	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	*18.0*	*12.7*	...	...
21	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	*15.0*	*11.0*	*8.0*
22	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.1	22.3	21.7	21.2	20.7	20.3	20.1	19.9	19.7	19.6
23	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.1	22.3	21.7	21.2	20.7	20.3	20.1	19.9	19.7	19.6
24	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.1	22.3	21.7	21.2	20.7	20.3	20.1	19.9	19.7	19.6
25	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.4	21.7	21.1	20.5	20.1	19.8	19.5	19.3	19.1	*16.7*
26	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.4	25.5	24.8	24.2	23.7	23.3	22.9	22.7	22.5	*19.6*
27	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.4	21.7	21.1	20.5	20.1	19.8	19.5	19.3	19.1	*16.7*
28	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.5	19.2	19.0	18.8	18.7	18.6	18.5
29	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.5	19.2	19.0	18.8	18.7	18.6	18.5
30	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.1	22.7	22.4	22.2	22.0	21.8	21.7	*20.0*
31	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.1	22.7	22.4	22.2	22.0	21.8	21.7	*20.0*
32	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.6	19.3	19.1	18.8	18.7	18.5	18.4	*17.0*
33	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.1	22.7	22.4	22.2	22.0	21.8	21.7	*20.0*
34	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.6	19.3	19.1	18.8	18.7	18.5	18.4	*17.0*
35	30.0	30.0	30.0	30.0	30.0	30.0	30.0	29.9	29.0	28.2	27.6	27.0	26.5	26.1	25.7	25.4	25.1
36	30.0	30.0	30.0	30.0	30.0	30.0	30.0	29.9	29.0	28.2	27.6	27.0	26.5	26.1	25.7	25.4	25.1
37	30.0	30.0	30.0	30.0	30.0	30.0	30.0	29.9	29.0	28.2	27.6	27.0	26.5	26.1	25.7	25.4	25.1
38	30.0	30.0	30.0	30.0	30.0	30.0	30.0	29.9	29.0	28.2	27.6	27.0	26.5	26.1	25.7	25.4	25.1
39	30.0	30.0	30.0	30.0	30.0	30.0	30.0	29.9	29.0	28.2	27.6	27.0	26.5	26.1	25.7	25.4	25.1

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TABLE 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

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	*3.7*	*3.0*	*2.4*	*2.0*	*1.5*	*1.2*	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	*3.7*	*3.0*	*2.4*	*2.0*	*1.5*	*1.2*	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	*3.7*	*3.0*	*2.4*	*2.0*	*1.5*	*1.2*	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	*16.6*	*16.4*	*16.4*	*14.9*	*12.0*	*9.6*	*7.9*	*6.5*	*5.2*	*4.1*	*3.2*	*2.6*	*2.0*	*1.6*	*1.3*
26	*19.5*	*19.3*	*19.3*	*17.5*	*14.1*	*11.3*	*9.3*	*7.7*	*6.1*	*4.8*	*3.8*	*3.0*	*2.4*	*1.9*	*1.5*
27	*16.6*	*16.4*	*16.4*	*14.9*	*12.0*	*9.6*	*7.9*	*6.5*	*5.2*	*4.1*	*3.2*	*2.6*	*2.0*	*1.6*	*1.3*
28	18.4	18.3	...	...	...	...	...	...	...	...	...	...	...	...	...
29	18.4	18.3	...	...	...	...	...	...	...	...	...	...	...	...	...
30	*19.5*	*18.9*	...	...	...	...	...	...	...	...	...	...	...	...	...
31	*19.5*	*18.9*	...	...	...	...	...	...	...	...	...	...	...	...	...
32	*16.6*	*16.1*	...	...	...	...	...	...	...	...	...	...	...	...	...
33	*19.5*	*18.9*	...	...	...	...	...	...	...	...	...	...	...	...	...
34	*16.6*	*16.1*	...	...	...	...	...	...	...	...	...	...	...	...	...
35	24.9	24.7	*24.1*	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...
36	24.9	24.7	*24.1*	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...
37	24.9	24.7	*24.1*	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...
38	24.9	24.7	*24.1*	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...
39	24.9	24.7	*24.1*	*17.5*	*12.7*	*9.6*	*7.6*	...	...	...	...	...	...	...	...

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TABLE 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Alloy Designation/ UNS No.	Class/ Condition/ Temper
1	55Ni–21Cr–13.5Mo	Wld. pipe	SB-619	N06022	Solution ann.
2	55Ni–21Cr–13.5Mo	Smls. pipe & tube	SB-622	N06022	Solution ann.
3	55Ni–21Cr–13.5Mo	Wld. tube	SB-626	N06022	Solution ann.
4	59Ni–23Cr–16Mo	Wld. fittings	SB-366	N06059	Solution ann.
5	59Ni–23Cr–16Mo	Smls. fittings	SB-366	N06059	Solution ann.
6	59Ni–23Cr–16Mo	Forged fittings	SB-462	N06059	Solution ann.
7	59Ni–23Cr–16Mo	Forgings	SB-564	N06059	Solution ann.
8	59Ni–23Cr–16Mo	Bar, rod	SB-574	N06059	Solution ann.
9	59Ni–23Cr–16Mo	Plate, sheet, strip	SB-575	N06059	Solution ann.
10	59Ni–23Cr–16Mo	Wld. pipe	SB-619	N06059	Solution ann.
11	59Ni–23Cr–16Mo	Smls. pipe & tube	SB-622	N06059	Solution ann.
12	59Ni–23Cr–16Mo	Wld. tube	SB-626	N06059	Solution ann.
13	61Ni–16Mo–16Cr	Rod	SB-574	N06455	Solution ann.
14	61Ni–16Mo–16Cr	Plate, sheet, strip	SB-575	N06455	Solution ann.
15	61Ni–16Mo–16Cr	Wld. pipe	SB-619	N06455	Solution ann.
16	61Ni–16Mo–16Cr	Smls. pipe & tube	SB-622	N06455	Solution ann.
17	61Ni–16Mo–16Cr	Wld. tube	SB-626	N06455	Solution ann.
18	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	N06600	Annealed
19	72Ni–15Cr–8Fe	Smls. tube	SB-163	N06600	Annealed
20	72Ni–15Cr–8Fe	Bar, rod	SB-166	N06600	Annealed
21	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	N06600	Annealed
22	72Ni–15Cr–8Fe	Plate	SB-168	N06600	Annealed
23	72Ni–15Cr–8Fe	Forgings	SB-564	N06600	Annealed
24	72Ni–15Cr–8Fe	Wld. tube	SB-516	N06600	Cold drawn/ann.
25	72Ni–15Cr–8Fe	Wld. pipe	SB-517	N06600	Cold drawn/ann.
26	35Ni–19Cr–1.25Si	Bar	SB-511	N08330	Annealed
27	35Ni–19Cr–1.25Si	Smls. & wld. pipe	SB-535	N08330	Annealed
28	35Ni–19Cr–1.25Si	Plate, sheet, strip	SB-536	N08330	Annealed
29	42Fe–33Ni–21Cr	Smls. tube	SB-163	N08800	Annealed
30	42Fe–33Ni–21Cr	Smls. pipe & tube	SB-407	N08800	Annealed
31	42Fe–33Ni–21Cr	Plate	SB-409	N08800	Annealed
32	42Fe–33Ni–21Cr	Wld. pipe	SB-514	N08800	Annealed
33	42Fe–33Ni–21Cr	Wld. tube	SB-515	N08800	Annealed
34	42Fe–33Ni–21Cr	Forgings	SB-564	N08800	Annealed
35	42Fe–33Ni–21Cr	Bar, rod	SB-408	N08800	Hot fin.
36	42Fe–33Ni–21Cr	Smls. tube	SB-163	N08810	Annealed
37	42Fe–33Ni–21Cr	Smls. pipe & tube	SB-407	N08810	Annealed
38	42Fe–33Ni–21Cr	Bar, rod	SB-408	N08810	Annealed
39	42Fe–33Ni–21Cr	Plate	SB-409	N08810	Annealed

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TABLE 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Size/Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Max. Use Temperature, °F	External Pressure Chart No.	Notes
1	...	43	100	45	1250	NFN-10	G1, G7, G12, T13
2	...	43	100	45	1250	NFN-10	G1, G12, T13
3	...	43	100	45	1250	NFN-10	G1, G7, G12, T13
4	...	43	100	45	1400	NFN-14	G1, G3, G7, G11, T14
5	...	43	100	45	1400	NFN-14	G1, G3, G11, T14
6	...	43	100	45	1400	NFN-14	G1, G3, G11, T14
7	...	43	100	45	1400	NFN-14	G1, G3, G11, T14
8	...	43	100	45	1400	NFN-14	G1, G3, G11, T14
9	...	43	100	45	1400	NFN-14	G1, G3, G11, T14
10	...	43	100	45	1400	NFN-14	G1, G3, G7, G11, T14
11	...	43	100	45	1400	NFN-14	G1, G3, G11, T14
12	...	43	100	45	1400	NFN-14	G1, G3, G7, G11, T14
13	...	43	100	40	800	NFN-14	G1, G2, G3
14	...	43	100	40	800	NFN-14	G1, G3
15	...	43	100	40	800	NFN-14	G1, G3, G7
16	...	43	100	40	800	NFN-14	G1, G3
17	...	43	100	40	800	NFN-14	G1, G3, G7
18	O.D. > 5	43	80	30	1200	NFN-4	G1, G3, T10
19	...	43	80	35	1200	NFN-4	G1, G3, T10
20	...	43	80	35	1200	NFN-4	G1, G2, G3, T10
21	O.D. ≤ 5	43	80	35	1200	NFN-4	G1, G3, T10
22	...	43	80	35	1200	NFN-4	G1, G3, T10
23	...	43	80	35	1200	NFN-4	G1, G2, G3, T10
24	O.D. ≤ 4½	43	80	35	1200	NFN-4	G1, G3, G7, T10
25	O.D. ≤ 4½	43	80	35	1200	NFN-4	G1, G3, G7, T10
26	...	46	70	30	1650	NFN-13	G1, G2, G3, G13, H1, T11
27	...	46	70	30	1650	NFN-13	G1, G3, G7, G10, H2, T11
28	...	46	70	30	1650	NFN-13	G1, G3, G10, H2, T11
29	...	45	75	30	1500	NFN-8	G1, G3, T12
30	...	45	75	30	1500	NFN-8	G1, G3, T12
31	...	45	75	30	1500	NFN-8	G1, G3, T12
32	...	45	75	30	1500	NFN-8	G1, G3, G7, T12
33	...	45	75	30	1500	NFN-8	G1, G3, G7, T12
34	...	45	75	30	1500	NFN-8	G1, G2, G3, T12
35	...	45	75	30	1500	NFN-8	G1, G2, G3, T12
36	...	45	65	25	1650	NFN-9	G1, G3, G13, T14
37	...	45	65	25	1650	NFN-9	G1, G3, G13, T14
38	...	45	65	25	1650	NFN-9	G1, G2, G3, G13, T14
39	...	45	65	25	1650	NFN-9	G1, G3, G13, T14

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TABLE 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

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	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.4	24.7	24.0	23.4	22.9	22.5	22.2	21.8	21.6	21.4
2	30.0	30.0	30.0	30.0	30.0	30.0	30.0	29.9	29.0	28.2	27.6	27.0	26.5	26.1	25.7	25.4	25.1
3	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.4	24.7	24.0	23.4	22.9	22.5	22.2	21.8	21.6	21.4
4	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.2	24.6	23.9	23.3	22.8	22.2	21.7	21.2	20.8
5	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	29.7	28.9	28.2	27.5	26.8	26.1	25.5	25.0	24.5
6	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	29.7	28.9	28.2	27.5	26.8	26.1	25.5	25.0	24.5
7	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	29.7	28.9	28.2	27.5	26.8	26.1	25.5	25.0	24.5
8	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	29.7	28.9	28.2	27.5	26.8	26.1	25.5	25.0	24.5
9	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	29.7	28.9	28.2	27.5	26.8	26.1	25.5	25.0	24.5
10	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.2	24.6	23.9	23.3	22.8	22.2	21.7	21.2	20.8
11	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	29.7	28.9	28.2	27.5	26.8	26.1	25.5	25.0	24.5
12	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.2	24.6	23.9	23.3	22.8	22.2	21.7	21.2	20.8
13	26.7	26.7	26.7	26.7	26.7	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	26.7	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	22.7	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	26.7	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	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	...	...
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	20.0	20.0	20.0	20.0	*16.0*
19	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	23.3	*16.0*
20	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	23.3	*16.0*
21	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	23.3	*16.0*
22	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	23.3	*16.0*
23	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	23.3	*16.0*
24	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	*13.6*
25	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	*13.6*
26	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.4	18.9	18.5	18.1	17.7	17.4	17.0	16.7
27	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.4	18.9	18.5	18.1	17.7	17.4	17.0	16.7
28	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.8	19.4	18.9	18.5	18.1	17.7	17.4	17.0	16.7
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	20.0	20.0	20.0	20.0	20.0
30	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
31	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
32	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
33	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
34	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
35	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
36	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.5	16.1	15.7	15.3	15.0	14.7	14.5
37	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.5	16.1	15.7	15.3	15.0	14.7	14.5
38	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.5	16.1	15.7	15.3	15.0	14.7	14.5
39	16.7	16.7	16.7	16.7	16.7	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 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

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	21.2	21.0	20.5	14.9	10.8	8.2	6.5	...	...	...	...	...	...	...	...
2	24.9	24.7	24.1	17.5	12.7	9.6	7.6	...	...	...	...	...	...	...	...
3	21.2	21.0	20.5	14.9	10.8	8.2	6.5	...	...	...	...	...	...	...	...
4	20.5	20.4	20.4	16.0	12.4	9.9	8.0	6.3	5.0	4.1	...	...	...	...	...
5	24.2	24.0	24.0	18.8	14.6	11.6	9.4	7.4	5.9	4.8	...	...	...	...	...
6	24.2	24.0	24.0	18.8	14.6	11.6	9.4	7.4	5.9	4.8	...	...	...	...	...
7	24.2	24.0	24.0	18.8	14.6	11.6	9.4	7.4	5.9	4.8	...	...	...	...	...
8	24.2	24.0	24.0	18.8	14.6	11.6	9.4	7.4	5.9	4.8	...	...	...	...	...
9	24.2	24.0	24.0	18.8	14.6	11.6	9.4	7.4	5.9	4.8	...	...	...	...	...
10	20.5	20.4	20.4	16.0	12.4	9.9	8.0	6.3	5.0	4.1	...	...	...	...	...
11	24.2	24.0	24.0	18.8	14.6	11.6	9.4	7.4	5.9	4.8	...	...	...	...	...
12	20.5	20.4	20.4	16.0	12.4	9.9	8.0	6.3	5.0	4.1	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	10.6	7.0	4.5	3.0	2.2	2.0	...	...	...	...	...	...	...	...	...
19	10.6	7.0	4.5	3.0	2.2	2.0	...	...	...	...	...	...	...	...	...
20	10.6	7.0	4.5	3.0	2.2	2.0	...	...	...	...	...	...	...	...	...
21	10.6	7.0	4.5	3.0	2.2	2.0	...	...	...	...	...	...	...	...	...
22	10.6	7.0	4.5	3.0	2.2	2.0	...	...	...	...	...	...	...	...	...
23	10.6	7.0	4.5	3.0	2.2	2.0	...	...	...	...	...	...	...	...	...
24	9.0	6.0	3.8	2.6	1.9	1.7	...	...	...	...	...	...	...	...	...
25	9.0	6.0	3.8	2.6	1.9	1.7	...	...	...	...	...	...	...	...	...
26	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
27	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
28	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
29	20.0	18.9	14.5	11.1	8.3	5.6	3.6	1.7	1.4	0.94	0.85	0.68	...	...	...
30	20.0	18.9	14.5	11.1	8.3	5.6	3.6	1.7	1.4	0.94	0.85	0.68	...	...	...
31	20.0	18.9	14.5	11.1	8.3	5.6	3.6	1.7	1.4	0.94	0.85	0.68	...	...	...
32	17.0	16.1	12.3	9.4	7.1	4.8	3.1	1.4	1.2	0.80	0.72	0.58	...	...	...
33	17.0	16.1	12.3	9.4	7.1	4.8	3.1	1.4	1.2	0.80	0.72	0.58	...	...	...
34	20.0	18.9	14.5	11.1	8.3	5.6	3.6	1.7	1.4	0.94	0.85	0.68	...	...	...
35	20.0	18.9	14.5	11.1	8.3	5.6	3.6	1.7	1.4	0.94	0.85	0.68	...	...	...
36	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	1.0
37	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	1.0
38	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	1.0
39	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	1.0

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TABLE 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Alloy Designation/ UNS No.	Class/ Condition/ Temper
1	42Fe–33Ni–21Cr	Wld. pipe	SB-514	N08810	Annealed
2	42Fe–33Ni–21Cr	Wld. tube	SB-515	N08810	Annealed
3	42Fe–33Ni–21Cr	Forgings	SB-564	N08810	Annealed
4	42Ni–21.5Cr–5Mo–2.3Cu	Smls. tube	SB-163	N08825	Annealed
5	42Ni–21.5Cr–5Mo–2.3Cu	Smls. pipe & tube	SB-423	N08825	Annealed
6	42Ni–21.5Cr–5Mo–2.3Cu	Plate, sheet, strip	SB-424	N08825	Annealed
7	42Ni–21.5Cr–5Mo–2.3Cu	Bar, rod	SB-425	N08825	Annealed
8	62Ni–28Mo–5Fe	Plate	SB-333	N10001	Solution ann.
9	62Ni–28Mo–5Fe	Wld. pipe	SB-619	N10001	Solution ann.
10	62Ni–28Mo–5Fe	Smls. pipe & tube	SB-622	N10001	Solution ann.
11	62Ni–28Mo–5Fe	Wld. tube	SB-626	N10001	Solution ann.
12	62Ni–28Mo–5Fe	Rod	SB-335	N10001	Solution ann.
13	62Ni–28Mo–5Fe	Rod	SB-335	N10001	Solution ann.
14	62Ni–28Mo–5Fe	Sheet, strip	SB-333	N10001	Solution ann.
15	70Ni–16Mo–7Cr–5Fe	Plate, sheet, strip	SB-434	N10003	Annealed
16	70Ni–16Mo–7Cr–5Fe	Rod	SB-573	N10003	Solution ann.
17	54Ni–16Mo–15Cr	Smls. fittings	SB-366	N10276	Solution ann.
18	54Ni–16Mo–15Cr	Wld. fittings	SB-366	N10276	Solution ann.
19	54Ni–16Mo–15Cr	Forgings	SB-462	N10276	Solution ann.
20	54Ni–16Mo–15Cr	Rod	SB-574	N10276	Solution ann.
21	54Ni–16Mo–15Cr	Plate, sheet, strip	SB-575	N10276	Solution ann.
22	54Ni–16Mo–15Cr	Wld. pipe	SB-619	N10276	Solution ann.
23	54Ni–16Mo–15Cr	Smls. pipe & tube	SB-622	N10276	Solution ann.
24	54Ni–16Mo–15Cr	Wld. tube	SB-626	N10276	Solution ann.
25	65Ni–28Mo–2Fe	Plate, sheet, strip	SB-333	N10665	Solution ann.
26	65Ni–28Mo–2Fe	Rod	SB-335	N10665	Solution ann.
27	65Ni–28Mo–2Fe	Smls. fittings	SB-366	N10665	Solution ann.
28	65Ni–28Mo–2Fe	Wld. fittings	SB-366	N10665	Solution ann.
29	65Ni–28Mo–2Fe	Forgings	SB-462	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	Ti	Plate, sheet, strip	SB-265	R50250	Annealed
34	Ti	Bar, billet	SB-348	R50250	Annealed
35	Ti	Forgings	SB-381	R50250	Annealed
36	Ti	Smls. tube	SB-338	R50250	Smls. ann.
37	Ti	Smls. pipe	SB-861	R50250	Smls. ann.
38	Ti	Wld. tube	SB-338	R50250	Wld. ann.
39	Ti	Wld. pipe	SB-862	R50250	Wld. ann.

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TABLE 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Size/Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Max. Use Temperature, °F	External Pressure Chart No.	Notes
1	...	45	65	25	1650	NFN-9	G1, G3, G7, G13, T14
2	...	45	65	25	1650	NFN-9	G1, G3, G7, G13, T14
3	...	45	65	25	1650	NFN-9	G1, G2, G3, G13, T14
4	...	45	85	35	1000	NFN-7	G1, G3
5	...	45	85	35	1000	NFN-7	G1, G3
6	...	45	85	35	1000	NFN-7	G3
7	...	45	85	35	1000	NFN-7	G2, G3
8	$3/16 \le t \le 2\frac{1}{2}$	44	100	45	800	NFN-5	G1, G3
9	...	44	100	45	800	NFN-5	G1, G3, G7
10	...	44	100	45	800	NFN-5	G1, G3
11	...	44	100	45	800	NFN-5	G1, G3, G7
12	$1\frac{1}{2} < t \le 3\frac{1}{2}$	44	100	46	800	NFN-5	G1, G2, G3
13	$5/16 \le t \le 1\frac{1}{2}$	44	115	46	800	NFN-5	G1, G2, G3
14	$t < 3/16$	44	115	50	800	NFN-5	G1, G3
15	$t < 2\frac{1}{2}$	44	100	40	800	NFN-6	G3
16	...	44	100	40	800	NFN-6	G1, G2, G3
17	...	43	100	41	800	NFN-10	G1, G3
18	...	43	100	41	800	NFN-10	G1, G3, G7
19	...	43	100	41	800	NFN-10	G1, G3
20	...	43	100	41	1250	NFN-10	G1, G2, G3, T13
21	...	43	100	41	1250	NFN-10	G1, G3, T13
22	...	43	100	41	1250	NFN-10	G1, G3, G7, T13
23	...	43	100	41	1250	NFN-10	G1, G3, T13
24	...	43	100	41	1250	NFN-10	G1, G3, G7, T13
25	...	44	110	51	800	NFN-16	G1, G3
26	...	44	110	51	800	NFN-16	G1, G2, G3
27	...	44	110	51	800	NFN-16	G1, G3
28	...	44	110	51	800	NFN-16	G1, G3, G7
29	...	44	110	51	800	NFN-16	G1, G3
30	...	44	110	51	800	NFN-16	G1, G3, G7
31	...	44	110	51	800	NFN-16	G1, G3
32	...	44	110	51	800	NFN-16	G1, G3, G7
33	...	51	35	25	600	NFT-3	...
34	...	51	35	25	600	NFT-3	...
35	...	51	35	25	600	NFT-3	...
36	...	51	35	25	600	NFT-3	...
37	...	51	35	25	600	NFT-3	...
38	...	51	35	25	600	NFT-3	G7
39	...	51	35	25	600	NFT-3	G7

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TABLE 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

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	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.0	13.7	13.3	13.0	12.8	12.5	12.3
2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.0	13.7	13.3	13.0	12.8	12.5	12.3
3	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.5	16.1	15.7	15.3	15.0	14.7	14.5
4	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	23.2	23.0	22.9	22.8
5	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	23.2	23.0	22.9	22.8
6	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	23.2	23.0	22.9	22.8
7	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	23.2	23.0	22.9	22.8
8	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	29.9	...	...
9	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.4	...	...
10	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	29.9	...	...
11	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.4	...	...
12	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.5	...	...
13	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.5	...	...
14	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.2	...	...
15	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.5	26.1	25.8	25.5	25.3	24.9	...	...
16	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.5	26.1	25.8	25.5	25.3	24.9	...	...
17	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	26.9	26.0	25.2	24.6	24.0	23.5	23.1	...	...
18	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2	22.8	22.1	21.5	20.9	20.4	20.0	19.6	...	...
19	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	26.9	26.0	25.2	24.6	24.0	23.5	23.1	...	...
20	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	26.9	26.0	25.2	24.6	24.0	23.5	23.1	22.8	22.6
21	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	26.9	26.0	25.2	24.6	24.0	23.5	23.1	22.8	22.6
22	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2	22.8	22.1	21.5	20.9	20.4	20.0	19.6	19.4	19.2
23	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	26.9	26.0	25.2	24.6	24.0	23.5	23.1	22.8	22.6
24	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2	22.8	22.1	21.5	20.9	20.4	20.0	19.6	19.4	19.2
25	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	...	...
26	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	...	...
27	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	...	...
28	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	...	...
29	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	...	...
30	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	...	...
31	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	...	...
32	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	...	...
33	14.6	13.4	11.7	10.2	9.0	7.8	6.8	5.9	5.2	4.7	4.4	...	...	...	...	...	...
34	14.6	13.4	11.7	10.2	9.0	7.8	6.8	5.9	5.2	4.7	4.4	...	...	...	...	...	...
35	14.6	13.4	11.7	10.2	9.0	7.8	6.8	5.9	5.2	4.7	4.4	...	...	...	...	...	...
36	14.6	13.4	11.7	10.2	9.0	7.8	6.8	5.9	5.2	4.7	4.4	...	...	...	...	...	...
37	14.6	13.4	11.7	10.2	9.0	7.8	6.8	5.9	5.2	4.7	4.4	...	...	...	...	...	...
38	12.4	11.4	9.9	8.7	7.6	6.7	5.8	5.1	4.5	4.0	3.8	...	...	...	...	...	...
39	12.4	11.4	9.9	8.7	7.6	6.7	5.8	5.1	4.5	4.0	3.8	...	...	...	...	...	...

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TABLE 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

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	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*
2	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*
3	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*	*1.0*
4	22.6	22.3	...	...	...	...	...	...	...	...	...	...	...	...	...
5	22.6	22.3	...	...	...	...	...	...	...	...	...	...	...	...	...
6	22.6	22.3	...	...	...	...	...	...	...	...	...	...	...	...	...
7	22.6	22.3	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	22.4	22.3	*18.5*	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...
21	22.4	22.3	*18.5*	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...
22	19.0	19.0	*15.7*	*12.8*	*10.4*	*8.3*	*6.6*	...	...	...	...	...	...	...	...
23	22.4	22.3	*18.5*	*15.0*	*12.2*	*9.8*	*7.8*	...	...	...	...	...	...	...	...
24	19.0	19.0	*15.7*	*12.8*	*10.4*	*8.3*	*6.6*	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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TABLE 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Alloy Designation/ UNS No.	Class/ Condition/ Temper
1	Ti	Plate, sheet, strip	SB-265	R50400	Annealed
2	Ti	Bar, billet	SB-348	R50400	Annealed
3	Ti	Forgings	SB-381	R50400	Annealed
4	Ti	Smls. tube	SB-338	R50400	Smls. ann.
5	Ti	Smls. pipe	SB-861	R50400	Smls. ann.
6	Ti	Wld. tube	SB-338	R50400	Wld. ann.
7	Ti	Wld. pipe	SB-862	R50400	Wld. ann.
8	Ti	Plate, sheet, strip	SB-265	R50550	Annealed
9	Ti	Bar, billet	SB-348	R50550	Annealed
10	Ti	Forgings	SB-381	R50550	Annealed
11	Ti	Smls. tube	SB-338	R50550	Smls. ann.
12	Ti	Smls. pipe	SB-861	R50550	Smls. ann.
13	Ti	Wld. tube	SB-338	R50550	Wld. ann.
14	Ti	Wld. pipe	SB-862	R50550	Wld. ann.
15	Ti–Pd	Plate, sheet, strip	SB-265	R52400	Annealed
16	Ti–Pd	Bar, billet	SB-348	R52400	Annealed
17	Ti–Pd	Forgings	SB-381	R52400	Annealed
18	Ti–Pd	Smls. tube	SB-338	R52400	Smls. ann.
19	Ti–Pd	Smls. pipe	SB-861	R52400	Smls. ann.
20	Ti–Pd	Wld. tube	SB-338	R52400	Wld. ann.
21	Ti–Pd	Wld. pipe	SB-862	R52400	Wld. ann.
22	Ti–Pd	Plate, sheet, strip	SB-265	R52402	Annealed
23	Ti–Pd	Smls. tube	SB-338	R52402	Annealed
24	Ti–Pd	Wld. tube	SB-338	R52402	Annealed
25	Ti–Pd	Bar, billet	SB-348	R52402	Annealed
26	Ti–Pd	Forgings	SB-381	R52402	Annealed
27	Ti–0.3Mo–0.8Ni	Plate, sheet, strip	SB-265	R53400	Annealed
28	Ti–0.3Mo–0.8Ni	Bar, billet	SB-348	R53400	Annealed
29	Ti–0.3Mo–0.8Ni	Forgings	SB-381	R53400	Annealed
30	Ti–0.3Mo–0.8Ni	Smls. tube	SB-338	R53400	Smls. ann.
31	Ti–0.3Mo–0.8Ni	Smls. pipe	SB-861	R53400	Smls. ann.
32	Ti–0.3Mo–0.8Ni	Wld. tube	SB-338	R53400	Wld. ann.
33	Ti–0.3Mo–0.8Ni	Wld. pipe	SB-862	R53400	Wld. ann.

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TABLE 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

Line No.	Size/Thickness, in.	P-No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Max. Use Temperature, °F	External Pressure Chart No.	Notes
1	...	51	50	40	600	NFT-2	...
2	...	51	50	40	600	NFT-2	...
3	...	51	50	40	600	NFT-2	...
4	...	51	50	40	600	NFT-2	...
5	...	51	50	40	600	NFT-2	...
6	...	51	50	40	600	NFT-2	G7
7	...	51	50	40	600	NFT-2	G7
8	...	52	65	55	600	NFT-1	...
9	...	52	65	55	600	NFT-1	...
10	...	52	65	55	600	NFT-1	...
11	...	52	65	55	600	NFT-1	...
12	...	52	65	55	600	NFT-1	...
13	...	52	65	55	600	NFT-1	G7
14	...	52	65	55	600	NFT-1	G7
15	...	51	50	40	600	NFT-2	...
16	...	51	50	40	600	NFT-2	...
17	...	51	50	40	600	NFT-2	...
18	...	51	50	40	600	NFT-2	...
19	...	51	50	40	600	NFT-2	...
20	...	51	50	40	600	NFT-2	G7
21	...	51	50	40	600	NFT-2	G7
22	...	51	50	40	600	NFT-2	...
23	...	51	50	40	600	NFT-2	...
24	...	51	50	40	600	NFT-2	...
25	...	51	50	40	600	NFT-2	...
26	...	51	50	40	600	NFT-2	...
27	...	52	70	50	600	NFT-1	...
28	...	52	70	50	600	NFT-1	...
29	...	52	70	50	600	NFT-1	...
30	...	52	70	50	600	NFT-1	...
31	...	52	70	50	600	NFT-1	...
32	...	52	70	50	600	NFT-1	G7
33	...	52	70	50	600	NFT-1	G7

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TABLE 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

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	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	...	...	...	...	...	...
2	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	...	...	...	...	...	...
3	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	...	...	...	...	...	...
4	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	...	...	...	...	...	...
5	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	...	...	...	...	...	...
6	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	...	...	...	...	...	...
7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	...	...	...	...	...	...
8	27.1	27.1	27.1	26.5	23.8	21.3	19.1	17.0	15.0	13.2	11.4	...	...	...	...	...	...
9	27.1	27.1	27.1	26.5	23.8	21.3	19.1	17.0	15.0	13.2	11.4	...	...	...	...	...	...
10	27.1	27.1	27.1	26.5	23.8	21.3	19.1	17.0	15.0	13.2	11.4	...	...	...	...	...	...
11	27.1	27.1	27.1	26.5	23.8	21.3	19.1	17.0	15.0	13.2	11.4	...	...	...	...	...	...
12	27.1	27.1	27.1	26.5	23.8	21.3	19.1	17.0	15.0	13.2	11.4	...	...	...	...	...	...
13	23.0	23.0	23.0	22.5	20.3	18.1	16.2	14.4	12.8	11.2	9.7	...	...	...	...	...	...
14	23.0	23.0	23.0	22.5	20.3	18.1	16.2	14.4	12.8	11.2	9.7	...	...	...	...	...	...
15	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	...	...	...	...	...	...
16	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	...	...	...	...	...	...
17	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	...	...	...	...	...	...
18	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	...	...	...	...	...	...
19	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	...	...	...	...	...	...
20	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	...	...	...	...	...	...
21	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	...	...	...	...	...	...
22	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	...	...	...	...	...	...
23	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	...	...	...	...	...	...
24	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	...	...	...	...	...	...
25	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	...	...	...	...	...	...
26	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	...	...	...	...	...	...
27	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	...	...	...	...	...	...
28	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	...	...	...	...	...	...
29	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	...	...	...	...	...	...
30	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	...	...	...	...	...	...
31	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	...	...	...	...	...	...
32	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	...	...	...	...	...	...
33	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	...	...	...	...	...	...

07

TABLE 5B (CONT'D)
SECTION VIII, DIVISION 2
MAXIMUM ALLOWABLE STRESS VALUES S_m FOR NONFERROUS MATERIALS

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	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

07 NOTES TO TABLE 5B

GENERAL NOTES

(a) The following abbreviations are used: ann., annealed; Cond., Condenser; extr., extruded; fin., finished; rel., relieved; Smls., Seamless; and Wld., Welded.

(b) An alternative typeface is used for stress values obtained from time-dependent properties (see Notes T1 through T14).

(c) Where specifications, grades, classes, and types are listed in this Table, and where the material specification in Section II, Part A or Part B is a dual-unit specification (e.g., SB-407/SB-407M), the values listed in this Table shall be applicable to either the customary U.S. version of the material specification or the SI units version of the material specification. For example, the values listed for SB-407 Grade N08800 shall be used when SB-407M Grade N08800 is used in construction.

(d) The values in this Table may be interpolated to determine values for intermediate temperatures. The values at intermediate temperatures shall be rounded to the same number of decimal places as the value at the higher temperature between which values are being interpolated. The rounding rule is: when the next digit beyond the last place to be retained is less than 5, retain unchanged the digit in the last place retained; when the digit next beyond the last place to be retained is 5 or greater, increase by 1 the digit in the last place retained.

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 that, 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 Maximum allowable stress values for 100°F may be used at temperatures down to –325°F without additional specification requirements.

G4 Maximum allowable stress values for 100°F may be used at temperatures down to –452°F without additional specification requirements.

G5 Maximum temperature for external pressure design not to exceed 350°F.

G6 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.

G7 A joint efficiency factor of 0.85 has been applied in arriving at the maximum allowable stress values for this material.

G8 For stress relieved tempers (T451, T4510, T4511, T651, T6510, T6511), stress values for materials in the basic temper shall be used.

G9 Copper-silicon alloys are not always suitable when exposed to certain media and high temperature, particularly steam above 212°F. The user should satisfy him/herself that the alloy selected is satisfactory for the service for which it is to be used.

G10 At temperatures over 1000°F, these stress values apply only when the carbon is 0.04% or higher.

G11 This alloy is subject to severe loss of impact strength at room temperatures after exposure in the range of 1000°F to 1400°F.

G12 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.

G13 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.

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 700°F and above are values obtained from time-dependent properties.

T7 Allowable stresses for temperatures of 750°F and above are values obtained from time-dependent properties.

T8 Allowable stresses for temperatures of 800°F and above are values obtained from time-dependent properties.

T9 Allowable stresses for temperatures of 850°F and above are values obtained from time-dependent properties.

T10 Allowable stresses for temperatures of 900°F and above are values obtained from time-dependent properties.

T11 Allowable stresses for temperatures of 950°F and above are values obtained from time-dependent properties.

T12 Allowable stresses for temperatures of 1000°F and above are values obtained from time-dependent properties.

T13 Allowable stresses for temperatures of 1050°F and above are values obtained from time-dependent properties.

T14 Allowable stresses for temperatures of 1100°F and above are values obtained from time-dependent properties.

NOTES — WELDING REQUIREMENTS

W1 Welding except for seal welds is not permitted.

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

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

TABLE U
TENSILE STRENGTH VALUES S_u FOR FERROUS AND NONFERROUS MATERIALS

Line No.	Nominal Composition	Product Form	Spec No.	Type/Grade	Alloy Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
	Ferrous Materials							
1	Carbon steel	Sheet	SA-1008	CS-A	...	...	...	40
2	Carbon steel	Sheet	SA-1008	CS-B	...	...	...	40
3	Carbon steel	Bar	SA-675	45	...	...	...	45
4	Carbon steel	Wld. pipe	SA-134	A283A	...	...	...	45
5	Carbon steel	Plate	SA-283	A	...	...	...	45
6	Carbon steel	Plate	SA-285	A	K01700	...	...	45
7	Carbon steel	Wld. pipe	SA-672	A45	K01700	...	...	45
8	Carbon steel	Sheet	SA-414	A	K01501	...	...	45
9	Carbon steel	Wld. tube	SA-178	A	K01200	...	...	47
10	Carbon steel	Smls. tube	SA-179	...	K01200	...	...	47
11	Carbon steel	Smls. tube	SA-192	...	K01201	...	...	47
12	Carbon steel	Wld. tube	SA-214	...	K01807	...	...	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	Smls. pipe	SA-53	S/A	K02504	...	...	48
17	Carbon steel	Smls. pipe	SA-106	A	K02501	...	...	48
18	Carbon steel	Wld. pipe	SA-135	A	...	...	...	48
19	Carbon steel	Forged pipe	SA-369	FPA	K02501	...	...	48
20	Carbon steel	Wld. pipe	SA-587	...	K11500	...	...	48
21	Carbon steel	Bar	SA-675	50	...	...	...	50
22	Carbon steel	Wld. pipe	SA-134	A283B	...	...	...	50
23	Carbon steel	Plate	SA-283	B	...	...	...	50
24	Carbon steel	Plate	SA-285	B	K02200	...	...	50
25	Carbon steel	Wld. pipe	SA-672	A50	K02200	...	...	50
26	Carbon steel	Sheet	SA-414	B	K02201	...	...	50
27	Carbon steel	Plate	SA/EN 10028-3	P275NH	...	...	$2 < t \leq 4$	53.5
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

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	56.5	56.5	56.5	56.5	...	...	...	...	...	...	...	...	...	...
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	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
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
41	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
42	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

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, 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
	6	Carbon steel	Plate	SA/AS 1548	7-430	...	...	≤ 6	62.5
A08	7	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...	$6 < t \le 10$	62.5
A08	8	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...	$4 < t \le 6$	64
	9	Carbon steel	Bar	SA-675	65	...	...	...	65
	10	Carbon steel	Castings	SA-352	LCB	J03003	...	...	65
	11	Carbon steel	Plate	SA-515	65	K02800	...	...	65
	12	Carbon steel	Plate	SA-516	65	K02403	...	...	65
	13	Carbon steel	Wld. pipe	SA-671	CB65	K02800	...	...	65
	14	Carbon steel	Wld. pipe	SA-671	CC65	K02403	...	...	65
	15	Carbon steel	Wld. pipe	SA-672	B65	K02800	...	...	65
	16	Carbon steel	Wld. pipe	SA-672	C65	K02403	...	...	65
	17	Carbon steel	Sheet	SA-414	E	K02704	...	...	65
	18	Carbon steel	Plate	SA-662	B	K02203	...	...	65
A08	19	Carbon steel	Plate	SA/GB 6654	16MnR	...	...	$4 < t \le 5$	65
	20	Carbon steel	Plate	SA-537	...	K12437	1	$2\frac{1}{2} < t \le 4$	65
	21	Carbon steel	Wld. pipe	SA-691	CMSH-70	K12437	...	$2\frac{1}{2} < t \le 4$	65
	22	Carbon steel	Plate	SA/AS 1548	7-460	...	...	≤ 6	66.5
	23	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...	≤ 4	66.5
A08	24	Carbon steel	Plate	SA/GB 6654	16MnR	...	...	$2.4 < t \le 4$	67
A08	25	Carbon steel	Plate	SA/GB 6654	16MnR	...	...	$1.5 < t \le 2.4$	68
	26	Carbon steel	Plate	SA-455	...	K03300	...	$0.58 < t \le \frac{3}{4}$	70
	27	Carbon steel	Bar	SA-675	70	...	...	...	70
	28	Carbon steel	Forgings	SA-105	...	K03504	...	...	70
	29	Carbon steel	Forgings	SA-181	...	K03502	70	...	70
	30	Carbon steel	Castings	SA-216	WCB	J03002	...	...	70
	31	Carbon steel	Forgings	SA-266	2	K03506	...	...	70
	32	Carbon steel	Forgings	SA-266	4	K03017	...	...	70
	33	Carbon steel	Forgings	SA-350	LF2	K03011	...	...	70
	34	Carbon steel	Forgings	SA-508	1	K13502	...	...	70
	35	Carbon steel	Forgings	SA-508	1A	K13502	...	...	70
	36	Carbon steel	Forgings	SA-541	1	K03506	...	...	70
	37	Carbon steel	Forgings	SA-541	1A	K03020	...	...	70
	38	Carbon steel	Cast pipe	SA-660	WCB	J03003	...	...	70
	39	Carbon steel	Forgings	SA-765	II	K03047	...	...	70
	40	Carbon steel	Plate	SA-515	70	K03101	...	...	70
	41	Carbon steel	Plate	SA-516	70	K02700	...	...	70
	42	Carbon steel	Wld. pipe	SA-671	CB70	K03101	...	...	70
	43	Carbon steel	Wld. pipe	SA-671	CC70	K02700	...	...	70
	44	Carbon steel	Wld. pipe	SA-672	B70	K03101	...	...	70
	45	Carbon steel	Wld. pipe	SA-672	C70	K02700	...	...	70

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	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	61.7	57.4	52.3	46.7	41.0	36.0	
7	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	61.7	57.4	52.3	46.7	41.0	36.0	A08
8	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	A08
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	65.3	65.3	65.3	65.3	65.3	...	...	...	...	...	...	...	...	...	A08
20	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	
21	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	
22	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	
23	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	
24	66.7	66.7	66.7	66.7	66.7	...	...	...	...	...	...	...	...	...	A08
25	68.2	68.2	68.2	68.2	68.2	...	...	...	...	...	...	...	...	...	A08
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	
35	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	
36	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	
37	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	
38	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	
39	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	
40	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	
41	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	
42	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	
43	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	
44	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	
45	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	

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Ferrous Materials (Cont'd)							
	1	Carbon steel	Smls. pipe	SA-106	C	K03501	...	...	70
	2	Carbon steel	Wld. tube	SA-178	D	...	...	...	70
	3	Carbon steel	Smls. tube	SA-210	C	K03501	...	...	70
	4	Carbon steel	Castings	SA-216	WCC	J02503	...	...	70
	5	Carbon steel	Smls. & wld. fittings	SA-234	WPC	K03501	...	...	70
	6	Carbon steel	Castings	SA-352	LCC	J02505	...	...	70
	7	Carbon steel	Castings	SA-487	16	...	A	...	70
	8	Carbon steel	Plate	SA-537	...	K12437	3	$4 < t \le 6$	70
	9	Carbon steel	Smls. tube	SA-556	C2	K03006	...	...	70
	10	Carbon steel	Tube	SA-557	C2	K03505	...	...	70
	11	Carbon steel	Cast pipe	SA-660	WCC	J02505	...	...	70
	12	Carbon steel	Bar	SA-695	B/40	K03504	...	...	70
	13	Carbon steel	Bar	SA-696	C	K03200	...	...	70
	14	Carbon steel	Sheet	SA-414	F	K03102	...	...	70
	15	Carbon steel	Plate	SA-662	C	K02007	...	...	70
	16	Carbon steel	Plate	SA-537	...	K12437	2	$4 < t \le 6$	70
07	17	Carbon steel	Plate	SA-738	C	K02008	...	$4 < t \le 6$	70
	18	Carbon steel	Plate	SA-537	...	K12437	1	$\le 2\frac{1}{2}$	70
	19	Carbon steel	Wld. pipe	SA-671	CD70	K12437	...	$\le 2\frac{1}{2}$	70
	20	Carbon steel	Wld. pipe	SA-672	D70	K12437	...	$\le 2\frac{1}{2}$	70
	21	Carbon steel	Wld. pipe	SA-691	CMSH-70	K12437	...	$\le 2\frac{1}{2}$	70
	22	Carbon steel	Plate	SA/AS 1548	7-490	...	...	≤ 6	71
A08	23	Carbon steel	Plate	SA/GB 6654	16MnR	...	...	$0.65 < t \le 1.5$	71
	24	Carbon steel	Plate	SA-455	...	K03300	...	$\frac{3}{8} < t \le \frac{5}{8}$	73
A08	25	Carbon steel	Plate	SA/GB 6654	16MnR	...	...	$0.25 < t \le 0.65$	74
	26	Carbon steel	Forgings	SA-266	3	K05001	...	...	75
	27	Carbon steel	Plate	SA-455	...	K03300	...	$\le \frac{3}{8}$	75
	28	Carbon steel	Plate	SA-299	...	K02803	...	> 1	75
	29	Carbon steel	Wld. pipe	SA-671	CK75	K02803	...	> 1	75
	30	Carbon steel	Wld. pipe	SA-672	N75	K02803	...	> 1	75
	31	Carbon steel	Wld. pipe	SA-691	CMS-75	K02803	...	> 1	75
	32	Carbon steel	Plate	SA-299	...	K02803	...	≤ 1	75
	33	Carbon steel	Wld. pipe	SA-691	CMS-75	K02803	...	≤ 1	75
	34	Carbon steel	Forgings	SA-372	B	K04001	...	...	75
	35	Carbon steel	Sheet	SA-414	G	K03103	...	...	75
	36	Carbon steel	Plate	SA-738	A	K12447	...	...	75
	37	Carbon steel	Plate	SA-537	...	K12437	3	$2\frac{1}{2} < t \le 4$	75
	38	Carbon steel	Plate	SA-537	...	K12437	2	$2\frac{1}{2} < t \le 4$	75
	39	Carbon steel	Wld. pipe	SA-691	CMSH-80	K12437	...	$2\frac{1}{2} < t \le 4$	75
07	40	Carbon steel	Plate	SA-738	C	K02008	...	$2\frac{1}{2} < t \le 4$	75

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	69.5	65.7	63.3	62.6	62.6	62.6	62.6	62.3	59.2	...	...	...	...	
8	70.0	70.0	69.1	68.4	68.4	68.4	68.4	68.4	67.7	65.4	...	...	...	...	
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	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	
14	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	
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	69.1	68.4	68.4	68.4	68.4	68.4	67.7	65.4	...	...	...	...	
17	70.0	70.0	69.1	68.4	68.4	68.4	68.4	68.4	67.7	65.4	...	...	...	...	07
18	70.0	70.0	69.1	68.4	68.4	68.4	68.4	68.4	67.7	65.4	...	...	...	...	
19	70.0	70.0	69.1	68.4	68.4	68.4	68.4	68.4	67.7	65.4	...	...	...	...	
20	70.0	70.0	69.1	68.4	68.4	68.4	68.4	68.4	67.7	65.4	...	...	...	...	
21	70.0	70.0	69.1	68.4	68.4	68.4	68.4	68.4	67.7	65.4	...	...	...	...	
22	71.0	71.0	71.0	71.0	71.0	71.0	71.0	71.0	70.1	65.2	59.4	53.0	46.6	40.9	
23	71.1	71.1	71.1	71.1	71.1	...	...	...	...	...	...	...	...	...	A08
24	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	
25	74.0	74.0	74.0	74.0	74.0	...	...	...	...	...	...	...	...	...	A08
26	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	
27	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	
28	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	
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	74.0	73.3	73.2	73.2	73.2	73.2	72.5	70.1	...	...	...	...	
38	75.0	75.0	74.0	73.3	73.2	73.2	73.2	73.2	72.5	70.1	...	...	...	...	
39	75.0	75.0	74.0	73.3	73.2	73.2	73.2	73.2	72.5	70.1	...	...	...	...	
40	75.0	75.0	74.0	73.3	73.2	73.2	73.2	73.2	72.5	70.1	...	...	...	...	07

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Ferrous Materials (Cont'd)							
	1	Carbon steel	Forgings	SA-765	IV	K02009	...	...	80
	2	Carbon steel	Plate	SA-537	...	K12437	3	$\le 2\frac{1}{2}$	80
	3	Carbon steel	Plate	SA-537	...	K12437	2	$\le 2\frac{1}{2}$	80
	4	Carbon steel	Wld. pipe	SA-671	CD80	K12437	...	$\le 2\frac{1}{2}$	80
	5	Carbon steel	Wld. pipe	SA-672	D80	K12437	...	$\le 2\frac{1}{2}$	80
	6	Carbon steel	Wld. pipe	SA-691	CMSH-80	K12437	...	$\le 2\frac{1}{2}$	80
07	7	Carbon steel	Plate	SA-738	C	K02008	...	$\le 2\frac{1}{2}$	80
	8	Carbon steel	Plate	SA-612	...	K02900	...	$\frac{1}{2} < t \le 1$	81
	9	Carbon steel	Plate	SA-612	...	K02900	...	$\le \frac{1}{2}$	83
07	10	Carbon steel	Plate	SA-738	B	K12007	...	...	85
	11	Carbon steel	Forgings	SA-372	C	K04801	...	...	90
	12	Carbon steel	Bolting	SA-449	...	K04200	...	$1\frac{1}{2} < t \le 3$	90
	13	Carbon steel	Plate	SA-724	A	K11831	...	...	90
	14	Carbon steel	Plate	SA-724	C	K12037	...	...	90
	15	Carbon steel	Plate	SA-724	B	K12031	...	...	95
	16	Carbon steel	Bolting	SA-325	...	...	...	...	105
	17	Carbon steel	Bolting	SA-325	1	K02706	...	$1\frac{1}{8} < t \le 1\frac{1}{2}$	105
	18	Carbon steel	Bolting	SA-449	...	K04200	...	$1 < t < 1\frac{1}{2}$	105
	19	Carbon steel	Bolting	SA-354	BC	K04100	...	$2\frac{1}{2} < t \le 4$	115
	20	Carbon steel	Bolting	SA-325	1	K02706	...	$\frac{1}{2} < t \le 1$	120
	21	Carbon steel	Bolting	SA-449	...	K04200	...	≤ 1	120
	22	Carbon steel	Bolting	SA-354	BC	K04100	...	$\frac{1}{4} < t \le 2\frac{1}{2}$	125
	23	Carbon steel	Bolting	SA-354	BD	K04100	...	$2\frac{1}{2} < t \le 4$	140
	24	Carbon steel	Bolting	SA-354	BD	K04100	...	$\frac{1}{4} < t \le 2\frac{1}{2}$	150
	25	C–Mn–Si–Cb	Plate	SA-737	B	K12001	...	...	70
	26	C–Mn–Si–Cb	Plate	SA/AS 1548	5-490	...	...	≤ 6	71
	27	C–Mn–Si–V	Plate	SA-737	C	K12202	...	...	80
A08	28	C–Mn–Si–V–Cb	Plate	SA-656	T3	...	...	≤ 2	60
A08	29	C–Mn–Si–V–Cb	Plate	SA-656	T7	...	...	≤ 2	60
A08	30	C–Mn–Si–V–Cb	Plate	SA-656	T3	...	...	$\le 1\frac{1}{2}$	70
A08	31	C–Mn–Si–V–Cb	Plate	SA-656	T7	...	...	$\le 1\frac{1}{2}$	70
A08	32	C–Mn–Si–V–Cb	Plate	SA-656	T3	...	...	≤ 1	80
A08	33	C–Mn–Si–V–Cb	Plate	SA-656	T7	...	...	≤ 1	80
A08	34	C–Mn–Si–V–Cb	Plate	SA-656	T3	...	...	$\le \frac{3}{4}$	90
A08	35	C–Mn–Si–V–Cb	Plate	SA-656	T7	...	...	$\le \frac{3}{4}$	90
	36	C–Mn–Ti	Plate, sheet	SA-562	...	K11224	...	...	55
	37	C–Si–Ti	Forgings	SA-836	...	...	1	...	55

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	79.1	79.1	79.1	78.8	77.7	...	...	...	...	...	...	
2	80.0	80.0	78.9	78.2	78.1	78.1	78.1	78.1	77.4	74.8	...	...	...	...	
3	80.0	80.0	78.9	78.2	78.1	78.1	78.1	78.1	77.4	74.8	...	...	...	...	
4	80.0	80.0	78.9	78.2	78.1	78.1	78.1	78.1	77.4	74.8	...	...	...	...	
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	...	...	...	...	07
8	81.0	81.0	79.4	79.4	79.4	79.4	79.4	79.4	...	...	...	...	...	...	
9	83.0	83.0	81.3	81.3	81.3	81.3	81.3	81.3	...	...	...	...	...	...	
10	85.0	85.0	85.0	85.0	85.0	84.2	83.0	81.0	78.3	74.6	...	...	...	...	07
11	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	
12	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	
13	90.0	90.0	88.8	87.9	87.9	87.9	87.9	87.9	87.0	84.1	...	...	...	...	
14	90.0	90.0	88.8	87.9	87.9	87.9	87.9	87.9	87.0	84.1	...	...	...	...	
15	95.0	95.0	93.7	92.8	92.8	92.8	92.8	92.8	91.9	88.8	...	...	...	...	
16	105.0	105.0	103.6	102.6	102.5	102.5	102.5	102.5	101.5	98.1	91.5	80.3	62.5	35.8	
17	105.0	105.0	103.6	102.6	102.5	102.5	102.5	102.5	101.5	98.1	91.5	80.3	62.5	35.8	
18	105.0	105.0	103.6	102.6	102.5	102.5	102.5	102.5	101.5	98.1	91.5	80.3	62.5	35.8	
19	115.0	115.0	115.0	115.0	115.0	115.0	115.0	113.6	105.7	96.2	85.8	75.4	66.3	...	
20	120.0	120.0	118.4	117.3	117.2	117.2	117.2	117.2	116.1	112.1	104.6	91.8	71.5	41.0	
21	120.0	120.0	118.4	117.3	117.2	117.2	117.2	117.2	116.1	112.1	104.6	91.8	71.5	41.0	
22	125.0	125.0	125.0	125.0	125.0	125.0	125.0	125.0	123.5	114.8	104.6	93.3	82.0	72.1	
23	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	138.3	128.6	117.1	104.5	91.8	80.7	
24	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	147.8	137.3	124.9	111.3	97.6	85.5	
25	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	...	
26	71.0	71.0	71.0	71.0	71.0	71.0	71.0	70.4	67.7	63.9	59.1	53.5	47.6	42.2	
27	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	...	
28	60.0	60.0	60.0	60.0	60.0	60.0	60.0	...	...	...	...	...	...	...	A08
29	60.0	60.0	60.0	60.0	60.0	60.0	60.0	...	...	...	...	...	...	...	A08
30	70.0	70.0	70.0	70.0	70.0	70.0	70.0	...	...	...	...	...	...	...	A08
31	70.0	70.0	70.0	70.0	70.0	70.0	70.0	...	...	...	...	...	...	...	A08
32	80.0	80.0	80.0	80.0	80.0	80.0	80.0	...	...	...	...	...	...	...	A08
33	80.0	80.0	80.0	80.0	80.0	80.0	80.0	...	...	...	...	...	...	...	A08
34	90.0	90.0	90.0	90.0	90.0	90.0	90.0	...	...	...	...	...	...	...	A08
35	90.0	90.0	90.0	90.0	90.0	90.0	90.0	...	...	...	...	...	...	...	A08
36	55.0	44.4	41.5	39.5	38.1	36.9	36.3	35.6	34.8	...	...	...	...	...	
37	55.0	54.3	50.7	48.3	46.6	45.1	44.3	43.5	42.5	...	...	...	...	...	

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
	Ferrous Materials (Cont'd)							
1	C–¼Mo	Bolting	SA-320	L7A	G40370	...	≤ 2½	125
2	C–¼Mo	Bolting	SA-574	4037	G40370	...	≥ ⅝	170
3	C–¼Mo	Bolting	SA-574	4042	G40420	...	≥ ⅝	170
4	C–¼Mo	Bolting	SA-574	4140	G41400	...	≥ ⅝	170
5	C–¼Mo	Bolting	SA-574	4037	G40370	...	≤ ½	180
6	C–¼Mo	Bolting	SA-574	4042	G40420	...	≤ ½	180
7	C–½Mo	Smls. tube	SA-209	T1b	K11422	...	...	53
8	C–½Mo	Wld. tube	SA-250	T1b	K11422	...	...	53
9	C–½Mo	Smls. tube	SA-209	T1	K11522	...	...	55
10	C–½Mo	Smls. & wld. fittings	SA-234	WP1	K12821	...	...	55

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	125.0	125.0	125.0	125.0	125.0	125.0	125.0	125.0	123.5	114.8	104.6	93.3	82.0	72.1
2	170.0	170.0	170.0	170.0	170.0	170.0	170.0	170.0	170.0	170.0	166.0	158.1	148.4	137.2
3	170.0	170.0	170.0	170.0	170.0	170.0	170.0	170.0	170.0	170.0	166.0	158.1	148.4	137.2
4	170.0	170.0	170.0	170.0	170.0	170.0	170.0	170.0	170.0	170.0	166.0	158.1	148.4	137.2
5	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	175.8	167.4	157.2	145.3
6	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	175.8	167.4	157.2	145.3
7	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
8	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
9	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
10	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

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
	Ferrous Materials (Cont'd)							
1	C–½Mo	Wld. tube	SA-250	T1	K11522	...	...	55
2	C–½Mo	Smls. pipe	SA-335	P1	K11522	...	...	55
3	C–½Mo	Forged pipe	SA-369	FP1	K11522	...	...	55
4	C–½Mo	Smls. tube	SA-209	T1a	K12023	...	...	60
5	C–½Mo	Wld. tube	SA-250	T1a	K12023	...	...	60
6	C–½Mo	Castings	SA-217	WC1	J12524	...	...	65
7	C–½Mo	Castings	SA-352	LC1	J12522	...	...	65
8	C–½Mo	Cast pipe	SA-426	CP1	J12521	...	...	65
9	C–½Mo	Plate	SA-204	A	K11820	...	...	65
10	C–½Mo	Wld. pipe	SA-672	L65	K11820	...	...	65
11	C–½Mo	Wld. pipe	SA-691	CM-65	K11820	...	...	65
12	C–½Mo	Forgings	SA-182	F1	K12822	...	...	70
13	C–½Mo	Plate	SA-204	B	K12020	...	...	70
14	C–½Mo	Forgings	SA-336	F1	K12520	...	...	70
15	C–½Mo	Wld. pipe	SA-672	L70	K12020	...	...	70
16	C–½Mo	Wld. pipe	SA-691	CM-70	K12020	...	...	70
17	C–½Mo	Plate	SA-204	C	K12320	...	...	75
18	C–½Mo	Wld. pipe	SA-672	L75	K12320	...	...	75
19	C–½Mo	Wld. pipe	SA-691	CM-75	K12320	...	...	75
20	C–½Mo	Plate	SA-517	J	K11625	...	≤ 1¼	115
21	½Cr–⅕Mo	Forgings	SA-372	G	K13049	70	...	120
22	½Cr–⅕Mo	Forgings	SA-372	H	K13547	70	...	120
23	½Cr–⅕Mo–V	Plate	SA-517	B	K11630	...	≤ 1¼	115
24	½Cr–¼Mo–Si	Plate	SA-517	A	K11856	...	≤ 1¼	115
25	½Cr–¼Mo–Si	Forgings	SA-592	A	K11856	...	≤ 2½	115
26	½Cr–½Mo	Smls. pipe	SA-335	P2	K11547	...	...	55
27	½Cr–½Mo	Forged pipe	SA-369	FP2	K11547	...	...	55
28	½Cr–½Mo	Plate	SA-387	2	K12143	1	...	55
29	½Cr–½Mo	Wld. pipe	SA-691	½CR	K12143	...	...	55
30	½Cr–½Mo	Smls. tube	SA-213	T2	K11547	...	...	60
31	½Cr–½Mo	Cast pipe	SA-426	CP2	J11547	...	...	60
32	½Cr–½Mo	Forgings	SA-182	F2	K12122	...	...	70
33	½Cr–½Mo	Plate	SA-387	2	K12143	2	...	70
34	½Cr–½Mo	Wld. pipe	SA-691	½CR	K12143	...	...	70
35	½Cr–1¼Mn–Si	Plate	SA-202	A	K11742	...	...	75
36	½Cr–1¼Mn–Si	Plate	SA-202	B	K12542	...	...	85
37	¾Cr–½Ni–Cu	Wld. tube	SA-423	1	K11535	...	...	60
38	¾Cr–¾Ni–Cu–Al	Pipe	SA-333	4	K11267	...	...	60

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	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	
2	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	
3	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	
4	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	
5	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	
6	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	
7	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	
8	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	
9	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	
10	85.0	85.0	81.5	79.0	77.5	76.4	75.7	75.0	74.1	72.9	71.4	69.8	...	...	
11	85.0	85.0	81.5	79.0	77.5	76.4	75.7	75.0	74.1	72.9	71.4	69.8	...	...	
12	85.0	85.0	81.5	79.0	77.5	76.4	75.7	75.0	74.1	72.9	71.4	69.8	...	...	
13	85.0	85.0	81.5	79.0	77.5	76.4	75.7	75.0	74.1	72.9	71.4	69.8	...	...	
14	85.0	85.0	81.5	79.0	77.5	76.4	75.7	75.0	74.1	72.9	71.4	69.8	...	...	
15	85.0	85.0	81.5	79.0	77.5	76.4	75.7	75.0	74.1	72.9	71.4	69.8	...	...	
16	85.0	85.0	81.5	79.0	77.5	76.4	75.7	75.0	74.1	72.9	71.4	69.8	...	...	07
17	85.0	85.0	81.5	79.0	77.5	76.4	75.7	75.0	74.1	72.9	71.4	69.8	...	...	07
18	85.0	85.0	81.5	79.0	77.5	76.4	75.7	75.0	74.1	72.9	71.4	69.8	...	...	07
19	85.0	85.0	81.5	79.0	77.5	76.4	75.7	75.0	74.1	72.9	71.4	69.8	...	...	07
20	85.0	85.0	81.5	79.0	77.5	76.4	75.7	75.0	74.1	72.9	71.4	69.8	...	...	07
21	85.0	85.0	81.5	79.0	77.5	76.4	75.7	75.0	74.1	72.9	71.4	69.8	...	...	07
22	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	
23	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	
24	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	
25	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	
26	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	
27	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	
28	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	
29	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	
30	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	
31	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	
32	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	
33	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	
34	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	
35	100.0	99.6	96.8	95.7	95.5	94.1	92.6	91.1	88.0	85.3	81.2	76.5	71.7	66.0	
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	

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Ferrous Materials (Cont'd)							
	1	9Cr–1Mo	Smls. tube	SA-213	T9	K90941	...	...	60
	2	9Cr–1Mo	Fittings	SA-234	WP9	K90941	...	...	60
	3	9Cr–1Mo	Smls. pipe	SA-335	P9	K90941	...	...	60
	4	9Cr–1Mo	Forged pipe	SA-369	FP9	K90941	...	...	60
	5	9Cr–1Mo	Forgings	SA-182	F9	K90941	...	...	85
	6	9Cr–1Mo	Forgings	SA-336	F9	K90941	...	...	85
	7	9Cr–1Mo	Castings	SA-217	C12	J82090	...	...	90
	8	9Cr–1Mo	Cast pipe	SA-426	CP9	J82090	...	...	90
	9	9Cr–1Mo–V	Forgings	SA-182	F91	K90901	...	≤ 3	85
	10	9Cr–1Mo–V	Smls. tube	SA-213	T91	K90901	...	≤ 3	85
	11	9Cr–1Mo–V	Fittings	SA-234	WP91	K90901	...	≤ 3	85
	12	9Cr–1Mo–V	Smls. pipe	SA-335	P91	K90901	...	≤ 3	85
	13	9Cr–1Mo–V	Forgings	SA-336	F91	K90901	...	≤ 3	85
	14	9Cr–1Mo–V	Forged pipe	SA-369	FP91	K90901	...	≤ 3	85
	15	9Cr–1Mo–V	Plate	SA-387	91	K90901	2	≤ 3	85
	16	11Cr–Ti	Plate	SA-240	...	S40910	...	...	55
	17	11Cr–Ti	Plate	SA-240	...	S40920	...	...	55
	18	11Cr–Ti	Plate	SA-240	...	S40930	...	...	55
	19	11Cr–Ti	Smls. & wld. tube	SA-268	TP409	S40900	...	...	55
	20	12Cr	Bar	SA-479	403	S40300	A	...	70
	21	12Cr	Bar	SA-479	403	S40300	1	...	70
	22	12Cr–Al	Plate	SA-240	405	S40500	...	...	60
	23	12Cr–Al	Bar	SA-479	405	S40500	...	...	60
A08	24	12Cr–Al	Bar	SA/JIS G4303	SUS405	...	...	...	60
	25	12Cr–Al	Smls. & wld. tube	SA-268	TP405	S40500	...	...	60
	26	12Cr–Ti	Smls. & wld. tube	SA-268	...	S40800	...	...	55
	27	13Cr	Plate	SA-240	410S	S41008	...	...	60
	28	13Cr	Smls. & wld. tube	SA-268	TP410	S41000	...	...	60
	29	13Cr	Plate	SA-240	410	S41000	...	...	65
	30	13Cr	Forgings	SA-182	F6a	S41000	1	...	70
	31	13Cr	Bar	SA-479	410	S41000	...	...	70
	32	13Cr	Bar	SA-479	410	S41000	A	...	70
	33	13Cr	Bar	SA-479	410	S41000	1	...	70
	34	13Cr	Forgings	SA-182	F6a	S41000	2	...	85
	35	13Cr	Castings	SA-217	CA15	J91150	...	...	90
	36	13Cr	Cast pipe	SA-426	CPCA15	J91150	...	...	90
07	37	13Cr	Bolting	SA-193	B6	S41000	...	≤ 4	110
	38	13Cr–4Ni	Castings	SA-487	CA6NM	J91540	A	...	110
	39	13Cr–4Ni	Forgings	SA-182	F6NM	S41500	...	...	115
	40	15Cr	Smls. & wld. tube	SA-268	TP429	S42900	...	...	60
	41	15Cr	Plate	SA-240	429	S42900	...	...	65

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	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	
2	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	
3	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	
4	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	
5	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	
6	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	
7	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	
8	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	
9	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	
10	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	
11	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	
12	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	
13	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	
14	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	
15	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	
16	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	
17	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	
18	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	
19	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	
20	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	
21	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	
22	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	
23	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	
24	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	A08
25	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	
26	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	
27	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	
28	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	
29	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	
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	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	
32	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	
33	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	
34	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	
35	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	
36	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	
37	110.0	110.0	109.0	107.0	105.0	102.0	100.0	97.7	94.6	90.9	86.4	81.1	75.1	68.4	07
38	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	
39	115.0	115.0	115.0	113.7	109.5	105.1	102.8	100.3	97.6	94.7	91.4	...	...	...	
40	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	
41	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	

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Ferrous Materials (Cont'd)							
	1	17Cr	Smls. & wld. tube	SA-268	TP430	S43000	...	...	60
	2	17Cr	Plate	SA-240	430	S43000	...	...	65
	3	17Cr	Bar	SA-479	430	S43000	...	...	70
	4	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1150	...	135
	5	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1150	...	135
	6	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1150	...	135
	7	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1100	...	140
	8	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1100	...	140
	9	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1100	...	140
	10	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1075	...	145
	11	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1075	...	145
	12	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1075	...	145
A08	13	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1025	...	155
A08	14	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H925	...	170
A08	15	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H900	...	190
07	16	17Cr–4Ni–6Mn	Plate	SA-240	201-1	S20100	...	...	75
07	17	17Cr–4Ni–6Mn	Plate	SA-666	201-1	S20100	...	...	75
	18	17Cr–4Ni–6Mn	Plate	SA-240	201-2	S20100	...	...	95
	19	17Cr–4Ni–6Mn	Plate	SA-666	201-2	S20100	...	...	95
	20	17Cr–7Ni	Plate, sheet, strip	SA-240	301	S30100	...	...	75
	21	18Cr–2Mo	Plate	SA-240	...	S44400	...	...	60
	22	18Cr–2Mo	Smls. & wld. tube	SA-268	...	S44400	...	...	60
	23	18Cr–Ti	Smls. & wld. tube	SA-268	TP439	S43035	...	...	60
	24	18Cr–Ti	Wld. tube	SA-803	TP439	S43035	...	...	60
	25	18Cr–Ti	Smls. & wld. pipe	SA-731	TP439	S43035	...	...	60
	26	18Cr–Ti	Bar	SA-479	439	S43035	...	...	70
	27	26Cr–3Ni–3Mo	Plate	SA-240	26-3-3	S44660	...	$\leq 2/10$	85
	28	26Cr–3Ni–3Mo	Smls. & wld. tube	SA-268	26-3-3	S44660	...	$\leq 2/10$	85
	29	26Cr–3Ni–3Mo	Wld. tube	SA-803	26-3-3	S44660	...	$\leq 2/10$	85
	30	26Cr–4Ni–Mo	Plate	SA-240	329	S32900	...	...	90
	31	26Cr–4Ni–Mo	Smls. & wld. tube	SA-789	...	S32900	...	...	90
	32	26Cr–4Ni–Mo	Smls. & wld. pipe	SA-790	...	S32900	...	...	90
	33	26Cr–4Ni–Mo–N	Plate	SA-240	...	S32950	...	...	100
	34	26Cr–4Ni–Mo–N	Smls. & wld. tube	SA-789	...	S32950	...	...	100
	35	26Cr–4Ni–Mo–N	Smls. & wld. pipe	SA-790	...	S32950	...	...	100
	36	27Cr	Smls. tube	SA-268	TP446-1	S44600	...	...	70
	37	27Cr–1Mo	Forgings	SA-182	FXM-27Cb	S44627	...	...	60
	38	27Cr–1Mo	Plate	SA-240	XM-27	S44627	...	...	65
	39	27Cr–1Mo	Smls. & wld. tube	SA-268	TPXM-27	S44627	...	...	65
	40	27Cr–1Mo	Bar	SA-479	XM-27	S44627	...	...	65
	41	27Cr–1Mo	Smls. & wld. pipe	SA-731	TPXM-27	S44627	...	...	65

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	58.8	57.8	56.9	55.5	54.4	53.1	51.4	49.3	46.8	44.0	40.8	37.2	
2	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	
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	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	
5	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	
6	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	
7	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	
8	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	
9	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	
10	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	
11	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	
12	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	
13	155.0	155.0	155.0	150.7	147.7	145.5	144.1	142.2	...	...	...	...	...	...	A08
14	170.0	170.0	170.0	165.2	162.0	159.5	158.0	144.9	...	...	...	...	...	...	A08
15	190.0	190.0	190.0	184.7	181.1	178.3	176.6	174.3	...	...	...	...	...	...	A08
16	75.0	65.6	60.3	58.4	...	...	...	...	...	...	...	...	...	...	07
17	75.0	65.6	60.3	58.4	...	...	...	...	...	...	...	...	...	...	07
18	95.0	83.1	76.4	74.0	...	...	...	...	...	...	...	...	...	...	
19	95.0	83.1	76.4	74.0	...	...	...	...	...	...	...	...	...	...	
20	75.0	61.1	55.1	53.9	53.9	53.9	53.9	53.7	52.5	51.2	49.9	49.2	...	...	
21	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	
22	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	
23	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	
24	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	
25	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	
26	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	
27	85.0	85.0	84.8	83.7	83.2	82.8	82.4	81.8	...	...	...	...	...	...	
28	85.0	85.0	84.8	83.7	83.2	82.8	82.4	81.8	...	...	...	...	...	...	
29	85.0	85.0	84.8	83.7	83.2	82.8	82.4	81.8	...	...	...	...	...	...	
30	90.0	90.0	86.7	84.9	84.9	84.9	84.9	84.9	...	...	...	...	...	...	
31	90.0	90.0	86.7	84.9	84.9	84.9	84.9	84.9	...	...	...	...	...	...	
32	90.0	90.0	86.7	84.9	84.9	84.9	84.9	84.9	...	...	...	...	...	...	
33	100.0	99.7	94.6	92.5	92.5	92.5	92.5	92.5	...	...	...	...	...	...	
34	100.0	99.7	94.6	92.5	92.5	92.5	92.5	92.5	...	...	...	...	...	...	
35	100.0	99.7	94.6	92.5	92.5	92.5	92.5	92.5	...	...	...	...	...	...	
36	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	
37	60.0	60.0	58.1	56.5	56.5	56.5	56.5	...	...	...	...	...	...	...	
38	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	
39	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	
40	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	
41	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	

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
	Ferrous Materials (Cont'd)							
1	27Cr–1Mo–Ti	Smls. & wld. pipe	SA-731	TPXM-33	S44626	...	...	65
2	27Cr–1Mo–Ti	Plate	SA-240	XM-33	S44626	...	...	68
3	27Cr–1Mo–Ti	Smls. & wld. tube	SA-268	TPXM-33	S44626	...	...	68
4	29Cr–4Mo	Bar	SA-479	...	S44700	...	...	70
5	29Cr–4Mo	Plate	SA-240	...	S44700	...	...	80
6	29Cr–4Mo	Smls. & wld. tube	SA-268	29-4	S44700	...	...	80
7	29Cr–4Mo–2Ni	Bar	SA-479	...	S44800	...	...	70
8	29Cr–4Mo–2Ni	Plate	SA-240	...	S44800	...	...	80
9	29Cr–4Mo–2Ni	Smls. & wld. tube	SA-268	29-4-2	S44800	...	...	80
10	29Cr–4Mo–Ti	Smls. & wld. tube	SA-268	...	S44735	...	...	75
11	Mn–¼Mo	Forgings	SA-372	D	K14508	...	...	105
12	Mn–¼Mo–V	Castings	SA-487	2	J13005	A	...	85
13	Mn–¼Mo–V	Castings	SA-487	2	J13005	B	...	90
14	Mn–½Mo	Plate	SA-302	A	K12021	...	...	75
15	Mn–½Mo	Wld. pipe	SA-672	H75	K12021	...	...	75
16	Mn–½Mo	Plate	SA-302	B	K12022	...	...	80
17	Mn–½Mo	Plate	SA-533	A	K12521	1	...	80
18	Mn–½Mo	Plate	SA-533	A	K12521	2	...	90
19	Mn–½Mo	Plate	SA-533	A	K12521	3	...	100
20	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	1	...	80
21	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	2	...	90
22	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	3	...	100
23	Mn–½Mo–½Ni	Plate	SA-302	C	K12039	...	...	80
24	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	1	...	80
25	Mn–½Mo–½Ni	Wld. pipe	SA-672	H80	K12039	...	...	80
26	Mn–½Mo–½Ni	Wld. pipe	SA-672	J80	K12539	...	...	80
27	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	2	...	90
28	Mn–½Mo–½Ni	Wld. pipe	SA-672	J90	K12539	...	...	90
29	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	3	...	100
30	Mn–½Mo–½Ni	Wld. pipe	SA-672	J100	K12539	...	...	100
31	Mn–½Mo–¾Ni	Plate	SA-302	D	K12054	...	...	80
32	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	1	...	80
33	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	2	...	90
34	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	3	...	100
35	Mn–½Ni–V	Plate	SA-225	C	K12524	...	...	105
36	Mn–V	Castings	SA-487	1	J13002	A	...	85
37	Mn–V	Castings	SA-487	1	J13002	B	...	90
38	1½Si–½Mo	Smls. pipe	SA-335	P15	K11578	...	...	60

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	115.0	115.0	115.0	115.0	115.0	115.0	113.2	110.5	107.1	103.3	...	...	...	...
2	135.0	135.0	135.0	135.0	135.0	135.0	132.9	129.7	125.8	121.3	...	...	...	...
3	155.0	155.0	155.0	155.0	155.0	155.0	152.6	149.0	144.4	139.2	...	...	...	...
4	175.0	175.0	175.0	175.0	175.0	175.0	172.3	168.2	163.1	157.2	...	...	...	...
5	190.0	190.0	190.0	190.0	190.0	190.0	187.1	182.6	177.0	170.7	...	...	...	...
6	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
7	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
8	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
9	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
10	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
11	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
12	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
13	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
14	115.0	115.0	115.0	115.0	115.0	115.0	113.2	110.5	107.1	103.3	...	...	...	...
15	135.0	135.0	135.0	135.0	135.0	135.0	132.9	129.7	125.8	121.3	...	...	...	...
16	155.0	155.0	155.0	155.0	155.0	155.0	152.6	149.0	144.4	139.2	...	...	...	...
17	175.0	175.0	175.0	175.0	175.0	175.0	172.3	168.2	163.1	157.2	...	...	...	...
18	190.0	190.0	190.0	190.0	190.0	190.0	187.1	182.6	177.0	170.7	...	...	...	...
19	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
20	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
21	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
22	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
23	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
24	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
25	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
26	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
27	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
28	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
29	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
30	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
31	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
32	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
33	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
34	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
35	115.0	115.0	115.0	115.0	115.0	115.0	113.2	110.5	107.1	103.3	...	...	...	...
36	135.0	135.0	135.0	135.0	135.0	135.0	132.9	129.7	125.8	121.3	...	...	...	...
37	155.0	155.0	155.0	155.0	155.0	155.0	152.6	149.0	144.4	139.2	...	...	...	...
38	175.0	175.0	175.0	175.0	175.0	175.0	172.3	168.2	163.1	157.2	...	...	...	...
39	190.0	190.0	190.0	190.0	190.0	190.0	187.1	182.6	177.0	170.7	...	...	...	...

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Ferrous Materials (Cont'd)							
	1	5Ni–¼Mo	Plate	SA-645	...	K41583	...	...	95
	2	8Ni	Forgings	SA-522	II	K71340	...	...	100
	3	8Ni	Plate	SA-553	II	K71340	...	...	100
	4	9Ni	Smls. & wld. pipe	SA-333	8	K81340	...	...	100
	5	9Ni	Smls. & wld. tube	SA-334	8	K81340	...	...	100
	6	9Ni	Plate	SA-353	...	K81340	...	...	100
	7	9Ni	Smls. & wld. fittings	SA-420	WPL8	K81340	...	...	100
	8	9Ni	Forgings	SA-522	I	K81340	...	...	100
	9	9Ni	Plate	SA-553	I	K81340	...	...	100
	10	25Ni–15Cr–2Ti	Bolting	SA-453	660	S66286	A	...	130
	11	25Ni–15Cr–2Ti	Bolting	SA-453	660	S66286	B	...	130
	12	25Ni–15Cr–2Ti	Bar	SA-638	660	S66286	...	...	130
	13	27Ni–22Cr–7Mo–Mn–Cu–N	Forgings	SA-182	...	S31277	...	...	112
	14	27Ni–22Cr–7Mo–Mn–Cu–N	Smls. tube	SA-213	...	S31277	...	...	112
	15	27Ni–22Cr–7Mo–Mn–Cu–N	Plate	SA-240	...	S31277	...	...	112
	16	27Ni–22Cr–7Mo–Mn–Cu–N	Wld. tube	SA-249	...	S31277	...	...	112
	17	27Ni–22Cr–7Mo–Mn–Cu–N	Smls. & wld. pipe	SA-312	...	S31277	...	...	112
	18	27Ni–22Cr–7Mo–Mn–Cu–N	Bar	SA-479	...	S31277	...	...	112
	19	29Ni–20Cr–3Cu–2Mo	Castings	SA-351	CN7M	J95150	...	...	62
A08	20	16Cr–4Ni–6Mn	Plate	SA-240	201LN	S20153	...	...	95
	21	16Cr–9Mn–2Ni–N	Plate	SA-240	204	S20400	...	...	95
	22	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...	>5	65
07	23	16Cr–12Ni–2Mo	Forgings	SA-965	F316L	S31603	...	...	65
	24	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...	≤5	70
	25	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316L	S31603	...	...	70
	26	16Cr–12Ni–2Mo	Plate	SA-240	316L	S31603	...	...	70
	27	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316L	S31603	...	...	70
	28	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316L	S31603	...	...	70
	29	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316L	S31603	1	...	70
	30	16Cr–12Ni–2Mo	Smls. & wld. fittings	SA-403	316L	S31603	...	...	70
	31	16Cr–12Ni–2Mo	Wld. pipe	SA-409	TP316L	S31603	...	...	70
	32	16Cr–12Ni–2Mo	Bar	SA-479	316L	S31603	...	...	70
	33	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316L	S31603	...	...	70
	34	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316L	S31603	...	...	70
	35	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316L	S31603	...	...	70
A08	36	16Cr–12Ni–2Mo	Bar	SA/JIS G4303	SUS316L	...	...	...	70
	37	16Cr–12Ni–2Mo	Castings	SA-351	CF3M	J92800	...	...	70
	38	16Cr–12Ni–2Mo	Cast pipe	SA-451	CPF3M	J92800	...	...	70
	39	16Cr–12Ni–2Mo	Castings	SA-351	CF8M	J92900	...	...	70
	40	16Cr–12Ni–2Mo	Cast pipe	SA-451	CPF8M	J92900	...	...	70
	41	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...	>5	70
07	42	16Cr–12Ni–2Mo	Forgings	SA-965	F316	S31600	...	...	70

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	95.0	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	100.0	100.0	99.5	...	...	...	...	...	...	...	...	...	...	...	
3	100.0	100.0	99.5	...	...	...	...	...	...	...	...	...	...	...	
4	100.0	100.0	99.5	...	...	...	...	...	...	...	...	...	...	...	
5	100.0	100.0	99.5	...	...	...	...	...	...	...	...	...	...	...	
6	100.0	100.0	99.5	...	...	...	...	...	...	...	...	...	...	...	
7	100.0	100.0	99.5	...	...	...	...	...	...	...	...	...	...	...	
8	100.0	100.0	99.5	...	...	...	...	...	...	...	...	...	...	...	
9	100.0	100.0	99.5	...	...	...	...	...	...	...	...	...	...	...	
10	130.0	130.0	130.0	129.7	127.1	124.8	123.7	122.6	121.3	119.8	118.3	116.4	114.4	112.1	
11	130.0	130.0	130.0	129.7	127.1	124.8	123.7	122.6	121.3	119.8	118.3	116.4	114.4	112.1	
12	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	
13	112.0	103.3	97.6	93.4	90.3	87.6	86.3	85.2	84.2	83.6	...	...	...	...	
14	112.0	103.3	97.6	93.4	90.3	87.6	86.3	85.2	84.2	83.6	...	...	...	...	
15	112.0	103.3	97.6	93.4	90.3	87.6	86.3	85.2	84.2	83.6	...	...	...	...	
16	112.0	103.3	97.6	93.4	90.3	87.6	86.3	85.2	84.2	83.6	...	...	...	...	
17	112.0	103.3	97.6	93.4	90.3	87.6	86.3	85.2	84.2	83.6	...	...	...	...	
18	112.0	103.3	97.6	93.4	90.3	87.6	86.3	85.2	84.2	83.6	...	...	...	...	
19	62.0	52.4	47.7	44.6	42.4	40.6	39.9	39.2	...	...	...	...	...	...	
20	95.0	82.9	74.2	70.3	69.1	68.7	68.4	67.9	67.0	65.9	64.5	63.0	61.7	60.9	A08
21	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	
22	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	
23	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	07
24	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	
25	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	
26	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	
27	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	
28	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	
29	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	
30	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	
31	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	
32	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	
33	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	
34	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	
35	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	
36	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	A08
37	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	
38	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	
39	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	
40	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	
41	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	
42	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	07

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Ferrous Materials (Cont'd)							
	1	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...	≤ 5	75
	2	16Cr–12Ni–2Mo	Bolting	SA-193	B8M	S31600	1	...	75
	3	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316	S31600	...	...	75
	4	16Cr–12Ni–2Mo	Plate	SA-240	316	S31600	...	...	75
	5	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316	S31600	...	...	75
	6	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316	S31600	...	...	75
	7	16Cr–12Ni–2Mo	Bolting	SA-320	B8M	S31600	1	...	75
	8	16Cr–12Ni–2Mo	Bolting	SA-320	B8MA	S31600	1A	...	75
	9	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316	S31600	1	...	75
	10	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316	S31600	...	...	75
	11	16Cr–12Ni–2Mo	Smls. & wld. fittings	SA-403	316	S31600	...	...	75
	12	16Cr–12Ni–2Mo	Wld. pipe	SA-409	TP316	S31600	...	...	75
	13	16Cr–12Ni–2Mo	Bar	SA-479	316	S31600	...	...	75
	14	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316	S31600	...	...	75
	15	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316	S31600	...	...	75
	16	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316	S31600	...	...	75
A08	17	16Cr–12Ni–2Mo	Bar	SA/JIS G4303	SUS316	...	...	...	75
A08	18	16Cr–12Ni–2Mo	Plate	SA/EN 10028-7	X5CrNiMo17-12-2	...	...	≤ 3	75
	19	16Cr–12Ni–2Mo	Bolting	SA-193	B8M2	S31600	...	$2\frac{1}{2} < t \le 3$	80
	20	16Cr–12Ni–2Mo	Bolting	SA-193	B8M	S31600	2	$1\frac{1}{4} < t \le 1\frac{1}{2}$	90
	21	16Cr–12Ni–2Mo	Bolting	SA-320	B8M	S31600	2	$1\frac{1}{4} < t \le 1\frac{1}{2}$	90
	22	16Cr–12Ni–2Mo	Bolting	SA-193	B8M2	S31600	...	$2 < t \le 2\frac{1}{2}$	90
	23	16Cr–12Ni–2Mo	Bolting	SA-193	B8M	S31600	2	$1 < t \le 1\frac{1}{4}$	95
	24	16Cr–12Ni–2Mo	Bolting	SA-320	B8M	S31600	2	$1 < t \le 1\frac{1}{4}$	95
	25	16Cr–12Ni–2Mo	Bolting	SA-193	B8M2	S31600	...	≤ 2	95
	26	16Cr–12Ni–2Mo	Bolting	SA-193	B8M	S31600	2	$\frac{3}{4} < t \le 1$	100
	27	16Cr–12Ni–2Mo	Bolting	SA-320	B8M	S31600	2	$\frac{3}{4} < t \le 1$	100
	28	16Cr–12Ni–2Mo	Bolting	SA-193	B8M	S31600	2	$\le \frac{3}{4}$	110
	29	16Cr–12Ni–2Mo	Bolting	SA-320	B8M	S31600	2	$\le \frac{3}{4}$	110
	30	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...	> 5	70
07	31	16Cr–12Ni–2Mo	Forgings	SA-965	F316H	S31609	...	...	70
	32	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...	≤ 5	75
	33	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316H	S31609	...	...	75
	34	16Cr–12Ni–2Mo	Plate	SA-240	316H	S31609	...	...	75
	35	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316H	S31609	...	...	75
	36	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316H	S31609	...	...	75
	37	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316H	S31609	1	...	75
	38	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316H	S31609	...	...	75
	39	16Cr–12Ni–2Mo	Smls. & wld. fittings	SA-403	316H	S31609	...	...	75
	40	16Cr–12Ni–2Mo	Bar	SA-479	316H	S31609	...	...	75
	41	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316H	S31609	...	...	75
	42	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316H	S31609	...	...	75
	43	16Cr–12Ni–2Mo–Cb	Plate	SA-240	316Cb	S31640	...	...	75

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	A08
18	75.4	75.4	73.3	72.3	72.2	72.2	72.2	72.2	71.9	71.2	70.1	68.7	64.6	61.9	A08
19	80.0	80.0	77.2	74.4	74.4	74.4	74.4	74.4	73.9	73.5	72.2	70.4	68.6	66.9	
20	90.0	90.0	86.8	83.7	83.7	83.7	83.7	83.7	83.2	82.7	81.2	79.2	77.2	75.2	
21	90.0	90.0	86.8	83.7	83.7	83.7	83.7	83.7	83.2	82.7	81.2	79.2	77.2	75.2	
22	90.0	90.0	86.8	83.7	83.7	83.7	83.7	83.7	83.2	82.7	81.2	79.2	77.2	75.2	
23	95.0	95.0	91.6	88.3	88.3	88.3	88.3	88.3	87.8	87.3	85.7	83.6	81.5	79.4	
24	95.0	95.0	91.6	88.3	88.3	88.3	88.3	88.3	87.8	87.3	85.7	83.6	81.5	79.4	
25	95.0	95.0	91.6	88.3	88.3	88.3	88.3	88.3	87.8	87.3	85.7	83.6	81.5	79.4	
26	100.0	100.0	98.6	96.3	95.7	95.7	95.7	95.7	95.3	94.4	93.0	91.1	88.7	85.7	
27	100.0	100.0	98.6	96.3	95.7	95.7	95.7	95.7	95.3	94.4	93.0	91.1	88.7	85.7	
28	110.0	110.0	108.4	105.9	105.3	105.3	105.3	105.3	104.8	103.8	102.3	100.2	97.6	94.3	
29	110.0	110.0	108.4	105.9	105.3	105.3	105.3	105.3	104.8	103.8	102.3	100.2	97.6	94.3	
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	07
32	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	
33	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	
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	
39	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	
40	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	
41	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	
42	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	
43	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	...	...	...	

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Ferrous Materials (Cont'd)							
	1	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316LN	S31653	...	> 5	70
07	2	16Cr–12Ni–2Mo–N	Forgings	SA-965	F316LN	S31653	...	...	70
	3	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316LN	S31653	...	≤ 5	75
	4	16Cr–12Ni–2Mo–N	Smls. tube	SA-213	TP316LN	S31653	...	...	75
	5	16Cr–12Ni–2Mo–N	Plate	SA-240	316LN	S31653	...	...	75
	6	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316LN	S31653	...	...	75
	7	16Cr–12Ni–2Mo–N	Smls. & wld. pipe	SA-312	TP316LN	S31653	...	...	75
	8	16Cr–12Ni–2Mo–N	Wld. pipe	SA-358	316LN	S31653	1	...	75
	9	16Cr–12Ni–2Mo–N	Smls. pipe	SA-376	TP316LN	S31653	...	...	75
	10	16Cr–12Ni–2Mo–N	Fittings	SA-403	316LN	S31653	...	...	75
	11	16Cr–12Ni–2Mo–N	Bar	SA-479	316LN	S31653	...	...	75
	12	16Cr–12Ni–2Mo–N	Wld. tube	SA-688	TP316LN	S31653	...	...	75
	13	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316N	S31651	...	...	80
	14	16Cr–12Ni–2Mo–N	Smls. tube	SA-213	TP316N	S31651	...	...	80
	15	16Cr–12Ni–2Mo–N	Plate	SA-240	316N	S31651	...	...	80
	16	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316N	S31651	...	...	80
	17	16Cr–12Ni–2Mo–N	Smls. & wld. pipe	SA-312	TP316N	S31651	...	...	80
	18	16Cr–12Ni–2Mo–N	Wld. pipe	SA-358	316N	S31651	1	...	80
	19	16Cr–12Ni–2Mo–N	Smls. pipe	SA-376	TP316N	S31651	...	...	80
	20	16Cr–12Ni–2Mo–N	Smls. & wld. fittings	SA-403	316N	S31651	...	...	80
	21	16Cr–12Ni–2Mo–N	Bar	SA-479	316N	S31651	...	...	80
	22	16Cr–12Ni–2Mo–N	Wld. tube	SA-688	TP316N	S31651	...	...	80
	23	16Cr–12Ni–2Mo–N	Wld. pipe	SA-813	TP316N	S31651	...	...	80
	24	16Cr–12Ni–2Mo–N	Wld. pipe	SA-814	TP316N	S31651	...	...	80
07	25	16Cr–12Ni–2Mo–N	Forgings	SA-965	F316N	S31651	...	...	80
	26	16Cr–12Ni–2Mo–Ti	Plate	SA-240	316Ti	S31635	...	...	75
	27	17.5Cr–17.5Ni–5.3Si	Plate	SA-240	...	S30601	Solution ann.	...	78
	28	18Cr–3Ni–12Mn	Plate	SA-240	XM-29	S24000	...	...	100
	29	18Cr–3Ni–12Mn	Wld. tube	SA-249	XM-29	S24000	...	...	100
	30	18Cr–3Ni–12Mn	Wld. pipe	SA-312	XM-29	S24000	...	...	100
	31	18Cr–3Ni–12Mn	Bar	SA-479	XM-29	S24000	...	...	100
	32	18Cr–3Ni–12Mn	Wld. tube	SA-688	TPXM-29	S24000	...	...	100
	33	18Cr–5Ni–3Mo	Smls. & wld. tube	SA-789	...	S31500	...	...	92
	34	18Cr–5Ni–3Mo	Smls. & wld. pipe	SA-790	...	S31500	...	...	92
	35	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...	> 5	65
07	36	18Cr–8Ni	Forgings	SA-965	F304L	S30403	...	...	65
	37	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...	≤ 5	70
	38	18Cr–8Ni	Smls. tube	SA-213	TP304L	S30403	...	...	70
	39	18Cr–8Ni	Plate	SA-240	304L	S30403	...	...	70

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	66.0	62.6	60.3	59.0	58.6	58.3	57.9	57.6	57.1	56.4	55.6	54.6	
2	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	07
3	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	
4	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	
5	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	
6	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	
7	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	
8	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	
9	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	
10	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	
11	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	
12	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	
13	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	
14	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	
15	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	
16	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	
17	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	
18	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	
19	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	
20	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	
21	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	
22	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	
23	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	
24	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	
25	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	07
26	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	...	...	...	
27	78.0	78.0	74.0	70.0	66.0	...	...	...	...	...	...	...	...	...	
28	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	
29	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	
30	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	
31	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	
32	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	
33	92.0	88.8	85.4	84.8	84.8	84.8	84.8	84.8	84.8	...	...	...	...	...	
34	92.0	88.8	85.4	84.8	84.8	84.8	84.8	84.8	84.8	...	...	...	...	...	
35	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	
36	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	07
37	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	
38	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	
39	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	

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Ferrous Materials (Cont'd)							
	1	18Cr–8Ni	Wld. tube	SA-249	TP304L	S30403	...	...	70
	2	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304L	S30403	...	...	70
	3	18Cr–8Ni	Wld. pipe	SA-358	304L	S30403	1	...	70
	4	18Cr–8Ni	Smls. & wld. fittings	SA-403	304L	S30403	...	...	70
	5	18Cr–8Ni	Wld. pipe	SA-409	TP304L	S30403	...	...	70
	6	18Cr–8Ni	Bar	SA-479	304L	S30403	...	...	70
	7	18Cr–8Ni	Wld. tube	SA-688	TP304L	S30403	...	...	70
	8	18Cr–8Ni	Wld. pipe	SA-813	TP304L	S30403	...	...	70
	9	18Cr–8Ni	Wld. pipe	SA-814	TP304L	S30403	...	...	70
A08	10	18Cr–8Ni	Bar	SA/JIS G4303	SUS304L	...	...	...	70
	11	18Cr–8Ni	Forgings	SA-182	F304	S30400	...	> 5	70
	12	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...	> 5	70
	13	18Cr–8Ni	Castings	SA-351	CF3	J92500	...	...	70
	14	18Cr–8Ni	Castings	SA-351	CF8	J92600	...	...	70
	15	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...	...	70
	16	18Cr–8Ni	Cast pipe	SA-451	CPF3	J92500	...	...	70
	17	18Cr–8Ni	Cast pipe	SA-451	CPF8	J92600	...	...	70
07	18	18Cr–8Ni	Forgings	SA-965	F304	S30400	...	...	70
07	19	18Cr–8Ni	Forgings	SA-965	F304H	S30409	...	...	70
	20	18Cr–8Ni	Forgings	SA-182	F304	S30400	...	≤ 5	75
	21	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...	≤ 5	75
	22	18Cr–8Ni	Bolting	SA-193	B8	S30400	1	...	75
	23	18Cr–8Ni	Smls. tube	SA-213	TP304	S30400	...	...	75
	24	18Cr–8Ni	Smls. tube	SA-213	TP304H	S30409	...	...	75
	25	18Cr–8Ni	Plate	SA-240	302	S30200	...	...	75
	26	18Cr–8Ni	Plate	SA-240	304	S30400	...	...	75
	27	18Cr–8Ni	Plate	SA-240	304H	S30409	...	...	75
	28	18Cr–8Ni	Wld. tube	SA-249	TP304	S30400	...	...	75
	29	18Cr–8Ni	Wld. tube	SA-249	TP304H	S30409	...	...	75
	30	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304	S30400	...	...	75
	31	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304H	S30409	...	...	75
	32	18Cr–8Ni	Bolting	SA-320	B8	S30400	1	...	75
	33	18Cr–8Ni	Bolting	SA-320	B8A	S30400	1A	...	75
	34	18Cr–8Ni	Wld. pipe	SA-358	304	S30400	1	...	75
	35	18Cr–8Ni	Wld. pipe	SA-358	304H	S30409	1	...	75
	36	18Cr–8Ni	Wld. pipe	SA-358	304LN	S30453	1	...	75
	37	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...	...	75
	38	18Cr–8Ni	Smls. pipe	SA-376	TP304H	S30409	...	...	75
	39	18Cr–8Ni	Smls. & wld. fittings	SA-403	304	S30400	...	...	75
	40	18Cr–8Ni	Smls. & wld. fittings	SA-403	304H	S30409	...	...	75

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	66.1	61.2	58.7	57.5	56.9	56.7	56.4	56.0	55.4	54.6	53.6	52.3	50.7	
2	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	
3	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	
4	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	
5	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	
6	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	
7	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	
8	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	
9	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	
10	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	A08
11	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	
12	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	
13	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	
14	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	
15	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	
16	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	
17	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	
18	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	07
19	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	07
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	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	
33	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	
34	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	
35	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	
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	
37	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	
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	
40	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	

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Ferrous Materials (Cont'd)							
	1	18Cr–8Ni	Wld. pipe	SA-409	TP304	S30400	...	...	75
	2	18Cr–8Ni	Bar	SA-479	302	S30200	...	...	75
	3	18Cr–8Ni	Bar	SA-479	304	S30400	...	...	75
	4	18Cr–8Ni	Bar	SA-479	304H	S30409	...	...	75
	5	18Cr–8Ni	Wld. tube	SA-688	TP304	S30400	...	...	75
	6	18Cr–8Ni	Wld. pipe	SA-813	TP304	S30400	...	...	75
	7	18Cr–8Ni	Wld. pipe	SA-813	TP304H	S30409	...	...	75
	8	18Cr–8Ni	Wld. pipe	SA-814	TP304	S30400	...	...	75
	9	18Cr–8Ni	Wld. pipe	SA-814	TP304H	S30409	...	...	75
A08	10	18Cr–8Ni	Bar	SA/JIS G4303	SUS302	...	...	...	75
A08	11	18Cr–8Ni	Bar	SA/JIS G4303	SUS304	...	...	...	75
A08	12	18Cr–8Ni	Plate	SA/EN 10028-7	X5CrNi18-10	...	...	≤ 3	75
	13	18Cr–8Ni	Castings	SA-351	CF3A	J92500	...	...	77
	14	18Cr–8Ni	Castings	SA-351	CF8A	J92600	...	...	77
	15	18Cr–8Ni	Cast pipe	SA-451	CPF3A	J92500	...	...	77
	16	18Cr–8Ni	Cast pipe	SA-451	CPF8A	J92600	...	...	77
	17	18Cr–8Ni–N	Forgings	SA-182	F304LN	S30453	...	> 5	70
07	18	18Cr–8Ni–N	Forgings	SA-965	F304LN	S30453	...	...	70
	19	18Cr–8Ni–N	Forgings	SA-182	F304LN	S30453	...	≤ 5	75
	20	18Cr–8Ni–N	Bolting	SA-193	B8NA	S30451	1A	...	75
	21	18Cr–8Ni–N	Smls. tube	SA-213	TP304LN	S30453	...	...	75
	22	18Cr–8Ni–N	Plate	SA-240	304LN	S30453	...	...	75
	23	18Cr–8Ni–N	Wld. tube	SA-249	TP304LN	S30453	...	...	75
	24	18Cr–8Ni–N	Smls. & wld. pipe	SA-312	TP304LN	S30453	...	...	75
	25	18Cr–8Ni–N	Smls. pipe	SA-376	TP304LN	S30453	...	...	75
	26	18Cr–8Ni–N	Smls. & wld. fittings	SA-403	304LN	S30453	WP	...	75
	27	18Cr–8Ni–N	Bar	SA-479	304LN	S30453	...	...	75
	28	18Cr–8Ni–N	Wld. tube	SA-688	TP304LN	S30453	...	...	75
	29	18Cr–8Ni–N	Wld. pipe	SA-813	TP304LN	S30453	...	...	75
	30	18Cr–8Ni–N	Wld. pipe	SA-814	TP304LN	S30453	...	...	75
	31	18Cr–8Ni–N	Forgings	SA-182	F304N	S30451	...	...	80
	32	18Cr–8Ni–N	Smls. tube	SA-213	TP304N	S30451	...	...	80
	33	18Cr–8Ni–N	Plate	SA-240	304N	S30451	...	...	80
	34	18Cr–8Ni–N	Wld. tube	SA-249	TP304N	S30451	...	...	80
	35	18Cr–8Ni–N	Smls. & wld. pipe	SA-312	TP304N	S30451	...	...	80
	36	18Cr–8Ni–N	Wld. pipe	SA-358	304N	S30451	1	...	80
	37	18Cr–8Ni–N	Smls. pipe	SA-376	TP304N	S30451	...	...	80
	38	18Cr–8Ni–N	Smls. & wld. fittings	SA-403	304N	S30451	...	...	80
	39	18Cr–8Ni–N	Bar	SA-479	304N	S30451	...	...	80
	40	18Cr–8Ni–N	Wld. tube	SA-688	TP304N	S30451	...	...	80
	41	18Cr–8Ni–N	Wld. pipe	SA-813	TP304N	S30451	...	...	80
	42	18Cr–8Ni–N	Wld. pipe	SA-814	TP304N	S30451	...	...	80
07	43	18Cr–8Ni–N	Forgings	SA-965	F304N	S30451	...	...	80

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	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	A08
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	A08
12	75.4	71.4	66.6	64.3	63.7	63.4	63.4	63.4	63.4	63.1	62.3	61.2	59.6	57.7	A08
13	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	
14	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	
15	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	
16	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	
17	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	
18	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	07
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	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	
32	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	
33	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	
34	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	
35	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	
36	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	
37	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	
38	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	
39	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	
40	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	
41	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	
42	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	
43	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	07

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Ferrous Materials (Cont'd)							
	1	18Cr–8Ni–S	Bolting	SA-320	B8F	S30323	1	...	75
	2	18Cr–8Ni–S	Bolting	SA-320	B8FA	S30323	1A	...	75
	3	18Cr–8Ni–4Si–N	Bar	SA-479	...	S21800	...	...	95
07	4	18Cr–10Ni–Cb	Forgings	SA-965	F348H	S34809	...	...	65
	5	18Cr–10Ni–Cb	Castings	SA-351	CF8C	J92710	...	...	70
	6	18Cr–10Ni–Cb	Cast pipe	SA-451	CPF8C	J92710	...	...	70
	7	18Cr–10Ni–Cb	Forgings	SA-182	F347	S34700	...	> 5	70
07	8	18Cr–10Ni–Cb	Forgings	SA-965	F347	S34700	...	...	70
	9	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...	> 5	70
07	10	18Cr–10Ni–Cb	Forgings	SA-965	F347H	S34709	...	...	70
	11	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...	> 5	70
07	12	18Cr–10Ni–Cb	Forgings	SA-965	F348	S34800	...	...	70
	13	18Cr–10Ni–Cb	Forgings	SA-182	F348H	S34809	...	> 5	70
	14	18Cr–10Ni–Cb	Forgings	SA-182	F347	S34700	...	≤ 5	75
	15	18Cr–10Ni–Cb	Bolting	SA-193	B8C	S34700	1	...	75
	16	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347	S34700	...	...	75
	17	18Cr–10Ni–Cb	Plate	SA-240	347	S34700	...	...	75
	18	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347	S34700	...	...	75
	19	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP347	S34700	...	...	75
	20	18Cr–10Ni–Cb	Bolting	SA-320	B8C	S34700	1	...	75
	21	18Cr–10Ni–Cb	Bolting	SA-320	B8CA	S34700	1A	...	75
	22	18Cr–10Ni–Cb	Wld. pipe	SA-358	347	S34700	1	...	75
	23	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347	S34700	...	...	75
	24	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	347	S34700	...	...	75
	25	18Cr–10Ni–Cb	Wld. pipe	SA-409	TP347	S34700	...	...	75
	26	18Cr–10Ni–Cb	Bar	SA-479	347	S34700	...	...	75
	27	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP347	S34700	...	...	75
A08	28	18Cr–10Ni–Cb	Bar	SA/JIS G4303	SUS347	...	...	...	75
	29	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...	≤ 5	75
	30	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347H	S34709	...	...	75
	31	18Cr–10Ni–Cb	Plate	SA-240	347H	S34709	...	...	75
	32	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347H	S34709	...	...	75
	33	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP347H	S34709	...	...	75
	34	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347H	S34709	...	...	75
	35	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	347H	S34709	...	...	75
	36	18Cr–10Ni–Cb	Bar	SA-479	347H	S34709	...	...	75
	37	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP347H	S34709	...	...	75
	38	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP347H	S34709	...	...	75

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	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	
4	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	07
5	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	
6	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	
7	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	
8	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	07
9	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	
10	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	07
11	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	
12	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	07
13	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	
14	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	
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	71.7	65.9	62.1	60.0	59.1	58.9	58.8	58.8	58.8	58.7	58.5	58.1	57.5	
17	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	
18	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	
19	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	
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	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5	
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	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5	
28	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	A08
29	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	
30	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	
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	71.8	65.9	62.1	60.0	59.0	58.9	58.8	58.8	58.8	58.7	58.5	58.2	57.5	
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	

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Ferrous Materials (Cont'd)							
	1	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...	≤ 5	75
	2	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348	S34800	...	...	75
	3	18Cr–10Ni–Cb	Plate	SA-240	348	S34800	...	...	75
	4	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348	S34800	...	...	75
	5	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP348	S34800	...	...	75
	6	18Cr–10Ni–Cb	Wld. pipe	SA-358	348	S34800	1	...	75
	7	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP348	S34800	...	...	75
	8	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	348	S34800	...	...	75
	9	18Cr–10Ni–Cb	Wld. pipe	SA-409	TP348	S34800	...	...	75
	10	18Cr–10Ni–Cb	Bar	SA-479	348	S34800	...	...	75
	11	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP348	S34800	...	...	75
	12	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP348	S34800	...	...	75
	13	18Cr–10Ni–Cb	Forgings	SA-182	F348H	S34809	...	≤ 5	75
	14	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348H	S34809	...	...	75
	15	18Cr–10Ni–Cb	Plate	SA-240	348H	S34809	...	...	75
	16	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348H	S34809	...	...	75
	17	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP348H	S34809	...	...	75
	18	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	348H	S34809	...	...	75
	19	18Cr–10Ni–Cb	Bar	SA-479	348H	S34809	...	...	75
	20	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP348H	S34809	...	...	75
	21	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP348H	S34809	...	...	75
	22	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347HFG	S34710	...	...	80
	23	18Cr–10Ni–Ti	Smls. & wld. pipe	SA-312	TP321	S32100	...	> 3/8	70
	24	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...	> 3/8	70
	25	18Cr–10Ni–Ti	Smls. & wld. pipe	SA-312	TP321H	S32109	...	> 3/16	70
	26	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321H	S32109	...	> 3/8	70
	27	18Cr–10Ni–Ti	Forgings	SA-182	F321	S32100	...	> 5	70
07	28	18Cr–10Ni–Ti	Forgings	SA-965	F321	S32100	...	...	70
	29	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...	> 5	70
07	30	18Cr–10Ni–Ti	Forgings	SA-965	F321H	S32109	...	...	70
	31	18Cr–10Ni–Ti	Forgings	SA-182	F321	S32100	...	≤ 5	75
	32	18Cr–10Ni–Ti	Bolting	SA-193	B8T	S32100	1	...	75
	33	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321	S32100	...	...	75
	34	18Cr–10Ni–Ti	Plate	SA-240	321	S32100	...	...	75
	35	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321	S32100	...	...	75
	36	18Cr–10Ni–Ti	Smls. & wld. pipe	SA-312	TP321	S32100	...	≤ 3/8	75
	37	18Cr–10Ni–Ti	Bolting	SA-320	B8T	S32100	1	...	75
	38	18Cr–10Ni–Ti	Bolting	SA-320	B8TA	S32100	1A	...	75
	39	18Cr–10Ni–Ti	Wld. pipe	SA-358	321	S32100	1	...	75
	40	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...	≤ 3/8	75
	41	18Cr–10Ni–Ti	Smls. & wld. fittings	SA-403	321	S32100	...	...	75
	42	18Cr–10Ni–Ti	Wld. pipe	SA-409	TP321	S32100	...	...	75

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	80.0	77.7	72.8	69.6	67.7	66.7	66.4	66.2	66.0	65.8	65.4	64.9	64.3	63.3	
23	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	
24	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	
25	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	
26	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	
27	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	
28	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	07
29	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	
30	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	07
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	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8	
37	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	
38	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	
39	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	
40	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	
41	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	
42	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	

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Ferrous Materials (Cont'd)							
	1	18Cr–10Ni–Ti	Bar	SA-479	321	S32100	...	...	75
	2	18Cr–10Ni–Ti	Wld. pipe	SA-813	TP321	S32100	...	...	75
	3	18Cr–10Ni–Ti	Wld. pipe	SA-814	TP321	S32100	...	...	75
A08	4	18Cr–10Ni–Ti	Bar	SA/JIS G4303	SUS321	...	...	...	75
	5	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...	≤ 5	75
	6	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321H	S32109	...	...	75
	7	18Cr–10Ni–Ti	Plate	SA-240	321H	S32109	...	...	75
	8	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321H	S32109	...	...	75
	9	18Cr–10Ni–Ti	Smls. & wld. pipe	SA-312	TP321H	S32109	...	≤ 3/16	75
	10	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321H	S32109	...	≤ 3/8	75
	11	18Cr–10Ni–Ti	Smls. & wld. fittings	SA-403	321H	S32109	...	...	75
	12	18Cr–10Ni–Ti	Bar	SA-479	321H	S32109	...	...	75
	13	18Cr–10Ni–Ti	Wld. pipe	SA-813	TP321H	S32109	...	...	75
	14	18Cr–10Ni–Ti	Wld. pipe	SA-814	TP321H	S32109	...	...	75
	15	18Cr–11Ni	Plate	SA-240	305	S30500	...	...	75
	16	18Cr–13Ni–3Mo	Forgings	SA-182	F317L	S31703	...	> 5	65
	17	18Cr–13Ni–3Mo	Forgings	SA-182	F317L	S31703	...	≤ 5	70
	18	18Cr–13Ni–3Mo	Forgings	SA-182	F317	S31700	...	≤ 5	75
	19	18Cr–13Ni–3Mo	Plate	SA-240	317	S31700	...	...	75
	20	18Cr–13Ni–3Mo	Plate	SA-240	317L	S31703	...	...	75
	21	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317	S31700	...	...	75
	22	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317L	S31703	...	...	75
	23	18Cr–13Ni–3Mo	Smls. & wld. pipe	SA-312	TP317	S31700	...	...	75
	24	18Cr–13Ni–3Mo	Smls. & wld. pipe	SA-312	TP317L	S31703	...	...	75
	25	18Cr–13Ni–3Mo	Smls. & wld. fittings	SA-403	317	S31700	...	...	75
	26	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	...	...	75
	27	18Cr–15Ni–4Si	Forgings	SA-182	...	S30600	Solution ann.	...	78
	28	18Cr–15Ni–4Si	Plate	SA-240	...	S30600	Solution ann.	≤ 2	78
	29	18Cr–15Ni–4Si	Smls. & wld. pipe	SA-312	...	S30600	Solution ann.	...	78
	30	18Cr–15Ni–4Si	Bar	SA-479	...	S30600	Solution ann.	≤ 4	78
	31	18Cr–18Ni–2Si	Smls. tube	SA-213	XM-15	S38100	...	...	75
	32	18Cr–18Ni–2Si	Plate	SA-240	XM-15	S38100	...	...	75
	33	18Cr–18Ni–2Si	Wld. tube	SA-249	TPXM-15	S38100	...	...	75
	34	18Cr–18Ni–2Si	Wld. pipe	SA-312	TPXM-15	S38100	...	...	75
	35	18Cr–20Ni–5.5Si	Smls. tube	SA-213	...	S32615	Solution ann.	...	80
	36	18Cr–20Ni–5.5Si	Plate	SA-240	...	S32615	Solution ann.	...	80
	37	18Cr–20Ni–5.5Si	Smls. & wld. pipe	SA-312	...	S32615	Solution ann.	...	80
	38	18Cr–20Ni–5.5Si	Bar	SA-479	...	S32615	Solution ann.	...	80
	39	19Cr–9Ni–½Mo	Castings	SA-351	CF10	J92590	...	...	70
	40	19Cr–9Ni–Mo–W	Bolting	SA-453	651	S63198	B	...	95
	41	19Cr–9Ni–Mo–W	Bolting	SA-453	651	S63198	A	...	100
	42	19Cr–9Ni–2Mo	Castings	SA-351	CF10M	...	...	...	70
	43	19Cr–10Ni–3Mo	Castings	SA-351	CG8M	J93000	...	...	75

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	71.1	66.9	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	63.8	
2	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	
3	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	
4	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	A08
5	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	
6	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	
7	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	
8	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	
9	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	
10	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	
11	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	
12	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	
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	71.0	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	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	
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	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	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	
21	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	
22	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	
23	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	
24	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	
25	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	
26	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	
27	78.0	74.6	68.6	...	...	...	...	...	...	...	...	...	...	...	
28	78.0	74.6	68.6	...	...	...	...	...	...	...	...	...	...	...	
29	78.0	74.6	68.6	...	...	...	...	...	...	...	...	...	...	...	
30	78.0	74.6	68.6	...	...	...	...	...	...	...	...	...	...	...	
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	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	
33	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	
34	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	
35	80.0	79.6	76.0	73.6	...	...	...	...	...	...	...	...	...	...	
36	80.0	79.6	76.0	73.6	...	...	...	...	...	...	...	...	...	...	
37	80.0	79.6	76.0	73.6	...	...	...	...	...	...	...	...	...	...	
38	80.0	79.6	76.0	73.6	...	...	...	...	...	...	...	...	...	...	
39	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	
40	95.0	93.7	88.4	85.1	83.2	82.2	81.8	81.3	80.7	79.9	78.8	77.3	75.4	73.0	
41	100.0	98.6	93.0	89.6	87.6	86.5	86.1	85.6	84.9	84.1	82.9	81.4	79.4	76.8	
42	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	
43	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	

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
	Ferrous Materials (Cont'd)							
1	19Cr–15Ni–4Mo	Smls. tube	SA-213	...	S31725	...	...	75
2	19Cr–15Ni–4Mo	Plate	SA-240	...	S31725	...	...	75
3	19Cr–15Ni–4Mo	Wld. tube	SA-249	...	S31725	...	...	75
4	19Cr–15Ni–4Mo	Smls. & wld. pipe	SA-312	...	S31725	...	...	75
5	19Cr–15Ni–4Mo	Wld. pipe	SA-358	...	S31725	...	...	75
6	19Cr–15Ni–4Mo	Smls. pipe	SA-376	...	S31725	...	...	75
7	19Cr–15Ni–4Mo	Wld. pipe	SA-409	...	S31725	...	...	75
8	19Cr–15Ni–4Mo	Bar	SA-479	...	S31725	...	...	75
9	20Cr–10Ni	Bar	SA-479	ER308	S30880	...	...	75
10	20Cr–18Ni–6Mo	Castings	SA-351	CK3MCuN	J93254	...	...	80
11	20Cr–18Ni–6Mo	Forgings	SA-182	F44	S31254	...	...	94
12	20Cr–18Ni–6Mo	Wld. tube	SA-249	...	S31254	...	...	94
13	20Cr–18Ni–6Mo	Smls. & wld. pipe	SA-312	...	S31254	...	...	94
14	20Cr–18Ni–6Mo	Wld. pipe	SA-358	...	S31254	...	...	94
15	20Cr–18Ni–6Mo	Plate	SA-240	...	S31254	...	...	100
16	21Cr–6Ni–9Mn	Forgings	SA-182	FXM-11	S21904	...	...	90
17	21Cr–6Ni–9Mn	Smls. & wld. pipe	SA-312	TPXM-11	S21904	...	...	90
18	21Cr–6Ni–9Mn	Plate	SA-666	XM-11	S21904	...	...	90
07 19	21Cr–6Ni–9Mn	Forgings	SA-965	FXM-11	S21904	...	...	90
20	21Cr–11Ni–N	Forgings	SA-182	F45	S30815	...	...	87
21	21Cr–11Ni–N	Smls. tube	SA-213	...	S30815	...	...	87
22	21Cr–11Ni–N	Plate	SA-240	...	S30815	...	...	87
23	21Cr–11Ni–N	Wld. tube	SA-249	...	S30815	...	...	87
24	21Cr–11Ni–N	Smls. & wld. pipe	SA-312	...	S30815	...	...	87
25	21Cr–11Ni–N	Bar	SA-479	...	S30815	...	...	87
26	22Cr–5Ni–3Mo–N	Forgings	SA-182	F51	S31803	...	...	90
27	22Cr–5Ni–3Mo–N	Plate	SA-240	...	S31803	...	...	90
28	22Cr–5Ni–3Mo–N	Bar	SA-479	...	S31803	...	...	90
29	22Cr–5Ni–3Mo–N	Smls. & wld. tube	SA-789	...	S31803	...	...	90
30	22Cr–5Ni–3Mo–N	Smls. & wld. pipe	SA-790	...	S31803	...	...	90
31	22Cr–5Ni–3Mo–N	Smls. & wld. fittings	SA-815	...	S31803	...	...	90
32	22Cr–13Ni–5Mn	Castings	SA-351	CG6MMN	J93790	...	...	85
33	22Cr–13Ni–5Mn	Forgings	SA-182	FXM-19	S20910	...	...	100
34	22Cr–13Ni–5Mn	Bolting	SA-193	B8R	S20910	Annealed	...	100
35	22Cr–13Ni–5Mn	Bolting	SA-193	B8RA	S20910	Annealed	...	100
36	22Cr–13Ni–5Mn	Smls. tube	SA-213	XM-19	S20910	...	...	100
37	22Cr–13Ni–5Mn	Plate	SA-240	XM-19	S20910	...	...	100
38	22Cr–13Ni–5Mn	Wld. tube	SA-249	TPXM-19	S20910	...	...	100

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	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
2	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
3	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
4	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
5	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
6	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
7	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
8	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
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	80.0	80.0	76.0	72.5	70.0	68.4	68.0	67.7	67.4	67.0	66.4	...	...	...
11	94.0	94.0	89.4	85.2	82.2	80.4	79.9	79.5	79.2	78.7	78.0	...	...	...
12	94.0	94.0	89.4	85.2	82.2	80.4	79.9	79.5	79.2	78.7	78.0	...	...	...
13	94.0	94.0	89.4	85.2	82.2	80.4	79.9	79.5	79.2	78.7	78.0	...	...	...
14	94.0	94.0	89.4	85.2	82.2	80.4	79.9	79.5	79.2	78.7	78.0	...	...	...
15	100.0	100.0	95.1	90.6	87.5	85.6	85.0	84.6	84.2	83.3	83.0	...	...	...
16	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
17	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
18	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
19	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 07
20	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
21	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
22	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
23	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
24	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
25	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
26	90.0	90.0	86.8	83.5	81.6	80.7	80.5	...	...	...	...	...	...	...
27	90.0	90.0	86.8	83.5	81.6	80.7	80.5	...	...	...	...	...	...	...
28	90.0	90.0	86.8	83.5	81.6	80.7	80.5	...	...	...	...	...	...	...
29	90.0	90.0	86.8	83.5	81.6	80.7	80.5	...	...	...	...	...	...	...
30	90.0	90.0	86.8	83.5	81.6	80.7	80.5	...	...	...	...	...	...	...
31	90.0	90.0	86.8	83.5	81.6	80.7	80.5	...	...	...	...	...	...	...
32	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
33	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
34	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
35	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
36	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
37	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
38	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

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Ferrous Materials (Cont'd)							
	1	22Cr–13Ni–5Mn	Smls. & wld. pipe	SA-312	TPXM-19	S20910	...	...	100
	2	22Cr–13Ni–5Mn	Wld. pipe	SA-358	XM-19	S20910	1	...	100
	3	22Cr–13Ni–5Mn	Smls. & wld. fittings	SA-403	XM-19	S20910	...	...	100
	4	22Cr–13Ni–5Mn	Bar	SA-479	XM-19	S20910	Annealed	...	100
	5	22Cr–13Ni–5Mn	Bar	SA-479	XM-19	S20910	Hot rolled	$3 < t \le 8$	100
	6	22Cr–13Ni–5Mn	Wld. pipe	SA-813	TPXM-19	S20910	...	...	100
	7	22Cr–13Ni–5Mn	Wld. pipe	SA-814	TPXM-19	S20910	...	...	100
07	8	22Cr–13Ni–5Mn	Forgings	SA-965	FXM-19	S20910	...	...	100
	9	22Cr–13Ni–5Mn	Bar	SA-479	XM-19	S20910	Hot rolled	$2 < t \le 3$	115
	10	22Cr–13Ni–5Mn	Bar	SA-479	XM-19	S20910	Hot rolled	≤ 2	135
	11	23Cr–4Ni–Mo–Cu	Plate	SA-240	...	S32304	...	...	87
	12	23Cr–4Ni–Mo–Cu–N	Smls. & wld. tube	SA-789	...	S32304	...	> 1	87
	13	23Cr–4Ni–Mo–Cu–N	Smls. & wld. pipe	SA-790	...	S32304	...	...	87
	14	23Cr–4Ni–Mo–Cu–N	Smls. & wld. tube	SA-789	...	S32304	...	≤ 1	100
	15	23Cr–12Ni	Smls. & wld. fittings	SA-403	309	S30900	...	...	75
	16	23Cr–12Ni	Smls. tube	SA-213	TP309S	S30908	...	...	75
	17	23Cr–12Ni	Plate	SA-240	309S	S30908	...	...	75
	18	23Cr–12Ni	Wld. tube	SA-249	TP309S	S30908	...	...	75
	19	23Cr–12Ni	Smls. & wld. pipe	SA-312	TP309S	S30908	...	...	75
	20	23Cr–12Ni	Wld. pipe	SA-358	309S	S30908	1	...	75
	21	23Cr–12Ni	Bar	SA-479	309S	S30908	...	...	75
	22	23Cr–12Ni	Wld. pipe	SA-813	TP309S	S30908	...	...	75
	23	23Cr–12Ni	Wld. pipe	SA-814	TP309S	S30908	...	...	75
A08	24	23Cr–12Ni	Bar	SA/JIS G4303	SUS309S	...	...	...	75
	25	23Cr–12Ni	Smls. tube	SA-213	TP309H	S30909	...	...	75
	26	23Cr–12Ni	Plate	SA-240	309H	S30909	...	...	75
	27	23Cr–12Ni	Wld. tube	SA-249	TP309H	S30909	...	...	75
	28	23Cr–12Ni	Smls. & wld. pipe	SA-312	TP309H	S30909	...	...	75
	29	23Cr–12Ni	Bar	SA-479	309H	S30909	...	...	75
	30	23Cr–12Ni–Cb	Smls. tube	SA-213	TP309Cb	S30940	...	...	75
	31	23Cr–12Ni–Cb	Plate	SA-240	309Cb	S30940	...	...	75
	32	23Cr–12Ni–Cb	Wld. tube	SA-249	TP309Cb	S30940	...	...	75
	33	23Cr–12Ni–Cb	Smls. & wld. pipe	SA-312	TP309Cb	S30940	...	...	75
	34	23Cr–12Ni–Cb	Bar	SA-479	309Cb	S30940	...	...	75
	35	23Cr–12Ni–Cb	Wld. pipe	SA-813	TP309Cb	S30940	...	...	75
	36	23Cr–12Ni–Cb	Wld. pipe	SA-814	TP309Cb	S30940	...	...	75
	37	24Cr–10Ni–4Mo–N	Castings	SA-995	2A	J93345	...	...	95
	38	25Cr–4Ni–4Mo–Ti	Plate	SA-240	...	S44635	...	...	90
	39	25Cr–4Ni–4Mo–Ti	Wld. tube	SA-268	...	S44635	...	...	90

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	99.4	94.2	91.1	89.1	87.7	87.0	86.4	85.6	84.8	83.8	82.6	81.3	79.7	
2	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	
3	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	
4	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	
5	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	
6	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	
7	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	
8	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	07
9	115.0	114.3	108.4	104.7	102.5	100.8	100.1	99.3	98.4	97.5	96.3	95.0	93.5	91.7	
10	135.0	134.1	127.2	123.0	120.3	118.4	117.5	116.6	115.6	114.4	113.1	111.5	109.7	107.6	
11	87.0	83.9	78.7	76.0	74.6	73.5	72.9	72.1	71.2	70.3	...	...	...	...	
12	87.0	83.9	78.7	76.0	74.6	73.5	72.9	72.1	71.2	70.3	...	...	...	...	
13	87.0	83.9	78.7	76.0	74.6	73.5	72.9	72.1	71.2	70.3	...	...	...	...	
14	100.0	96.5	90.6	87.6	86.1	84.9	84.2	83.4	...	...	...	...	...	...	
15	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	
16	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	
17	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	
18	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	
19	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	
20	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	
21	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	
22	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	
23	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	
24	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	A08
25	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	
26	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	
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	95.0	94.9	87.8	84.6	84.6	84.6	84.6	81.3	...	...	...	...	...	...	
38	90.0	87.1	82.1	78.8	77.0	76.3	75.7	...	...	...	...	...	...	...	
39	90.0	87.1	82.1	78.8	77.0	76.3	75.7	...	...	...	...	...	...	...	

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Ferrous Materials (Cont'd)							
	1	25Cr–5Ni–3Mo–2Cu	Castings	SA-995	1B	J93372	...	...	100
	2	25Cr–5Ni–3Mo–2Cu	Plate	SA-240	...	S32550	...	...	110
	3	25Cr–5Ni–3Mo–2Cu	Bar	SA-479	...	S32550	...	...	110
	4	25Cr–5Ni–3Mo–2Cu	Smls. & wld. tube	SA-789	...	S32550	...	...	110
	5	25Cr–5Ni–3Mo–2Cu	Smls. & wld. pipe	SA-790	...	S32550	...	...	110
	6	25Cr–6Ni–Mo–N	Plate	SA-240	...	S31200	...	...	100
	7	25Cr–6.5Ni–3Mo–N	Smls. & wld. tube	SA-789	...	S31260	...	...	100
	8	25Cr–6.5Ni–3Mo–N	Smls. & wld. pipe	SA-790	...	S31260	...	...	100
	9	25Cr–6.5Ni–3Mo–N	Plate	SA-240	...	S31260	...	...	100
07	10	25Cr–7Ni–3Mo–W–Cu–N	Forgings	SA-182	F54	S39274	...	...	116
07	11	25Cr–7Ni–3Mo–W–Cu–N	Smls. & wld. tube	SA-789	...	S39274	...	...	116
07	12	25Cr–7Ni–3Mo–W–Cu–N	Smls. & wld. pipe	SA-790	...	S39274	...	...	116
07	13	25Cr–7Ni–4Mo–N	Forgings	SA-182	F53	S32750	...	...	116
07	14	25Cr–7Ni–4Mo–N	Plate	SA-240	...	S32750	...	...	116
	15	25Cr–7Ni–4Mo–N	Smls. & wld. tube	SA-789	...	S32750	...	≤1	116
	16	25Cr–7Ni–4Mo–N	Smls. & wld. pipe	SA-790	...	S32750	...	≤1	116
	17	25Cr–12Ni	Castings	SA-351	CH8	J93400	...	...	65
	18	25Cr–12Ni	Cast pipe	SA-451	CPH8	J93400	...	...	65
	19	25Cr–12Ni	Castings	SA-351	CH20	J93402	...	...	70
	20	25Cr–12Ni	Cast pipe	SA-451	CPH20	J93402	...	...	70
	21	25Cr–20Ni	Castings	SA-351	CK20	J94202	...	...	65
	22	25Cr–20Ni	Cast pipe	SA-451	CPK20	J94202	...	...	65
	23	25Cr–20Ni	Forgings	SA-182	F310	S31000	...	≤5	75
07	24	25Cr–20Ni	Forgings	SA-965	F310	S31000	...	...	75
	25	25Cr–20Ni	Smls. tube	SA-213	TP310S	S31008	...	...	75
	26	25Cr–20Ni	Plate	SA-240	310S	S31008	...	...	75
	27	25Cr–20Ni	Wld. tube	SA-249	TP310S	S31008	...	...	75
	28	25Cr–20Ni	Smls. & wld. pipe	SA-312	TP310S	S31008	...	...	75
	29	25Cr–20Ni	Wld. pipe	SA-358	310S	S31008	1	...	75
	30	25Cr–20Ni	Smls. & wld. fittings	SA-403	310S	S31008	...	...	75
	31	25Cr–20Ni	Bar	SA-479	310S	S31008	...	...	75
	32	25Cr–20Ni	Wld. pipe	SA-813	TP310S	S31008	...	...	75
	33	25Cr–20Ni	Wld. pipe	SA-814	TP310S	S31008	...	...	75
A08	34	25Cr–20Ni	Bar	SA/JIS G4303	SUS310S	...	...	...	75
	35	25Cr–20Ni	Smls. tube	SA-213	TP310H	S31009	...	...	75
	36	25Cr–20Ni	Plate	SA-240	310H	S31009	...	...	75
	37	25Cr–20Ni	Wld. tube	SA-249	TP310H	S31009	...	...	75
	38	25Cr–20Ni	Smls. & wld. pipe	SA-312	TP310H	S31009	...	...	75
	39	25Cr–20Ni	Bar	SA-479	310H	S31009	...	...	75

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	110.0	109.6	103.4	100.1	98.7	...	...	...	...	...	...	...	...	...	
3	110.0	109.6	103.4	100.1	98.7	...	...	...	...	...	...	...	...	...	
4	110.0	109.6	103.4	100.1	98.7	...	...	...	...	...	...	...	...	...	
5	110.0	109.6	103.4	100.1	98.7	...	...	...	...	...	...	...	...	...	
6	100.0	100.0	94.8	92.0	91.5	91.5	...	...	...	...	...	...	...	...	
7	100.0	99.9	94.9	92.5	92.2	92.2	92.2	...	...	...	...	...	...	...	
8	100.0	99.9	94.9	92.5	92.2	92.2	92.2	...	...	...	...	...	...	...	
9	100.0	99.9	94.9	92.5	92.2	92.2	92.2	...	...	...	...	...	...	...	
10	116.0	116.0	110.5	109.9	109.9	109.9	109.9	109.9	109.9	...	...	...	...	...	07
11	116.0	116.0	110.5	109.9	109.9	109.9	109.9	109.9	109.9	...	...	...	...	...	07
12	116.0	116.0	110.5	109.9	109.9	109.9	109.9	109.9	109.9	...	...	...	...	...	07
13	116.0	115.5	109.1	105.4	103.6	103.0	...	...	...	...	...	...	...	...	07
14	116.0	115.5	109.1	105.4	103.6	103.0	...	...	...	...	...	...	...	...	07
15	116.0	115.5	109.1	105.4	103.6	103.0	...	...	...	...	...	...	...	...	
16	116.0	115.5	109.1	105.4	103.6	103.0	...	...	...	...	...	...	...	...	
17	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	
18	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	
19	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	
20	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	
21	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	
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	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	
24	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	07
25	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	
26	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	
27	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	
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	A08
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	
39	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	

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Ferrous Materials (Cont'd)							
	1	25Cr–20Ni–Cb	Smls. tube	SA-213	TP310Cb	S31040	...	...	75
	2	25Cr–20Ni–Cb	Plate	SA-240	310Cb	S31040	...	...	75
	3	25Cr–20Ni–Cb	Wld. tube	SA-249	TP310Cb	S31040	...	...	75
	4	25Cr–20Ni–Cb	Smls. & wld. pipe	SA-312	TP310Cb	S31040	...	...	75
	5	25Cr–20Ni–Cb	Bar	SA-479	310Cb	S31040	...	...	75
	6	25Cr–20Ni–Cb	Wld. pipe	SA-813	TP310Cb	S31040	...	...	75
	7	25Cr–20Ni–Cb	Wld. pipe	SA-814	TP310Cb	S31040	...	...	75
07	8	25Cr–22Ni–2Mo–N	Forgings	SA-182	F310MoLN	S31050	...	...	78
	9	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...	$0.250 < t \le 1.250$	78
	10	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...	$0.250 < t \le 1.250$	78
	11	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...	$0.250 < t \le 1.250$	78
	12	25Cr–22Ni–2Mo–N	Plate	SA-240	310MoLN	S31050	...	...	80
	13	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...	≤ 0.250, wall	84
	14	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...	≤ 0.250, wall	84
	15	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...	≤ 0.250, wall	84
07	16	29Cr–6.5Ni–2Mo–N	Plate, sheet, strip	SA-240	...	S32906	...	≥ 0.40	109
07	17	29Cr–6.5Ni–2Mo–N	Bar	SA-479	...	S32906	...	...	109
07	18	29Cr–6.5Ni–2Mo–N	Smls. tube	SA-789	...	S32906	...	≥ 0.40	109
07	19	29Cr–6.5Ni–2Mo–N	Smls. pipe	SA-790	...	S32906	...	≥ 0.40	109
07	20	29Cr–6.5Ni–2Mo–N	Plate, sheet, strip	SA-240	...	S32906	...	< 0.40	116
07	21	29Cr–6.5Ni–2Mo–N	Smls. tube	SA-789	...	S32906	...	< 0.40	116
07	22	29Cr–6.5Ni–2Mo–N	Smls. pipe	SA-790	...	S32906	...	< 0.40	116

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	
1	28.0	25.4	23.4	22.1	...	...	...	...	...	...	...	...	...	...	
2	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	
3	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	
4	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
5	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
6	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
7	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
8	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
9	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	
10	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...	
11	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...	
12	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...	
13	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...	
14	45.0	45.0	43.9	38.2	...	...	...	...	...	...	...	...	...	...	
15	45.0	45.0	43.9	38.2	...	...	...	...	...	...	...	...	...	...	
16	45.0	45.0	43.9	38.2	...	...	...	...	...	...	...	...	...	...	
17	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
18	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
19	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
20	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
21	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
22	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	
23	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
24	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
25	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
26	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
27	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
28	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	
29	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
30	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
31	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
32	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
33	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
34	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	
35	28.0	25.4	23.4	22.1	...	...	...	...	...	...	...	...	...	...	07
36	28.0	25.4	23.4	22.1	...	...	...	...	...	...	...	...	...	...	
37	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
38	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
39	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
40	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
41	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
42	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Nonferrous Materials (Cont'd)							
	1	...	Smls. tube	SB-75	...	C12000	050	...	30
	2	...	Smls. tube	SB-75	...	C12000	060	...	30
	3	...	Smls. pipe	SB-42	...	C12000	061	$\frac{1}{8} < \text{NPS} \le 2$	30
	4	...	Smls. pipe	SB-42	...	C12000	H55	$2 < \text{NPS} \le 12$	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	$\frac{1}{8} < \text{NPS} \le 2$	45
	9	...	Smls. tube	SB-75	...	C12000	H80	...	45
	10	...	Smls. cond. tube	SB-111	...	C12000	H80	< 3	45
07	11	...	Finned tube	SB-359	...	C12200	H55	...	30
	12	...	Smls. tube	SB-75	...	C12200	050	...	30
	13	...	Smls. tube	SB-75	...	C12200	060	...	30
07	14	...	Smls. pipe	SB-42	...	C12200	061	$\frac{1}{8} < t \le 3$	30
	15	...	Finned tube	SB-359	...	C12200	061	...	30
07	16	...	Plate, sheet, strip	SB-152	...	C12200	H00	...	30
07	17	...	Plate, sheet, strip	SB-152	...	C12200	H01	...	30
07	18	...	Plate, sheet, strip	SB-152	...	C12200	H02	...	30
07	19	...	Plate, sheet, strip	SB-152	...	C12200	H03	...	30
07	20	...	Plate, sheet, strip	SB-152	...	C12200	H04	...	30
	21	...	Plate, sheet, strip	SB-152	...	C12200	025	...	30
	22	...	Wld. cond. tube	SB-543	...	C12200	Light cold worked	...	32
	23	...	Smls. pipe	SB-42	...	C12200	H55	$2 < t \le 12$	36
	24	...	Smls. tube	SB-75	...	C12200	H55	...	36
	25	...	Smls. cond. tube	SB-111	...	C12200	H55	< 3	36
	26	...	Smls. U-bend tube	SB-395	...	C12200	H55	< 2	36
	27	...	Smls. pipe	SB-42	...	C12200	H80	$\frac{1}{8} < t \le 2$	45
	28	...	Smls. cond. tube	SB-75	...	C12200	H80	< 4	45
	29	...	Smls. tube	SB-111	...	C12200	H80	< 3	45
	30	...	Plate, sheet, strip, bar	SB-152	...	C12300	025	...	30
A08	31	...	...	...	...	...	...	...	...
	32	...	Plate, sheet, strip	SB-152	...	C14200	025	...	30
	33	...	Smls. cond. tube	SB-111	...	C14200	H55	< 3	36
	34	...	Smls. U-bend tube	SB-395	...	C14200	H55	...	36
	35	...	Smls. cond. tube	SB-111	...	C14200	H80	< 3	45
	36	...	Smls. cond. tube	SB-111	...	C19200	061	< 3	38
	37	...	Smls. U-bend tube	SB-395	...	C19200	061	...	38
	38	...	Wld. cond. tube	SB-543	...	C19400	Annealed	...	45
	39	...	Wld. cond. tube	SB-543	...	C19400	Light cold worked	...	45

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	...	...	...	...	...	...	...	...	...	...	07
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	...	...	...	...	...	...	...	...	...	...	07
15	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	
16	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
17	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
18	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
19	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
20	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	07
21	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	
22	32.0	32.0	31.0	29.3	...	...	...	...	...	...	...	...	...	...	
23	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...	
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	45.0	45.0	43.9	38.2	...	...	...	...	...	...	...	...	...	...	
28	45.0	45.0	43.9	38.2	...	...	...	...	...	...	...	...	...	...	
29	45.0	45.0	43.9	38.2	...	...	...	...	...	...	...	...	...	...	
30	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A08
32	30.0	27.2	25.1	23.7	...	...	...	...	...	...	...	...	...	...	
33	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...	
34	36.0	36.0	34.9	32.9	...	...	...	...	...	...	...	...	...	...	
35	45.0	45.0	43.9	38.2	...	...	...	...	...	...	...	...	...	...	
36	38.0	35.9	32.6	29.7	...	...	...	...	...	...	...	...	...	...	
37	38.0	35.9	32.6	29.7	...	...	...	...	...	...	...	...	...	...	
38	45.0	45.0	41.7	38.6	...	...	...	...	...	...	...	...	...	...	
39	45.0	45.0	41.7	38.6	...	...	...	...	...	...	...	...	...	...	

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
	Nonferrous Materials (Cont'd)							
1	...	Smls. cond. tube	SB-111	...	C60800	061	...	50
2	...	Smls. U-bend tube	SB-395	...	C60800	061	...	50
3	...	Plate, sheet	SB-169	...	C61400	025 or 060	$2 < t \le 5$	65
4	...	Plate	SB-171	...	C61400	025	$2 < t \le 5$	65
5	...	Plate, sheet	SB-169	...	C61400	025 or 060	$\frac{1}{2} < t \le 2$	70
6	...	Plate	SB-171	...	C61400	025	≤ 2	70
7	...	Plate, sheet	SB-169	...	C61400	025 or 060	$\le \frac{1}{2}$	72
8	...	Plate	SB-171	...	C63000	025	$3.5 < t \le 5$	80
9	...	Plate	SB-171	...	C63000	025	$2 < t \le 3.5$	85
10	...	Plate	SB-171	...	C63000	025	≤ 2	90
11	...	Forgings	SB-283	...	C64200	M10	$> 1\frac{1}{2}$	68
12	...	Forgings	SB-283	...	C64200	M10	$\le 1\frac{1}{2}$	70
13	...	Plate, sheet	SB-96	...	C65500	061	≤ 2	50
14	...	Smls. pipe & tube	SB-466	...	C70600	060	...	38
15	...	Wld. pipe	SB-467	...	C70600	W061	$> 4\frac{1}{2}$	38
16	...	Bar, rod	SB-151	...	C70600	060	...	38
17	...	Plate	SB-171	...	C70600	M20	...	40
18	...	Plate, sheet	SB-171	...	C70600	M20	≤ 2.5	40
19	...	Plate	SB-171	...	C70600	025	...	40
20	...	Plate, sheet	SB-171	...	C70600	025	≤ 2.5	40
21	...	Smls. cond. tube	SB-111	...	C70600	061	...	40
22	...	Finned tube	SB-359	...	C70600	061	...	40
23	...	Smls. U-bend tube	SB-395	...	C70600	061	...	40
24	...	Wld. pipe	SB-467	...	C70600	W061	$\le 4\frac{1}{2}$	40
25	...	Wld. tube	SB-543	...	C70600	W061	$2\frac{1}{2} < t \le 5$	40
26	...	Wld. pipe	SB-467	...	C70600	W061	$\le 4\frac{1}{2}$	45
27	...	Wld. tube	SB-543	...	C70600	Light cold worked	...	45
28	...	Smls. tube	SB-111	...	C70600	H55	...	45
29	...	Wld. pipe	SB-467	...	C70600	Wld. fr. cold rld. strip	$\le 4\frac{1}{2}$	54
30	...	Plate, sheet	SB-171	...	C71500	025	$2.5 < t \le 5$	45
31	...	Plate, sheet	SB-171	...	C71500	025	≤ 2.5	50
32	...	Smls. cond. tube	SB-111	...	C71500	061	...	52
33	...	Smls. cond. tube	SB-111	...	C71500	HR50	...	72
34	...	Castings	SB-148	...	C95200	M01	...	65
35	...	Castings	SB-271	...	C95200	M02	...	65
36	...	Castings	SB-505	...	C95200	M07	...	68
37	...	Castings	SB-148	...	C95400	M01	...	75
38	...	Castings	SB-271	...	C95400	M02	...	75

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	50.0	50.0	50.0	47.3	38.5	...	...	...	...	...	...	...	...	...
2	50.0	50.0	50.0	47.3	38.5	...	...	...	...	...	...	...	...	...
3	65.0	65.0	65.0	63.7	59.4	...	...	...	...	...	...	...	...	...
4	65.0	65.0	65.0	63.7	59.4	...	...	...	...	...	...	...	...	...
5	70.0	70.0	70.0	68.6	63.9	...	...	...	...	...	...	...	...	...
6	70.0	70.0	70.0	68.6	63.9	...	...	...	...	...	...	...	...	...
7	72.0	72.0	72.0	70.6	65.8	...	...	...	...	...	...	...	...	...
8	80.0	80.0	80.0	80.0	78.9	64.0	48.4	25.4	...	...	...	...	...	...
9	85.0	85.0	85.0	85.0	83.9	68.0	51.4	27.0	...	...	...	...	...	...
10	90.0	90.0	90.0	90.0	88.8	72.0	54.4	28.6	...	...	...	...	...	...
11	68.0	...	...	...	...	...	...	...	...	...	...	...	...	...
12	70.0	...	...	...	...	...	...	...	...	...	...	...	...	...
13	50.0	50.0	50.0	47.0	43.3	...	...	...	...	...	...	...	...	...
14	38.0	37.6	34.7	32.6	31.4	30.9	...	...	...	...	...	...	...	...
15	38.0	37.6	34.7	32.6	31.4	30.9	...	...	...	...	...	...	...	...
16	38.0	37.6	34.7	32.6	31.4	30.9	...	...	...	...	...	...	...	...
17	40.0	39.6	36.5	34.3	33.0	32.6	...	...	...	...	...	...	...	...
18	40.0	39.6	36.5	34.3	33.0	32.6	...	...	...	...	...	...	...	...
19	40.0	39.6	36.5	34.3	33.0	32.6	...	...	...	...	...	...	...	...
20	40.0	39.6	36.5	34.3	33.0	32.6	...	...	...	...	...	...	...	...
21	40.0	39.6	36.5	34.3	33.0	32.6	...	...	...	...	...	...	...	...
22	40.0	39.6	36.5	34.3	33.0	32.6	...	...	...	...	...	...	...	...
23	40.0	39.6	36.5	34.3	33.0	32.6	...	...	...	...	...	...	...	...
24	40.0	39.6	36.5	34.3	33.0	32.6	...	...	...	...	...	...	...	...
25	40.0	39.6	36.5	34.3	33.0	32.6	...	...	...	...	...	...	...	...
26	45.0	44.5	41.1	38.6	37.1	36.6	...	...	...	...	...	...	...	...
27	45.0	44.5	41.1	38.6	37.1	36.6	...	...	...	...	...	...	...	...
28	45.0	44.5	41.1	38.6	37.1	36.6	...	...	...	...	...	...	...	...
29	54.0	53.4	49.3	46.3	44.6	44.0	...	...	...	...	...	...	...	...
30	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	...	...	...	...	...	...
31	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	...	...	...	...	...	...
32	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	...	...	...	...	...	...
33	72.0	72.0	72.0	68.9	66.1	64.6	64.0	62.8	60.2	...	...	...	...	...
34	65.0	65.0	65.0	62.1	56.5	48.6	...	...	...	...	...	...	...	...
35	65.0	65.0	65.0	62.1	56.5	48.6	...	...	...	...	...	...	...	...
36	68.0	68.0	68.0	65.0	59.2	50.9	...	...	...	...	...	...	...	...
37	75.0	75.0	75.0	75.0	75.0	...	...	...	...	...	...	...	...	...
38	75.0	75.0	75.0	75.0	75.0	...	...	...	...	...	...	...	...	...

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
	Nonferrous Materials (Cont'd)							
1	99Ni	Plate, sheet, strip	SB-162	...	N02200	As rolled	...	55
2	99Ni	Smls. pipe & tube	SB-161	...	N02200	Stress rel.	...	65
3	99Ni	Smls. tube	SB-163	...	N02200	Stress rel.	...	65
4	99Ni–Low C	Smls. pipe & tube	SB-161	...	N02201	Annealed	> 5 O.D.	50
5	99Ni–Low C	Smls. & wld. fittings	SB-366	...	N02201	Annealed	...	50
6	99Ni–Low C	Bar, rod	SB-160	...	N02201	Hot rolled/ann.	...	50
7	99Ni–Low C	Smls. pipe & tube	SB-161	...	N02201	Annealed	≤ 5 O.D.	50
8	99Ni–Low C	Smls. tube	SB-163	...	N02201	Annealed	...	50
9	99Ni–Low C	Plate, sheet, strip	SB-162	...	N02201	Hot rolled/ann.	...	50
10	67Ni–30Cu	Bar	SB-164	...	N04400	Annealed	...	70
11	67Ni–30Cu	Smls. pipe & tube	SB-165	...	N04400	Annealed	> 5 O.D.	70
12	67Ni–30Cu	Forgings	SB-564	...	N04400	Annealed	...	70
13	67Ni–30Cu	Plate	SB-127	...	N04400	Annealed	...	70
14	67Ni–30Cu	Smls. tube	SB-163	...	N04400	Annealed	≤ 3	70
15	67Ni–30Cu	Smls. pipe & tube	SB-165	...	N04400	Annealed	≤ 5 O.D.	70
16	67Ni–30Cu	Smls. & wld. fittings	SB-366	...	N04400	Annealed	...	70
17	67Ni–30Cu	Bar	SB-164	...	N04400	Hot worked	...	75
18	67Ni–30Cu	Plate	SB-127	...	N04400	As rolled	...	75
19	67Ni–30Cu	Bar, rod	SB-164	...	N04400	Hot worked	...	75
20	67Ni–30Cu	Smls. tube	SB-163	...	N04400	Stress rel.	...	85
21	67Ni–30Cu	Smls. pipe & tube	SB-165	...	N04400	Stress rel.	...	85
22	67Ni–30Cu–S	Bar	SB-164	...	N04405	Annealed	...	70
23	67Ni–30Cu–S	Bar	SB-164	...	N04405	Hot worked	...	75
A08 24	67Ni–28Cu–3Al	Bolting	SF-468	...	N05500	Ann./aged	0.250–1.500	130
25	47Ni–22Cr–9Mo–18Fe	Plate	SB-435	...	N06002	Annealed	> 3/16	95
26	47Ni–22Cr–9Mo–18Fe	Sheet	SB-435	...	N06002	Solution ann.	≤ 3/16	95
27	47Ni–22Cr–9Mo–18Fe	Rod	SB-572	...	N06002	Annealed	...	95
28	47Ni–22Cr–9Mo–18Fe	Smls. & wld. fittings	SB-366	...	N06002	Annealed	...	100
29	47Ni–22Cr–9Mo–18Fe	Sheet	SB-435	...	N06002	Annealed	1/16 < t ≤ 3/16	100
30	47Ni–22Cr–9Mo–18Fe	Wld. pipe	SB-619	...	N06002	Solution ann.	...	100
31	47Ni–22Cr–9Mo–18Fe	Smls. pipe & tube	SB-622	...	N06002	Solution ann.	...	100
32	47Ni–22Cr–9Mo–18Fe	Wld. tube	SB-626	...	N06002	Solution ann.	...	100
33	47Ni–22Cr–19Fe–6Mo	Rod	SB-581	...	N06007	Solution ann.	> 3/4	85
34	47Ni–22Cr–19Fe–6Mo	Plate, sheet, strip	SB-582	...	N06007	Solution ann.	> 3/4	85
35	47Ni–22Cr–19Fe–6Mo	Smls. & wld. fittings	SB-366	...	N06007	Annealed	...	90
36	47Ni–22Cr–19Fe–6Mo	Rod	SB-581	...	N06007	Solution ann.	≤ 3/4	90
37	47Ni–22Cr–19Fe–6Mo	Plate, sheet, strip	SB-582	...	N06007	Solution ann.	≤ 3/4	90
38	47Ni–22Cr–19Fe–6Mo	Wld. pipe	SB-619	...	N06007	Solution ann.	...	90
39	47Ni–22Cr–19Fe–6Mo	Smls. pipe & tube	SB-622	...	N06007	Solution ann.	...	90
40	47Ni–22Cr–19Fe–6Mo	Wld. tube	SB-626	...	N06007	Solution ann.	...	90

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	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	...	...	...	
2	65.0	65.0	65.0	65.0	64.1	61.8	59.8	...	...	...	...	...	...	...	
3	65.0	65.0	65.0	65.0	64.1	61.8	59.8	...	...	...	...	...	...	...	
4	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	
5	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	
6	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	
7	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	
8	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	
9	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	
10	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	
11	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	
12	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	
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	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	
15	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	
16	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	
17	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	
18	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	
19	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	
20	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	
21	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	
22	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	
23	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	
24	130.0	130.0	130.0	130.0	130.0	129.7	128.1	126.3	...	...	...	...	...	...	A08
25	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	
26	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	
27	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	
28	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	
29	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	
30	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	
31	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	
32	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	
33	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	
34	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	
35	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	
36	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	
37	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	
38	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	
39	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	
40	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	

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Nonferrous Materials (Cont'd)							
	1	55Ni–21Cr–13.5Mo	Smls. & wld. fittings	SB-366	...	N06022	Solution ann.	...	100
	2	55Ni–21Cr–13.5Mo	Forgings	SB-462	...	N06022	Solution ann.	...	100
	3	55Ni–21Cr–13.5Mo	Forgings	SB-564	...	N06022	Solution ann.	...	100
	4	55Ni–21Cr–13.5Mo	Rod	SB-574	...	N06022	Solution ann.	...	100
	5	55Ni–21Cr–13.5Mo	Plate, sheet, strip	SB-575	...	N06022	Solution ann.	...	100
	6	55Ni–21Cr–13.5Mo	Wld. pipe	SB-619	...	N06022	Solution ann.	...	100
	7	55Ni–21Cr–13.5Mo	Smls. pipe & tube	SB-622	...	N06022	Solution ann.	...	100
	8	55Ni–21Cr–13.5Mo	Wld. tube	SB-626	...	N06022	Solution ann.	...	100
	9	40Ni–29Cr–15Fe–5Mo	Smls. & wld. fittings	SB-366	...	N06030	Solution ann.	...	85
	10	40Ni–29Cr–15Fe–5Mo	Forgings	SB-462	...	N06030	Solution ann.	...	85
	11	40Ni–29Cr–15Fe–5Mo	Rod	SB-581	...	N06030	Solution ann.	...	85
	12	40Ni–29Cr–15Fe–5Mo	Plate, sheet, strip	SB-582	...	N06030	Solution ann.	...	85
	13	40Ni–29Cr–15Fe–5Mo	Wld. pipe	SB-619	...	N06030	Solution ann.	...	85
	14	40Ni–29Cr–15Fe–5Mo	Smls. pipe & tube	SB-622	...	N06030	Solution ann.	...	85
	15	40Ni–29Cr–15Fe–5Mo	Wld. tube	SB-626	...	N06030	Solution ann.	...	85
	16	46Ni–27Cr–23Fe–2.75Si	Rod	SB-166	...	N06045	...	...	90
	17	46Ni–27Cr–23Fe–2.75Si	Smls. pipe & tube	SB-167	...	N06045	...	...	90
	18	46Ni–27Cr–23Fe–2.75Si	Plate, sheet, strip	SB-168	...	N06045	...	...	90
	19	46Ni–27Cr–23Fe–2.75Si	Smls. & wld. fittings	SB-366	...	N06045	...	...	90
	20	46Ni–27Cr–23Fe–2.75Si	Wld. tube	SB-516	...	N06045	...	...	90
	21	46Ni–27Cr–23Fe–2.75Si	Wld. pipe	SB-517	...	N06045	...	...	90
	22	46Ni–27Cr–23Fe–2.75Si	Forgings	SB-564	...	N06045	...	...	90
	23	59Ni–23Cr–16Mo	Fittings	SB-366	CR5923	N06059	Annealed	...	100
	24	59Ni–23Cr–16Mo	Fittings	SB-366	WP5923	N06059	Annealed	...	100
	25	59Ni–23Cr–16Mo	Wld. fittings	SB-366	WP5923W	N06059	Annealed	...	100
	26	59Ni–23Cr–16Mo	Fittings	SB-366	WP5923WX	N06059	Annealed	...	100
	27	59Ni–23Cr–16Mo	Forgings	SB-564	...	N06059	Solution ann.	...	100
	28	59Ni–23Cr–16Mo	Rod	SB-574	...	N06059	Solution ann.	...	100
	29	59Ni–23Cr–16Mo	Plate, sheet, strip	SB-575	...	N06059	Solution ann.	...	100
	30	59Ni–23Cr–16Mo	Wld. pipe	SB-619	...	N06059	Solution ann.	...	100
	31	59Ni–23Cr–16Mo	Smls. pipe & tube	SB-622	...	N06059	Solution ann.	...	100
	32	59Ni–23Cr–16Mo	Wld. tube	SB-626	...	N06059	Solution ann.	...	100
	33	59Ni–23Cr–16Mo–1.6Cu	Fittings	SB-366	...	N06200	Solution ann.	...	100
	34	59Ni–23Cr–16Mo–1.6Cu	Forgings	SB-462	...	N06200	Solution ann.	...	100
	35	59Ni–23Cr–16Mo–1.6Cu	Forgings	SB-564	...	N06200	Solution ann.	...	100
	36	59Ni–23Cr–16Mo–1.6Cu	Rod	SB-574	...	N06200	Solution ann.	...	100
	37	59Ni–23Cr–16Mo–1.6Cu	Plate, sheet, strip	SB-575	...	N06200	Solution ann.	...	100
	38	59Ni–23Cr–16Mo–1.6Cu	Wld. pipe	SB-619	...	N06200	Solution ann.	...	100
	39	59Ni–23Cr–16Mo–1.6Cu	Smls. pipe & tube	SB-622	...	N06200	Solution ann.	...	100
	40	59Ni–23Cr–16Mo–1.6Cu	Wld. tube	SB-626	...	N06200	Solution ann.	...	100
A08	41	60Ni–19Cr–19Mo–1.8Ta	Smls. & wld. fittings	SB-366	...	N06210	Solution ann.	...	100
A08	42	60Ni–19Cr–19Mo–1.8Ta	Forgings	SB-564	...	N06210	Solution ann.	...	100
A08	43	60Ni–19Cr–19Mo–1.8Ta	Rod	SB-574	...	N06210	Solution ann.	...	100
A08	44	60Ni–19Cr–19Mo–1.8Ta	Plate, sheet, strip	SB-575	...	N06210	Solution ann.	...	100

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	98.5	95.3	92.9	91.1	90.4	89.7	89.1	88.4	87.8	87.1	86.3	85.4	
2	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	
3	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	
4	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	
5	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	
6	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	
7	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	
8	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	
9	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	
10	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	
11	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	
12	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	
13	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	
14	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	
15	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	
16	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	
17	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	
18	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	
19	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	
20	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	
21	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	
22	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	
23	100.0	100.0	100.0	97.9	94.4	91.2	89.7	88.3	87.1	86.1	85.3	84.7	84.2	83.8	
24	100.0	100.0	100.0	97.9	94.4	91.2	89.7	88.3	87.1	86.1	85.3	84.7	84.2	83.8	
25	100.0	100.0	100.0	97.9	94.4	91.2	89.7	88.3	87.1	86.1	85.3	84.7	84.2	83.8	
26	100.0	100.0	100.0	97.9	94.4	91.2	89.7	88.3	87.1	86.1	85.3	84.7	84.2	83.8	
27	100.0	100.0	100.0	97.9	94.4	91.2	89.7	88.3	87.1	86.1	85.3	84.7	84.2	83.8	
28	100.0	100.0	100.0	97.9	94.4	91.2	89.7	88.3	87.1	86.1	85.3	84.7	84.2	83.8	
29	100.0	100.0	100.0	97.9	94.4	91.2	89.7	88.3	87.1	86.1	85.3	84.7	84.2	83.8	
30	100.0	100.0	100.0	97.9	94.4	91.2	89.7	88.3	87.1	86.1	85.3	84.7	84.2	83.8	
31	100.0	100.0	100.0	97.9	94.4	91.2	89.7	88.3	87.1	86.1	85.3	84.7	84.2	83.8	
32	100.0	100.0	100.0	97.9	94.4	91.2	89.7	88.3	87.1	86.1	85.3	84.7	84.2	83.8	
33	100.0	100.0	100.0	96.7	93.7	91.7	91.0	90.2	89.3	88.3	87.2	86.0	84.9	84.1	
34	100.0	100.0	100.0	96.7	93.7	91.7	91.0	90.2	89.3	88.3	87.2	86.0	84.9	84.1	
35	100.0	100.0	100.0	96.7	93.7	91.7	91.0	90.2	89.3	88.3	87.2	86.0	84.9	84.1	
36	100.0	100.0	100.0	96.7	93.7	91.7	91.0	90.2	89.3	88.3	87.2	86.0	84.9	84.1	
37	100.0	100.0	100.0	96.7	93.7	91.7	91.0	90.2	89.3	88.3	87.2	86.0	84.9	84.1	
38	100.0	100.0	100.0	96.7	93.7	91.7	91.0	90.2	89.3	88.3	87.2	86.0	84.9	84.1	
39	100.0	100.0	100.0	96.7	93.7	91.7	91.0	90.2	89.3	88.3	87.2	86.0	84.9	84.1	
40	100.0	100.0	100.0	96.7	93.7	91.7	91.0	90.2	89.3	88.3	87.2	86.0	84.9	84.1	
41	100.0	100.0	99.8	96.7	94.2	92.2	91.4	90.7	90.0	89.4	88.9	88.4	87.8	87.3	A08
42	100.0	100.0	99.8	96.7	94.2	92.2	91.4	90.7	90.0	89.4	88.9	88.4	87.8	87.3	A08
43	100.0	100.0	99.8	96.7	94.2	92.2	91.4	90.7	90.0	89.4	88.9	88.4	87.8	87.3	A08
44	100.0	100.0	99.8	96.7	94.2	92.2	91.4	90.7	90.0	89.4	88.9	88.4	87.8	87.3	A08

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Nonferrous Materials (Cont'd)							
A08	1	60Ni–19Cr–19Mo–1.8Ta	Wld. pipe	SB-619	...	N06210	Solution ann.	...	100
A08	2	60Ni–19Cr–19Mo–1.8Ta	Smls. pipe & tube	SB-622	...	N06210	Solution ann.	...	100
A08	3	60Ni–19Cr–19Mo–1.8Ta	Wld. tube	SB-626	...	N06210	Solution ann.	...	100
	4	57Ni–22Cr–14W–2Mo–La	Plate, sheet, strip	SB-435	...	N06230	Solution ann.	...	110
	5	57Ni–22Cr–14W–2Mo–La	Forgings	SB-564	...	N06230	Solution ann.	...	110
	6	57Ni–22Cr–14W–2Mo–La	Bar	SB-572	...	N06230	Solution ann.	...	110
	7	57Ni–22Cr–14W–2Mo–La	Wld. pipe	SB-619	...	N06230	Solution ann.	...	110
	8	57Ni–22Cr–14W–2Mo–La	Smls. pipe & tube	SB-622	...	N06230	Solution ann.	...	110
	9	57Ni–22Cr–14W–2Mo–La	Wld. tube	SB-626	...	N06230	Solution ann.	...	110
	10	61Ni–16Mo–16Cr	Smls. & wld. fittings	SB-366	...	N06455	Annealed	...	100
	11	61Ni–16Mo–16Cr	Rod	SB-574	...	N06455	Solution ann.	...	100
	12	61Ni–16Mo–16Cr	Plate, sheet, strip	SB-575	...	N06455	Solution ann.	...	100
	13	61Ni–16Mo–16Cr	Wld. pipe	SB-619	...	N06455	Solution ann.	...	100
A08	14	61Ni–16Mo–16Cr	Smls. pipe & tube	SB-622	...	N06455	Solution ann.	...	100
	15	61Ni–16Mo–16Cr	Wld. tube	SB-626	...	N06455	Solution ann.	...	100
A08	16	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.	> 5	75
A08	17	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.	> 5	80
	18	72Ni–15Cr–8Fe	Smls. & wld. fittings	SB-366	...	N06600	Annealed	...	80
A08	19	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Cold drawn/ann.	> 5	80
A08	20	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.	≤ 5	80
	21	72Ni–15Cr–8Fe	Smls. tube	SB-163	...	N06600	Annealed	≤ 3	80
	22	72Ni–15Cr–8Fe	Bar	SB-166	...	N06600	Annealed	...	80
	23	72Ni–15Cr–8Fe	Plate	SB-168	...	N06600	Annealed	...	80
	24	72Ni–15Cr–8Fe	Wld. tube	SB-516	...	N06600	Annealed	...	80
	25	72Ni–15Cr–8Fe	Forgings	SB-564	...	N06600	...	...	80
A08	26	72Ni–15Cr–8Fe	Pipe, tube	SB-167	...	N06600	Cold drawn/ann.	≤ 5	80
	27	72Ni–15Cr–8Fe	Wld. pipe	SB-517	...	N06600	Cold drawn/ann.	...	80
	28	72Ni–15Cr–8Fe	Bar, rod	SB-166	...	N06600	Hot fin.	...	85
	29	72Ni–15Cr–8Fe	Plate, sheet, strip	SB-168	...	N06600	Hot rolled	...	85
	30	60Ni–23Cr–Fe	Smls. tube	SB-163	...	N06601	Annealed	≤ 3 O.D.	80
	31	60Ni–23Cr–Fe	Bar	SB-166	...	N06601	Annealed	...	80
	32	60Ni–23Cr–Fe	Smls. pipe & tube	SB-167	...	N06601	Annealed	...	80
	33	60Ni–23Cr–Fe	Plate, sheet, strip	SB-168	...	N06601	Annealed	...	80
	34	52Ni–22Cr–13Co–9Mo	Bar, rod	SB-166	...	N06617	Annealed	...	95
	35	52Ni–22Cr–13Co–9Mo	Smls. pipe & tube	SB-167	...	N06617	Annealed	...	95
	36	52Ni–22Cr–13Co–9Mo	Plate, sheet, strip	SB-168	...	N06617	Annealed	...	95
	37	52Ni–22Cr–13Co–9Mo	Forgings	SB-564	...	N06617	Annealed	...	95
07	38	60Ni–22Cr–9Mo–3.5Cb	Plate, sheet, strip	SB-443	2	N06625	Solution ann.	...	100
07	39	60Ni–22Cr–9Mo–3.5Cb	Smls. pipe & tube	SB-444	2	N06625	Solution ann.	...	100
07	40	60Ni–22Cr–9Mo–3.5Cb	Bar	SB-446	2	N06625	Solution ann.	...	100
	41	60Ni–22Cr–9Mo–3.5Cb	Smls. & wld. fittings	SB-366	...	N06625	Annealed	...	110
07	42	60Ni–22Cr–9Mo–3.5Cb	Bar	SB-446	1	N06625	Annealed	$4 < t \leq 10$	110
07	43	60Ni–22Cr–9Mo–3.5Cb	Forgings	SB-564	...	N06625	Annealed	$4 < t \leq 10$	110

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	99.8	96.7	94.2	92.2	91.4	90.7	90.0	89.4	88.9	88.4	87.8	87.3	A08
2	100.0	100.0	99.8	96.7	94.2	92.2	91.4	90.7	90.0	89.4	88.9	88.4	87.8	87.3	A08
3	100.0	100.0	99.8	96.7	94.2	92.2	91.4	90.7	90.0	89.4	88.9	88.4	87.8	87.3	A08
4	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	
5	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	
6	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	
7	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	
8	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	
9	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	
10	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	
11	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	
12	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	
13	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	
14	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	A08
15	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	
16	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	73.4	70.6	...	...	A08
17	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...	A08
18	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...	
19	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...	A08
20	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...	A08
21	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...	
22	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...	
23	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...	
24	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...	
25	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...	
26	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...	A08
27	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	78.3	75.3	...	...	
28	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	...	...	
29	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	...	...	
30	80.0	80.0	80.0	80.0	80.0	80.0	80.0	79.7	79.2	78.6	77.8	76.7	75.5	73.9	
31	80.0	80.0	80.0	80.0	80.0	80.0	80.0	79.7	79.2	78.6	77.8	76.7	75.5	73.9	
32	80.0	80.0	80.0	80.0	80.0	80.0	80.0	79.7	79.2	78.6	77.8	76.7	75.5	73.9	
33	80.0	80.0	80.0	80.0	80.0	80.0	80.0	79.7	79.2	78.6	77.8	76.7	75.5	73.9	
34	95.0	95.0	95.0	95.0	95.0	93.2	92.3	91.4	90.6	89.9	89.2	88.5	87.8	87.1	
35	95.0	95.0	95.0	95.0	95.0	93.2	92.3	91.4	90.6	89.9	89.2	88.5	87.8	87.1	
36	95.0	95.0	95.0	95.0	95.0	93.2	92.3	91.4	90.6	89.9	89.2	88.5	87.8	87.1	
37	95.0	95.0	95.0	95.0	95.0	93.2	92.3	91.4	90.6	89.9	89.2	88.5	87.8	87.1	
38	100.0	100.0	100.0	100.0	99.7	98.1	97.6	97.3	97.1	96.9	96.7	96.2	95.5	94.5	07
39	100.0	100.0	100.0	100.0	99.7	98.1	97.6	97.3	97.1	96.9	96.7	96.2	95.5	94.5	07
40	100.0	100.0	100.0	100.0	99.7	98.1	97.6	97.3	97.1	96.9	96.7	96.2	95.5	94.5	07
41	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	
42	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	07
43	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	07

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Nonferrous Materials (Cont'd)							
07	1	...	...	...	...	...	...	...	...
	2	60Ni–22Cr–9Mo–3.5Cb	Plate, sheet, strip	SB-443	1	N06625	Annealed	...	110
	3	60Ni–22Cr–9Mo–3.5Cb	Plate, sheet, strip	SB-443	1	N06625	Annealed	...	120
	4	60Ni–22Cr–9Mo–3.5Cb	Smls. pipe	SB-444	1	N06625	Annealed	...	120
	5	60Ni–22Cr–9Mo–3.5Cb	Bar	SB-446	1	N06625	Annealed	≤ 4	120
07	6	...	...	...	...	...	...	...	...
07	7	60Ni–22Cr–9Mo–3.5Cb	Forgings	SB-564	...	N06625	Annealed	≤ 4	120
	8	60Ni–22Cr–9Mo–3.5Cb	Wld. tube	SB-704	...	N06625	Annealed	...	120
	9	60Ni–22Cr–9Mo–3.5Cb	Wld. pipe	SB-705	...	N06625	Annealed	...	120
	10	Ni–Cr–Mo–W	Forgings	SB-564	...	N06686	Solution ann.	...	100
	11	Ni–Cr–Mo–W	Rod	SB-574	...	N06686	Solution ann.	...	100
	12	Ni–Cr–Mo–W	Plate, sheet, strip	SB-575	...	N06686	Solution ann.	...	100
	13	Ni–Cr–Mo–W	Wld. pipe	SB-619	...	N06686	Solution ann.	...	100
	14	Ni–Cr–Mo–W	Smls. pipe & tube	SB-622	...	N06686	Solution ann.	...	100
	15	Ni–Cr–Mo–W	Wld. tube	SB-626	...	N06686	Solution ann.	...	100
	16	58Ni–29Cr–9Fe	Smls. tube	SB-163	...	N06690	Annealed	...	85
	17	58Ni–29Cr–9Fe	Bar, rod	SB-166	...	N06690	Annealed	...	85
	18	58Ni–29Cr–9Fe	Smls. pipe & tube	SB-167	...	N06690	Annealed	...	85
	19	58Ni–29Cr–9Fe	Plate, sheet, strip	SB-168	...	N06690	Annealed	...	85
	20	58Ni–29Cr–9Fe	Forgings	SB-564	...	N06690	Annealed	...	85
	21	49Ni–25Cr–18Fe–6Mo	Plate, sheet, strip	SB-582	...	N06975	Solution ann.	...	85
	22	49Ni–25Cr–18Fe–6Mo	Wld. pipe	SB-619	...	N06975	Solution ann.	...	85
	23	49Ni–25Cr–18Fe–6Mo	Smls. pipe & tube	SB-622	...	N06975	Solution ann.	...	85
	24	49Ni–25Cr–18Fe–6Mo	Wld. tube	SB-626	...	N06975	Solution ann.	...	85
	25	47Ni–22Cr–20Fe–7Mo	Rod	SB-581	...	N06985	Annealed	> 3/4	85
	26	47Ni–22Cr–20Fe–7Mo	Plate, sheet, strip	SB-582	...	N06985	Annealed	> 3/4	85
	27	47Ni–22Cr–20Fe–7Mo	Smls. & wld. fittings	SB-366	...	N06985	Annealed	...	90
	28	47Ni–22Cr–20Fe–7Mo	Rod	SB-581	...	N06985	Annealed	≤ 3/4	90
	29	47Ni–22Cr–20Fe–7Mo	Plate, sheet, strip	SB-582	...	N06985	Annealed	≤ 3/4	90
	30	47Ni–22Cr–20Fe–7Mo	Wld. pipe	SB-619	...	N06985	Annealed	...	90
	31	47Ni–22Cr–20Fe–7Mo	Smls. pipe & tube	SB-622	...	N06985	Annealed	...	90
	32	47Ni–22Cr–20Fe–7Mo	Wld. tube	SB-626	...	N06985	Annealed	...	90
	33	35Ni–35Fe–20Cr–Cb	Forgings	SB-462	...	N08020	Annealed	...	80
	34	35Ni–35Fe–20Cr–Cb	Plate	SB-463	...	N08020	Annealed	...	80
	35	35Ni–35Fe–20Cr–Cb	Bar	SB-473	...	N08020	Annealed	...	80
	36	35Ni–35Fe–20Cr–Cb	Smls. pipe & tube	SB-729	...	N08020	Annealed	...	80
	37	35Ni–35Fe–20Cr–Cb	Wld. pipe	SB-464	...	N08020	Wld. ann.	...	80
	38	35Ni–35Fe–20Cr–Cb	Wld. tube	SB-468	...	N08020	Wld. ann.	...	80
	39	35Ni–35Fe–20Cr–Cb	Smls. & wld. fittings	SB-366	...	N08020	Annealed	...	85

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	71.0	71.0	67.8	65.4	63.6	62.2	61.6	61.0	60.5	...	...	...	...	...	07
2	71.0	71.0	67.8	65.4	63.6	62.2	61.6	61.0	60.5	...	...	...	...	...	
3	71.0	71.0	67.8	65.4	63.6	62.2	61.6	61.0	60.5	...	...	...	...	...	
4	71.0	71.0	67.8	65.4	63.6	62.2	61.6	61.0	60.5	...	...	...	...	...	
5	71.0	71.0	67.8	65.4	63.6	62.2	61.6	61.0	60.5	...	...	...	...	...	
6	71.0	71.0	67.8	65.4	63.6	62.2	61.6	61.0	60.5	...	...	...	...	...	
7	87.0	87.0	83.8	80.4	77.4	74.9	73.8	72.7	71.5	70.2	...	...	...	...	
8	87.0	87.0	83.8	80.4	77.4	74.9	73.8	72.7	71.5	70.2	...	...	...	...	
9	87.0	87.0	83.8	80.4	77.4	74.9	73.8	72.7	71.5	70.2	...	...	...	...	
10	87.0	87.0	83.8	80.4	77.4	74.9	73.8	72.7	71.5	70.2	...	...	...	...	
11	87.0	87.0	83.8	80.4	77.4	74.9	73.8	72.7	71.5	70.2	...	...	...	...	
12	100.0	100.0	100.0	98.4	97.4	96.8	96.4	96.0	95.6	95.2	...	...	...	...	
13	100.0	100.0	100.0	98.4	97.4	96.8	96.4	96.0	95.6	95.2	...	...	...	...	
14	100.0	100.0	100.0	98.4	97.4	96.8	96.4	96.0	95.6	95.2	...	...	...	...	
15	100.0	100.0	100.0	98.4	97.4	96.8	96.4	96.0	95.6	95.2	...	...	...	...	
16	100.0	100.0	100.0	98.4	97.4	96.8	96.4	96.0	95.6	95.2	...	...	...	...	
17	100.0	100.0	100.0	98.4	97.4	96.8	96.4	96.0	95.6	95.2	...	...	...	...	
18	115.0	115.0	115.0	113.1	112.0	111.3	110.9	110.4	109.9	109.5	...	...	...	...	
19	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...	...	...	...	
20	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...	...	...	...	
21	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...	...	...	...	
22	105.0	105.0	105.0	105.0	105.0	104.4	104.2	103.9	103.7	103.5	103.3	103.2	103.1	103.1	07
23	105.0	105.0	105.0	105.0	105.0	104.4	104.2	103.9	103.7	103.5	103.3	103.2	103.1	103.1	07
24	105.0	105.0	105.0	105.0	105.0	104.4	104.2	103.9	103.7	103.5	103.3	103.2	103.1	103.1	07
25	105.0	105.0	105.0	105.0	105.0	104.4	104.2	103.9	103.7	103.5	103.3	103.2	103.1	103.1	07
26	105.0	105.0	105.0	105.0	105.0	104.4	104.2	103.9	103.7	103.5	103.3	103.2	103.1	103.1	07
27	105.0	105.0	105.0	105.0	105.0	104.4	104.2	103.9	103.7	103.5	103.3	103.2	103.1	103.1	07
28	105.0	105.0	105.0	105.0	105.0	104.4	104.2	103.9	103.7	103.5	103.3	103.2	103.1	103.1	07
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	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	
36	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	
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	...	
38	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	...	
39	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	...	

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Nonferrous Materials (Cont'd)							
	1	Ni–28Mo–3Fe–1.3Cr–0.25Al	Forgings	SB-564	...	N10629	...	...	110
	2	Ni–28Mo–3Fe–1.3Cr–0.25Al	Wld. pipe	SB-619	...	N10629	...	...	110
	3	Ni–28Mo–3Fe–1.3Cr–0.25Al	Smls. pipe & tube	SB-622	...	N10629	...	...	110
	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	...	110
	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, sheet, strip	SB-333	...	N10665	Solution ann.	...	110
	9	65Ni–28Mo–2Fe	Rod	SB-335	...	N10665	Solution ann.	...	110
	10	65Ni–28Mo–2Fe	Forgings	SB-462	...	N10665	Solution ann.	...	110
A08	11	65Ni–28Mo–2Fe	Forgings	SB-564	...	N10665	Solution ann.	...	110
	12	65Ni–28Mo–2Fe	Wld. pipe	SB-619	...	N10665	Solution ann.	...	110
	13	65Ni–28Mo–2Fe	Smls. pipe & tube	SB-622	...	N10665	Solution ann.	...	110
	14	65Ni–28Mo–2Fe	Wld. tube	SB-626	...	N10665	Solution ann.	...	110
	15	65Ni–29.5Mo–2Fe–2Cr	Plate, sheet, strip	SB-333	...	N10675	Solution ann.	...	110
	16	65Ni–29.5Mo–2Fe–2Cr	Rod	SB-335	...	N10675	Solution ann.	...	110
	17	65Ni–29.5Mo–2Fe–2Cr	Smls. & wld. fittings	SB-366	...	N10675	Solution ann.	...	110
	18	65Ni–29.5Mo–2Fe–2Cr	Forgings	SB-462	...	N10675	Solution ann.	...	110
	19	65Ni–29.5Mo–2Fe–2Cr	Forgings	SB-564	...	N10675	Solution ann.	...	110
	20	65Ni–29.5Mo–2Fe–2Cr	Wld. pipe	SB-619	...	N10675	Solution ann.	...	110
	21	65Ni–29.5Mo–2Fe–2Cr	Smls. pipe & tube	SB-622	...	N10675	Solution ann.	...	110
	22	65Ni–29.5Mo–2Fe–2Cr	Wld. tube	SB-626	...	N10675	Solution ann.	...	110
	23	37Ni–30Co–28Cr–2.7Si	Plate, sheet, strip	SB-435	...	N12160	Solution ann.	...	90
	24	37Ni–30Co–28Cr–2.7Si	Forgings	SB-564	...	N12160	Solution ann.	...	90
	25	37Ni–30Co–28Cr–2.7Si	Rod	SB-572	...	N12160	Solution ann.	...	90
	26	37Ni–30Co–28Cr–2.7Si	Wld. pipe	SB-619	...	N12160	Solution ann.	...	90
	27	37Ni–30Co–28Cr–2.7Si	Smls. pipe & tube	SB-622	...	N12160	Solution ann.	...	90
	28	37Ni–30Co–28Cr–2.7Si	Wld. tube	SB-626	...	N12160	Solution ann.	...	90
	29	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Smls. & wld. fittings	SB-366	...	R20033	...	...	109
	30	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Forgings	SB-564	...	R20033	...	...	109
	31	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Wld. pipe	SB-619	...	R20033	...	...	109
	32	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Smls. pipe & tube	SB-622	...	R20033	...	...	109
	33	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Plate, sheet, strip	SB-625	...	R20033	...	...	109
	34	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Wld. tube	SB-626	...	R20033	...	...	109
	35	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Rod	SB-649	...	R20033	...	...	109
	36	21Ni–30Fe–22Cr–18Co–3Mo–3W	Plate, sheet, strip	SB-435	...	R30556	Annealed	...	100
	37	21Ni–30Fe–22Cr–18Co–3Mo–3W	Rod	SB-572	...	R30556	Annealed	...	100
	38	21Ni–30Fe–22Cr–18Co–3Mo–3W	Wld. pipe	SB-619	...	R30556	Annealed	...	100
	39	21Ni–30Fe–22Cr–18Co–3Mo–3W	Smls. pipe & tube	SB-622	...	R30556	Annealed	...	100
	40	21Ni–30Fe–22Cr–18Co–3Mo–3W	Wld. tube	SB-626	...	R30556	Annealed	...	100

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	...
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	...
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	...
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	...
5	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
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 A08
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	110.0	109.2	108.7	108.1	107.6	107.0	106.5	105.9	105.5	105.3
14	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
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	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
21	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
22	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
23	90.0	90.0	90.0	87.8	85.5	83.3	82.2	81.1	80.0	78.9	77.8	76.6	75.4	74.1
24	90.0	90.0	90.0	87.8	85.5	83.3	82.2	81.1	80.0	78.9	77.8	76.6	75.4	74.1
25	90.0	90.0	90.0	87.8	85.5	83.3	82.2	81.1	80.0	78.9	77.8	76.6	75.4	74.1
26	90.0	90.0	90.0	87.8	85.5	83.3	82.2	81.1	80.0	78.9	77.8	76.6	75.4	74.1
27	90.0	90.0	90.0	87.8	85.5	83.3	82.2	81.1	80.0	78.9	77.8	76.6	75.4	74.1
28	90.0	90.0	90.0	87.8	85.5	83.3	82.2	81.1	80.0	78.9	77.8	76.6	75.4	74.1
29	109.0	109.0	103.2	97.8	93.7	90.6	89.3	88.2	87.1	86.0	84.9	83.5	...	...
30	109.0	109.0	103.2	97.8	93.7	90.6	89.3	88.2	87.1	86.0	84.9	83.5	...	...
31	109.0	109.0	103.2	97.8	93.7	90.6	89.3	88.2	87.1	86.0	84.9	83.5	...	...
32	109.0	109.0	103.2	97.8	93.7	90.6	89.3	88.2	87.1	86.0	84.9	83.5	...	...
33	109.0	109.0	103.2	97.8	93.7	90.6	89.3	88.2	87.1	86.0	84.9	83.5	...	...
34	109.0	109.0	103.2	97.8	93.7	90.6	89.3	88.2	87.1	86.0	84.9	83.5	...	...
35	109.0	109.0	103.2	97.8	93.7	90.6	89.3	88.2	87.1	86.0	84.9	83.5	...	...
36	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
37	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
38	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
39	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
40	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

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Nonferrous Materials (Cont'd)							
	1	Co–26Cr–9Ni–5Mo–3Fe–2W	Rod	SB-815	...	R31233	Solution ann.	...	130
	2	Co–26Cr–9Ni–5Mo–3Fe–2W	Plate, sheet, strip	SB-818	...	R31233	Solution ann.	...	130
	3	Ti	Plate, sheet, strip	SB-265	1	R50250	Annealed	...	35
	4	Ti	Smls. & wld. tube	SB-338	1	R50250	Annealed	...	35
	5	Ti	Bar, billet	SB-348	1	R50250	Annealed	...	35
	6	Ti	Smls. & wld. fittings	SB-363	WPT1	R50250	Annealed	...	35
	7	Ti	Forgings	SB-381	F-1	R50250	Annealed	...	35
	8	Ti	Smls. pipe	SB-861	1	R50250	Annealed	...	35
	9	Ti	Wld. pipe	SB-862	1	R50250	Annealed	...	35
	10	Ti	Castings	SB-367	C-2	R50400	...	...	50
	11	Ti	Forgings	SB-381	F-2	R50400	Annealed	...	50
A08	12	Ti	Plate, sheet, strip	SB-265	2H	R50400	Annealed	...	58
A08	13	Ti	Smls. & wld. tube	SB-338	2H	R50400	Annealed	...	58
A08	14	Ti	Bar, billet	SB-348	2H	R50400	Annealed	...	58
A08	15	Ti	Smls. fittings	SB-363	WPT2H	R50400	Annealed	...	58
A08	16	Ti	Wld. fittings	SB-363	WPT2HW	R50400	Annealed	...	58
A08	17	Ti	Forgings	SB-381	F-2H	R50400	Annealed	...	58
A08	18	Ti	Smls. pipe	SB-861	2H	R50400	Annealed	...	58
A08	19	Ti	Wld. pipe	SB-862	2H	R50400	Annealed	...	58
	20	Ti	Castings	SB-367	C-3	R50550	...	...	65
	21	Ti	Plate, sheet, strip	SB-265	3	R50550	Annealed	...	65
	22	Ti	Smls. & wld. tube	SB-338	3	R50550	Annealed	...	65
	23	Ti	Bar, billet	SB-348	3	R50550	Annealed	...	65
	24	Ti	Smls. & wld. fittings	SB-363	WPT3	R50550	Annealed	...	65
	25	Ti	Forgings	SB-381	F-3	R50550	Annealed	...	65
	26	Ti	Smls. pipe	SB-861	3	R50550	Annealed	...	65
	27	Ti	Wld. pipe	SB-862	3	R50550	Annealed	...	65
	28	Ti–Pd	Plate, sheet, strip	SB-265	11	R52250	Annealed	...	35
	29	Ti–Pd	Plate, sheet, strip	SB-265	17	R52252	Annealed	...	35
	30	Ti–Ru	Plate, sheet, strip	SB-265	27	R52254	Annealed	...	35
	31	Ti–Pd	Plate, sheet, strip	SB-265	7	R52400	Annealed	...	50
A08	32	Ti–0.15Pd	Plate, sheet, strip	SB-265	7H	R52400	Annealed	...	58
A08	33	Ti–0.15Pd	Smls. & wld. tube	SB-338	7H	R52400	Annealed	...	58
A08	34	Ti–0.15Pd	Bar, billet	SB-348	7H	R52400	Annealed	...	58
A08	35	Ti–0.15Pd	Smls. fittings	SB-363	WPT7H	R52400	Annealed	...	58
A08	36	Ti–0.15Pd	Wld. fittings	SB-363	WPT7HW	R52400	Annealed	...	58
A08	37	Ti–0.15Pd	Forgings	SB-381	F-7H	R52400	Annealed	...	58
A08	38	Ti–0.15Pd	Smls. pipe	SB-861	7H	R52400	Annealed	...	58
A08	39	Ti–0.15Pd	Wld. pipe	SB-862	7H	R52400	Annealed	...	58

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	130.0	130.0	130.0	130.0	130.0	130.0	130.0	128.3	126.6	125.2	124.1	123.0	121.9	120.4	
2	130.0	130.0	130.0	130.0	130.0	130.0	130.0	128.3	126.6	125.2	124.1	123.0	121.9	120.4	
3	35.0	28.9	23.1	19.3	16.3	12.5	...	...	...	...	...	...	...	...	
4	35.0	28.9	23.1	19.3	16.3	12.5	...	...	...	...	...	...	...	...	
5	35.0	28.9	23.1	19.3	16.3	12.5	...	...	...	...	...	...	...	...	
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	50.0	41.3	34.1	28.4	23.8	...	...	...	...	...	...	...	...	...	
11	50.0	43.6	36.2	30.9	26.6	22.8	...	...	...	...	...	...	...	...	
12	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
13	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
14	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
15	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
16	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
17	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
18	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
19	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
20	65.0	55.2	44.6	36.2	29.8	...	...	...	...	...	...	...	...	...	
21	65.0	55.2	44.6	36.2	29.8	25.8	...	...	...	...	...	...	...	...	
22	65.0	55.2	44.6	36.2	29.8	25.8	...	...	...	...	...	...	...	...	
23	65.0	55.2	44.6	36.2	29.8	25.8	...	...	...	...	...	...	...	...	
24	65.0	55.2	44.6	36.2	29.8	25.8	...	...	...	...	...	...	...	...	
25	65.0	55.2	44.6	36.2	29.8	25.8	...	...	...	...	...	...	...	...	
26	65.0	55.2	44.6	36.2	29.8	25.8	...	...	...	...	...	...	...	...	
27	65.0	55.2	44.6	36.2	29.8	25.8	...	...	...	...	...	...	...	...	
28	35.0	28.9	23.1	19.3	16.3	12.5	...	...	...	...	...	...	...	...	
29	35.0	29.2	23.2	19.2	16.4	12.4	...	...	...	...	...	...	...	...	
30	35.0	28.9	23.1	19.3	16.3	12.5	...	...	...	...	...	...	...	...	
31	50.0	43.6	36.2	30.9	26.6	22.8	...	...	...	...	...	...	...	...	
32	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
33	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
34	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
35	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
36	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
37	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
38	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
39	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
		Nonferrous Materials (Cont'd)							
	1	Ti–Pd	Plate, sheet, strip	SB-265	16	R52402	Annealed	...	50
	2	Ti–Pd	Bar, billet	SB-348	16	R52402	Annealed	...	50
	3	Ti–Pd	Forgings	SB-381	F-16	R52402	Annealed	...	50
A08	4	Ti–0.05Pd	Plate, sheet, strip	SB-265	16H	R52402	Annealed	...	58
A08	5	Ti–0.05Pd	Smls. & wld. tube	SB-338	16H	R52402	Annealed	...	58
A08	6	Ti–0.05Pd	Bar, billet	SB-348	16H	R52402	Annealed	...	58
A08	7	Ti–0.05Pd	Smls. fittings	SB-363	WPT16H	R52402	Annealed	...	58
A08	8	Ti–0.05Pd	Wld. fittings	SB-363	WPT16HW	R52402	Annealed	...	58
A08	9	Ti–0.05Pd	Forgings	SB-381	F-16H	R52402	Annealed	...	58
A08	10	Ti–0.05Pd	Smls. pipe	SB-861	16H	R52402	Annealed	...	58
A08	11	Ti–0.05Pd	Wld. pipe	SB-862	16H	R52402	Annealed	...	58
	12	Ti–Ru	Plate, sheet, strip	SB-265	26	R52404	Annealed	...	50
	13	Ti–Ru	Smls. & wld. tube	SB-338	26	R52404	Annealed	...	50
	14	Ti–Ru	Bar, billet	SB-348	26	R52404	Annealed	...	50
	15	Ti–Ru	Smls. fittings	SB-363	WPT26	R52404	Annealed	...	50
	16	Ti–Ru	Wld. fittings	SB-363	WPT26W	R52404	Annealed	...	50
	17	Ti–Ru	Forgings	SB-381	F-26	R52404	Annealed	...	50
	18	Ti–Ru	Smls. pipe	SB-861	26	R52404	Annealed	...	50
	19	Ti–Ru	Wld. pipe	SB-862	26	R52404	Annealed	...	50
A08	20	Ti–0.10Ru	Plate, sheet, strip	SB-265	26H	R52404	Annealed	...	58
A08	21	Ti–0.10Ru	Smls. & wld. tube	SB-338	26H	R52404	Annealed	...	58
A08	22	Ti–0.10Ru	Bar, billet	SB-348	26H	R52404	Annealed	...	58
A08	23	Ti–0.10Ru	Smls. fittings	SB-363	WPT26H	R52404	Annealed	...	58
A08	24	Ti–0.10Ru	Wld. fittings	SB-363	WPT26HW	R52404	Annealed	...	58
A08	25	Ti–0.10Ru	Forgings	SB-381	F-26H	R52404	Annealed	...	58
A08	26	Ti–0.10Ru	Smls. pipe	SB-861	26H	R52404	Annealed	...	58
A08	27	Ti–0.10Ru	Wld. pipe	SB-862	26H	R52404	Annealed	...	58
	28	Ti–0.3Mo–0.8Ni	Forgings	SB-381	F-12	R53400	Annealed	...	70
	29	Ti–3Al–2.5V	Plate, sheet, strip	SB-265	9	R56320	Annealed	...	90
	30	Ti–3Al–2.5V	Smls. & wld. tube	SB-338	9	R56320	Annealed	...	90
	31	Ti–3Al–2.5V	Bar, billet	SB-348	9	R56320	Annealed	...	90

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	50.0	43.6	36.0	30.8	26.4	22.8	...	...	...	...	...	...	...	...	
2	50.0	43.6	36.0	30.8	26.4	22.8	...	...	...	...	...	...	...	...	
3	50.0	43.6	36.0	30.8	26.4	22.8	...	...	...	...	...	...	...	...	
4	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
5	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
6	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
7	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
8	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
9	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
10	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
11	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
12	50.0	43.6	36.0	30.8	26.4	22.8	...	...	...	...	...	...	...	...	
13	50.0	43.6	36.0	30.8	26.4	22.8	...	...	...	...	...	...	...	...	
14	50.0	43.6	36.0	30.8	26.4	22.8	...	...	...	...	...	...	...	...	
15	50.0	43.6	36.0	30.8	26.4	22.8	...	...	...	...	...	...	...	...	
16	50.0	43.6	36.0	30.8	26.4	22.8	...	...	...	...	...	...	...	...	
17	50.0	43.6	36.0	30.8	26.4	22.8	...	...	...	...	...	...	...	...	
18	50.0	43.6	36.0	30.8	26.4	22.8	...	...	...	...	...	...	...	...	
19	50.0	43.6	36.0	30.8	26.4	22.8	...	...	...	...	...	...	...	...	
20	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
21	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
22	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
23	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
24	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
25	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
26	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
27	58.0	45.9	38.2	32.6	28.1	...	...	...	...	...	...	...	...	...	A08
28	70.0	65.4	56.8	50.0	45.7	43.2	...	...	...	...	...	...	...	...	
29	90.0	86.6	79.1	70.5	63.4	60.3	...	...	...	...	...	...	...	...	
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	...	...	...	...	...	...	...	...	

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 Designation/ UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
	Nonferrous Materials (Cont'd)							
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	F-9	R56320	Annealed	...	90
4	Ti–3Al–2.5V	Smls. pipe	SB-861	9	R56320	Annealed	...	90
5	Ti–3Al–2.5V	Wld. pipe	SB-862	9	R56320	Annealed	...	90
6	99.2Zr	Forgings	SB-493	...	R60702	Annealed	...	55
7	99.2Zr	Smls. tube	SB-523	...	R60702	Annealed	...	55
8	99.2Zr	Wld. tube	SB-523	...	R60702	Annealed	...	55
9	99.2Zr	Bar, wire	SB-550	...	R60702	Annealed	...	55
10	99.2Zr	Plate, sheet, strip	SB-551	...	R60702	Annealed	...	55
11	99.2Zr	Smls. & wld. pipe	SB-658	...	R60702	Annealed	...	55

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	...	...	...	...	...	...	...	...	...	...
7	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4
8	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8
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	...	23.0	22.2	21.5	20.8	20.1	19.5	19.0	18.4	17.8
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	...	24.5	23.7	22.9	22.2	21.5	20.8	20.2	19.7	19.0
25	...	25.3	24.5	23.6	22.8	22.1	21.5	20.9	20.3	19.6
26	...	25.3	24.5	23.6	22.8	22.1	21.5	20.9	20.3	19.6
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	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8
41	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4

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 Designation/ UNS No.	Class/Condition/ 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	...	...
A08	6	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...
A08	7	Carbon steel	Plate	SA/AS 1548	7-430	...	...
A08	8	Carbon steel	Plate	SA/AS 1548	7-430	...	...
	9	Carbon steel	Plate	SA/AS 1548	7-430	...	...
	10	Carbon steel	Plate	SA/AS 1548	7-430	...	...
A08	11	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...
	12	Carbon steel	Bar	SA-675	65	...	...
	13	Carbon steel	Castings	SA-352	LCB	J03003	...
	14	Carbon steel	Plate	SA-515	65	K02800	...
	15	Carbon steel	Plate	SA-516	65	K02403	...
	16	Carbon steel	Wld. pipe	SA-671	CB65	K02800	...
	17	Carbon steel	Wld. pipe	SA-671	CC65	K02403	...
	18	Carbon steel	Wld. pipe	SA-672	B65	K02800	...
	19	Carbon steel	Wld. pipe	SA-672	C65	K02403	...
	20	Carbon steel	Sheet	SA-414	E	K02704	...
	21	Carbon steel	Plate	SA-662	B	K02203	...
A08	22	Carbon steel	Plate	SA/GB 6654	16MnR	...	...
	23	Carbon steel	Plate	SA-537	...	K12437	1
	24	Carbon steel	Wld. pipe	SA-691	CMSH-70	K12437	...
	25	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...
A08	26	Carbon steel	Plate	SA/AS 1548	7-460	...	...
A08	27	Carbon steel	Plate	SA/AS 1548	7-460	...	...
	28	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...
	29	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...
	30	Carbon steel	Plate	SA/AS 1548	7-460	...	...
	31	Carbon steel	Plate	SA/EN 10028-2	P295GH	...	...
	32	Carbon steel	Plate	SA/AS 1548	7-460	...	...
A08	33	Carbon steel	Plate	SA/GB 6654	16MnR	...	...
A08	34	Carbon steel	Plate	SA/GB 6654	16MnR	...	...
	35	Carbon steel	Plate	SA-455	...	K03300	...
	36	Carbon steel	Bar	SA-675	70	...	...
	37	Carbon steel	Forgings	SA-105	...	K03504	...
	38	Carbon steel	Forgings	SA-181	...	K03502	70
	39	Carbon steel	Castings	SA-216	WCB	J03002	...
	40	Carbon steel	Forgings	SA-266	2	K03506	...
	41	Carbon steel	Forgings	SA-266	4	K03017	...
	42	Carbon steel	Forgings	SA-350	LF2	K03011	...

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	$6 < t \le 10$	62.5	32	...	A08
7	$3\frac{1}{4} < t \le 6$	62.5	36.5	...	A08
8	$1\frac{1}{2} < t \le 3\frac{1}{4}$	62.5	39	...	A08
9	$\frac{5}{8} < t \le 1\frac{1}{2}$	62.5	40.5	...	
10	$\le \frac{5}{8}$	62.5	43.5	...	
11	$4 < t \le 6$	64	34	...	A08
12	...	65	32.5	...	
13	...	65	35	...	
14	...	65	35	...	
15	...	65	35	...	
16	...	65	35	...	
17	...	65	35	...	
18	...	65	35	...	
19	...	65	35	...	
20	...	65	38	...	
21	...	65	40	...	
22	$4 < t \le 5$	65	40	...	A08
23	$2\frac{1}{2} < t \le 4$	65	45	...	
24	$2\frac{1}{2} < t \le 4$	65	45	...	
25	$2\frac{1}{4} < t \le 4$	66.5	37.5	...	
26	$3\frac{1}{4} < t \le 6$	66.5	38.5	...	A08
27	$1\frac{1}{2} < t \le 3\frac{1}{4}$	66.5	40	...	A08
28	$1\frac{1}{2} < t \le 2\frac{1}{4}$	66.5	41.5	...	
29	$\frac{5}{8} < t \le 1\frac{1}{2}$	66.5	42	...	
30	$\frac{5}{8} < t \le 1\frac{1}{2}$	66.5	43	...	
31	$\le \frac{5}{8}$	66.5	43	...	
32	$\le \frac{5}{8}$	66.5	44	...	
33	$2.4 < t \le 4$	67	41	...	A08
34	$1.5 < t \le 2.4$	68	44	...	A08
35	$0.58 < t \le \frac{3}{4}$	70	35	...	
36	...	70	35	...	
37	...	70	36	...	
38	...	70	36	...	
39	...	70	36	...	
40	...	70	36	...	
41	...	70	36	...	
42	...	70	36	...	

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
A08	6	32.0	30.1	29.3	28.8	28.3	...	27.3	...	26.1
A08	7	36.5	...	33.4	...	32.3	...	31.2	...	29.7
A08	8	39.0	...	35.7	...	34.5	...	33.3	...	31.8
	9	40.5	...	37.1	...	35.8	...	34.6	...	33.0
	10	43.5	...	39.9	...	38.5	...	37.2	...	35.4
A08	11	34.0	32.0	31.1	30.6	30.1	...	29.1	...	27.7
	12	32.5	30.5	29.8	29.2	28.8	...	27.8	...	26.5
	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	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
	16	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
	17	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
	18	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
	19	35.0	32.9	32.1	31.5	31.0	...	29.9	...	28.5
	20	38.0	35.7	34.8	34.2	33.6	...	32.5	...	31.0
	21	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
A08	22	39.9	...	36.5	...	35.3	...	34.1	...	32.5
	23	45.0	42.3	41.2	40.5	39.8	...	38.4	...	36.7
	24	45.0	42.3	41.2	40.5	39.8	...	38.4	...	36.7
	25	37.5	35.2	34.4	33.7	33.2	...	32.0	...	30.6
A08	26	38.5	...	35.3	...	34.1	...	32.9	...	31.4
A08	27	40.0	...	36.6	...	35.4	...	34.2	...	32.6
	28	41.5	39.0	38.0	37.3	36.7	...	35.5	...	33.8
	29	42.0	39.5	38.5	37.8	37.2	...	35.9	...	34.2
	30	43.0	...	39.4	...	38.0	...	36.7	...	35.0
	31	43.0	40.4	39.4	38.7	38.0	...	36.7	...	35.0
	32	44.0	...	40.3	...	38.9	...	37.6	...	35.9
A08	33	41.3	...	37.9	...	36.6	...	35.3	...	33.7
A08	34	44.2	...	40.5	...	39.1	...	37.8	...	36.0
	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	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	38	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	39	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	40	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	41	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	42	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3

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	...	24.5	23.7	22.9	22.2	21.5	20.8	20.2	19.7	19.0	A08
7	...	28.0	27.1	26.1	25.3	24.5	23.7	23.1	22.4	21.7	A08
8	...	29.9	28.9	27.9	27.0	26.1	25.4	24.7	24.0	23.2	A08
9	...	31.0	30.0	29.0	28.0	27.1	26.3	25.6	24.9	24.1	
10	...	33.3	32.2	31.1	30.1	29.2	28.3	27.5	26.7	25.9	
11	...	26.1	25.2	24.3	23.5	22.8	22.1	21.5	20.9	20.2	A08
12	...	24.9	24.1	23.3	22.5	21.8	21.1	20.5	20.0	19.3	
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	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8	
16	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8	
17	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8	
18	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8	
19	...	26.8	25.9	25.1	24.2	23.5	22.8	22.1	21.5	20.8	
20	...	29.1	28.2	27.2	26.3	25.5	24.7	24.0	23.3	22.6	
21	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8	
22	...	...	...	...	...	...	...	...	...	...	A08
23	...	34.5	33.4	32.2	31.2	30.2	29.3	28.4	27.6	26.7	
24	...	34.5	33.4	32.2	31.2	30.2	29.3	28.4	27.6	26.7	
25	...	28.7	27.8	26.9	26.0	25.1	24.4	23.7	23.0	22.3	
26	...	29.5	28.5	27.6	26.7	25.8	25.0	24.3	23.6	22.9	A08
27	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8	A08
28	...	31.8	30.8	29.7	28.7	27.8	27.0	26.2	25.5	24.7	
29	...	32.2	31.1	30.1	29.1	28.2	27.3	26.5	25.8	25.0	
30	...	33.0	31.9	30.8	29.8	28.8	28.0	27.2	26.4	25.6	
31	...	33.0	31.9	30.8	29.8	28.8	28.0	27.2	26.4	25.6	
32	...	33.7	32.6	31.5	30.5	29.5	28.6	27.8	27.0	26.2	
33	...	...	...	...	...	...	...	...	...	...	A08
34	...	...	...	...	...	...	...	...	...	...	A08
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	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
38	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
39	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
40	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
41	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
42	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	

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 Designation/ UNS No.	Class/Condition/ Temper
		Ferrous Materials (Cont'd)					
	1	Carbon steel	Forgings	SA-508	1	K13502	...
	2	Carbon steel	Forgings	SA-508	1A	K13502	...
	3	Carbon steel	Forgings	SA-541	1	K03506	...
	4	Carbon steel	Forgings	SA-541	1A	K03020	...
	5	Carbon steel	Cast pipe	SA-660	WCB	J03003	...
	6	Carbon steel	Forgings	SA-765	II	K03047	...
	7	Carbon steel	Plate	SA-515	70	K03101	...
	8	Carbon steel	Plate	SA-516	70	K02700	...
	9	Carbon steel	Wld. pipe	SA-671	CB70	K03101	...
	10	Carbon steel	Wld. pipe	SA-671	CC70	K02700	...
	11	Carbon steel	Wld. pipe	SA-672	B70	K03101	...
	12	Carbon steel	Wld. pipe	SA-672	C70	K02700	...
	13	Carbon steel	Smls. pipe	SA-106	C	K03501	...
	14	Carbon steel	Wld. tube	SA-178	D	...	...
	15	Carbon steel	Smls. tube	SA-210	C	K03501	...
	16	Carbon steel	Castings	SA-216	WCC	J02503	...
	17	Carbon steel	Smls. & wld. fittings	SA-234	WPC	K03501	...
	18	Carbon steel	Castings	SA-352	LCC	J02505	...
	19	Carbon steel	Castings	SA-487	16	...	A
	20	Carbon steel	Plate	SA-537	...	K12437	3
	21	Carbon steel	Smls. tube	SA-556	C2	K03006	...
	22	Carbon steel	Tube	SA-557	C2	K03505	...
	23	Carbon steel	Cast pipe	SA-660	WCC	J02505	...
	24	Carbon steel	Bar	SA-695	B/40	K03504	...
	25	Carbon steel	Bar	SA-696	C	K03200	...
	26	Carbon steel	Sheet	SA-414	F	K03102	...
	27	Carbon steel	Plate	SA-662	C	K02007	...
	28	Carbon steel	Plate	SA-537	...	K12437	2
07	29	Carbon steel	Plate	SA-738	C	K02008	...
	30	Carbon steel	Plate	SA-537	...	K12437	1
	31	Carbon steel	Wld. pipe	SA-671	CD70	K12437	...
	32	Carbon steel	Wld. pipe	SA-672	D70	K12437	...
	33	Carbon steel	Wld. pipe	SA-691	CMSH-70	K12437	...
A08	34	Carbon steel	Plate	SA/AS 1548	7-490	...	...
A08	35	Carbon steel	Plate	SA/AS 1548	7-490	...	...
	36	Carbon steel	Plate	SA/AS 1548	7-490	...	...
	37	Carbon steel	Plate	SA/AS 1548	7-490	...	...
A08	38	Carbon steel	Plate	SA/GB 6654	16MnR	...	...
	39	Carbon steel	Plate	SA-455	...	K03300	...
A08	40	Carbon steel	Plate	SA/GB 6654	16MnR	...	...
	41	Carbon steel	Forgings	SA-266	3	K05001	...
	42	Carbon steel	Plate	SA-455	...	K03300	...

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	36	...	
2	...	70	36	...	
3	...	70	36	...	
4	...	70	36	...	
5	...	70	36	...	
6	...	70	36	...	
7	...	70	38	...	
8	...	70	38	...	
9	...	70	38	...	
10	...	70	38	...	
11	...	70	38	...	
12	...	70	38	...	
13	...	70	40	...	
14	...	70	40	...	
15	...	70	40	...	
16	...	70	40	...	
17	...	70	40	...	
18	...	70	40	...	
19	...	70	40	...	
20	$4 < t \le 6$	70	40	...	
21	...	70	40	...	
22	...	70	40	...	
23	...	70	40	...	
24	...	70	40	...	
25	...	70	40	...	
26	...	70	42	...	
27	...	70	43	...	
28	$4 < t \le 6$	70	46	...	
29	$4 < t \le 6$	70	46	...	07
30	$\le 2\frac{1}{2}$	70	50	...	
31	$\le 2\frac{1}{2}$	70	50	...	
32	$\le 2\frac{1}{2}$	70	50	...	
33	$\le 2\frac{1}{2}$	70	50	...	
34	$3\frac{1}{4} < t \le 6$	71	40.5	...	A08
35	$1\frac{1}{2} < t \le 3\frac{1}{4}$	71	43.5	...	A08
36	$\frac{5}{8} < t \le 1\frac{1}{2}$	71	45	...	
37	$\le \frac{5}{8}$	71	46.5	...	
38	$0.65 < t \le 1.5$	71	47.1	...	A08
39	$\frac{3}{8} < t \le \frac{5}{8}$	73	37	...	
40	$0.25 < t \le 0.65$	74	50	...	A08
41	...	75	37.5	...	
42	$\le \frac{3}{8}$	75	38	...	

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	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	2	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	3	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	4	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	5	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	6	36.0	33.8	33.0	32.4	31.8	...	30.8	...	29.3
	7	38.0	35.7	34.8	34.2	33.6	...	32.5	...	31.0
	8	38.0	35.7	34.8	34.2	33.6	...	32.5	...	31.0
	9	38.0	35.7	34.8	34.2	33.6	...	32.5	...	31.0
	10	38.0	35.7	34.8	34.2	33.6	...	32.5	...	31.0
	11	38.0	35.7	34.8	34.2	33.6	...	32.5	...	31.0
	12	38.0	35.7	34.8	34.2	33.6	...	32.5	...	31.0
	13	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
	14	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
	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	37.2	35.7	34.4	33.4	...	31.8	...	30.5
	20	40.0	37.1	35.3	33.8	32.4	...	30.0	...	28.3
	21	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
	22	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
	23	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
	24	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
	25	40.0	37.6	36.6	36.0	35.4	...	34.2	...	32.6
	26	42.0	39.5	38.5	37.8	37.2	...	35.9	...	34.2
	27	43.0	40.4	39.4	38.7	38.0	...	36.7	...	35.0
	28	46.0	42.6	40.6	38.8	37.2	...	34.6	...	32.5
07	29	46.0	42.6	40.6	38.8	37.2	...	34.6	...	32.5
	30	50.0	46.3	44.2	42.2	40.5	...	37.6	...	35.4
	31	50.0	46.3	44.2	42.2	40.5	...	37.6	...	35.4
	32	50.0	46.3	44.2	42.2	40.5	...	37.6	...	35.4
	33	50.0	46.3	44.2	42.2	40.5	...	37.6	...	35.4
A08	34	40.5	...	37.1	...	35.8	...	34.6	...	33.0
A08	35	43.5	...	39.9	...	38.5	...	37.2	...	35.4
	36	45.0	...	41.2	...	39.8	...	38.4	...	36.7
	37	46.5	...	42.6	...	41.1	...	39.7	...	37.9
A08	38	47.1	...	43.2	...	41.7	...	40.3	...	38.4
	39	37.0	34.8	33.9	33.3	32.7	...	31.6	...	30.2
A08	40	50.0	...	45.8	...	44.3	...	42.8	...	40.8
	41	37.5	35.2	34.4	33.7	33.2	...	32.0	...	30.6
	42	38.0	35.7	34.8	34.2	33.6	...	32.5	...	31.0

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	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
2	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
3	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
4	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
5	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
6	...	27.6	26.7	25.8	24.9	24.1	23.4	22.8	22.1	21.4	
7	...	29.1	28.2	27.2	26.3	25.5	24.7	24.0	23.3	22.6	
8	...	29.1	28.2	27.2	26.3	25.5	24.7	24.0	23.3	22.6	
9	...	29.1	28.2	27.2	26.3	25.5	24.7	24.0	23.3	22.6	
10	...	29.1	28.2	27.2	26.3	25.5	24.7	24.0	23.3	22.6	
11	...	29.1	28.2	27.2	26.3	25.5	24.7	24.0	23.3	22.6	
12	...	29.1	28.2	27.2	26.3	25.5	24.7	24.0	23.3	22.6	
13	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8	
14	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8	
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	...	29.3	28.7	28.0	27.1	26.2	...	...	...	...	
20	...	27.0	26.4	25.8	25.2	24.4	...	...	...	...	
21	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8	
22	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8	
23	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8	
24	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8	
25	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8	
26	...	32.2	31.1	30.1	29.1	28.2	27.3	26.5	25.8	25.0	
27	...	33.0	31.9	30.8	29.8	28.8	28.0	27.2	26.4	25.6	
28	...	31.0	30.3	29.7	28.9	28.1	...	...	...	...	
29	...	31.0	30.3	29.7	28.9	28.1	...	...	...	...	07
30	...	33.7	33.0	32.3	31.5	30.5	...	...	...	...	
31	...	33.7	33.0	32.3	31.5	30.5	...	...	...	...	
32	...	33.7	33.0	32.3	31.5	30.5	...	...	...	...	
33	...	33.7	33.0	32.3	31.5	30.5	...	...	...	...	
34	...	31.0	30.0	29.0	28.0	27.1	26.3	25.6	24.9	24.1	A08
35	...	33.3	32.2	31.1	30.1	29.2	28.3	27.5	26.7	25.9	A08
36	...	34.5	33.4	32.2	31.2	30.2	29.3	28.4	27.6	26.7	
37	...	35.6	34.5	33.3	32.2	31.2	30.2	29.4	28.6	27.6	
38	...	...	...	...	...	...	...	...	...	...	A08
39	...	28.4	27.4	26.5	25.6	24.8	24.1	23.4	22.7	22.0	
40	...	...	...	...	...	...	...	...	...	...	A08
41	...	28.7	27.8	26.9	26.0	25.1	24.4	23.7	23.0	22.3	
42	...	29.1	28.2	27.2	26.3	25.5	24.7	24.0	23.3	22.6	

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 Designation/ UNS No.	Class/Condition/ Temper
		Ferrous Materials (Cont'd)					
	1	Carbon steel	Plate	SA-299	...	K02803	...
	2	Carbon steel	Wld. pipe	SA-671	CK75	K02803	...
	3	Carbon steel	Wld. pipe	SA-672	N75	K02803	...
	4	Carbon steel	Wld. pipe	SA-691	CMS-75	K02803	...
	5	Carbon steel	Plate	SA-299	...	K02803	...
	6	Carbon steel	Wld. pipe	SA-691	CMS-75	K02803	...
	7	Carbon steel	Forgings	SA-372	B	K04001	...
	8	Carbon steel	Sheet	SA-414	G	K03103	...
	9	Carbon steel	Plate	SA-738	A	K12447	...
	10	Carbon steel	Plate	SA-537	...	K12437	3
	11	Carbon steel	Plate	SA-537	...	K12437	2
	12	Carbon steel	Wld. pipe	SA-691	CMSH-80	K12437	...
07	13	Carbon steel	Plate	SA-738	C	K02008	...
	14	Carbon steel	Forgings	SA-765	IV	K02009	...
	15	Carbon steel	Plate	SA-537	...	K12437	3
	16	Carbon steel	Plate	SA-537	...	K12437	2
	17	Carbon steel	Wld. pipe	SA-671	CD80	K12437	...
	18	Carbon steel	Wld. pipe	SA-672	D80	K12437	...
	19	Carbon steel	Wld. pipe	SA-691	CMSH-80	K12437	...
07	20	Carbon steel	Plate	SA-738	C	K02008	...
	21	Carbon steel	Plate	SA-612	...	K02900	...
	22	Carbon steel	Plate	SA-612	...	K02900	...
07	23	Carbon steel	Plate	SA-738	B	K12007	...
	24	Carbon steel	Forgings	SA-372	C	K04801	...
	25	Carbon steel	Bolting	SA-449	...	K04200	...
	26	Carbon steel	Plate	SA-724	A	K11831	...
	27	Carbon steel	Plate	SA-724	C	K12037	...
	28	Carbon steel	Plate	SA-724	B	K12031	...
	29	Carbon steel	Bolting	SA-325	...	...	...
	30	Carbon steel	Bolting	SA-325	1	K02706	...
	31	Carbon steel	Bolting	SA-449	...	K04200	...
	32	Carbon steel	Bolting	SA-354	BC	K04100	...
	33	Carbon steel	Bolting	SA-325	1	K02706	...
	34	Carbon steel	Bolting	SA-449	...	K04200	...
	35	Carbon steel	Bolting	SA-354	BC	K04100	...
	36	Carbon steel	Bolting	SA-354	BD	K04100	...
	37	Carbon steel	Bolting	SA-354	BD	K04100	...

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	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8	
2	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8	
3	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8	
4	...	30.7	29.6	28.6	27.7	26.8	26.0	25.3	24.6	23.8	
5	...	32.2	31.1	30.1	29.1	28.2	27.3	26.5	25.8	25.0	
6	...	32.2	31.1	30.1	29.1	28.2	27.3	26.5	25.8	25.0	
7	...	34.5	33.4	32.2	31.2	30.2	29.3	28.4	27.6	26.7	
8	...	34.5	33.4	32.2	31.2	30.2	29.3	28.4	27.6	26.7	
9	...	34.5	33.4	32.2	31.2	30.2	29.3	28.4	27.6	26.7	
10	...	33.7	33.0	32.3	31.5	30.5	...	...	...	...	
11	...	37.1	36.3	35.5	34.6	33.5	...	...	...	...	
12	...	37.1	36.3	35.5	34.6	33.5	...	...	...	...	
13	...	37.1	36.3	35.5	34.6	33.5	...	...	...	...	07
14	...	38.2	37.7	37.1	...	...	...	...	...	...	
15	...	37.1	36.3	35.5	34.6	33.5	...	...	...	...	
16	...	40.5	39.6	38.7	37.7	36.6	...	...	...	...	
17	...	40.5	39.6	38.7	37.7	36.6	...	...	...	...	
18	...	40.5	39.6	38.7	37.7	36.6	...	...	...	...	
19	...	40.5	39.6	38.7	37.7	36.6	...	...	...	...	
20	...	40.5	39.6	38.7	37.7	36.6	...	...	...	...	07
21	...	33.9	33.0	32.1	...	...	...	...	...	...	
22	...	33.9	33.0	32.1	...	...	...	...	...	...	
23	...	46.3	45.4	44.5	43.5	42.4	...	...	...	...	07
24	...	42.2	40.8	39.4	38.1	36.9	35.8	34.8	33.8	32.7	
25	...	44.5	43.0	41.5	40.2	38.9	37.7	36.7	...	...	
26	...	47.2	46.2	45.2	44.0	42.7	...	...	...	...	
27	...	47.2	46.2	45.2	44.0	42.7	...	...	...	...	
28	...	50.6	49.5	48.4	47.2	45.7	...	...	...	...	
29	...	54.6	53.4	52.3	51.0	49.4	47.4	44.8	41.4	36.9	
30	...	54.6	53.4	52.3	51.0	49.4	47.4	44.8	41.4	36.9	
31	...	54.6	53.4	52.3	51.0	49.4	47.4	44.8	41.4	36.9	
32	...	75.9	73.4	70.9	68.5	66.4	64.4	62.6	60.8	58.8	
33	...	62.0	60.7	59.3	57.9	56.1	53.9	50.9	47.0	41.9	
34	...	62.0	60.7	59.3	57.9	56.1	53.9	50.9	47.0	41.9	
35	...	83.6	80.8	78.1	75.5	73.1	70.9	68.9	66.9	64.8	
36	...	88.2	85.2	82.3	79.6	77.1	74.8	72.7	70.6	68.4	
37	...	99.6	96.2	93.0	89.8	87.0	84.3	81.9	79.5	76.9	

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 Designation/ UNS No.	Class/Condition/ Temper
		Ferrous Materials (Cont'd)					
	1	Carbon steel	Flat wire	SA-905	...	...	2
	2	Carbon steel	Flat wire	SA-905	...	...	2
	3	Carbon steel	Flat wire	SA-905	...	...	2
	4	Carbon steel	Flat wire	SA-905	...	...	2
	5	Carbon steel	Flat wire	SA-905	...	...	2
	6	Carbon steel	Flat wire	SA-905	...	...	1
	7	Carbon steel	Flat wire	SA-905	...	...	1
	8	Carbon steel	Flat wire	SA-905	...	...	1
	9	Carbon steel	Flat wire	SA-905	...	...	1
	10	Carbon steel	Flat wire	SA-905	...	...	1
	11	C–Mn–Si–Cb	Plate	SA-737	B	K12001	...
A08	12	C–Mn–Si–Cb	Plate	SA/AS 1548	5-490	...	...
A08	13	C–Mn–Si–Cb	Plate	SA/AS 1548	5-490	...	...
	14	C–Mn–Si–Cb	Plate	SA/AS 1548	5-490	...	...
	15	C–Mn–Si–Cb	Plate	SA/AS 1548	5-490	...	...
	16	C–Mn–Si–V	Plate	SA-737	C	K12202	...
A08	17	C–Mn–Si–V–Cb	Plate	SA-656	T3	...	...
A08	18	C–Mn–Si–V–Cb	Plate	SA-656	T7	...	...
A08	19	C–Mn–Si–V–Cb	Plate	SA-656	T3	...	...
A08	20	C–Mn–Si–V–Cb	Plate	SA-656	T7	...	...
A08	21	C–Mn–Si–V–Cb	Plate	SA-656	T3	...	...
A08	22	C–Mn–Si–V–Cb	Plate	SA-656	T7	...	...
A08	23	C–Mn–Si–V–Cb	Plate	SA-656	T3	...	...
A08	24	C–Mn–Si–V–Cb	Plate	SA-656	T7	...	...
	25	C–Mn–Ti	Plate, sheet	SA-562	...	K11224	...
	26	C–Si–Ti	Forgings	SA-836	...	...	1
	27	C–¼Mo	Bolting	SA-320	L7A	G40370	...
	28	C–¼Mo	Bolting	SA-574	4037	G40370	...
	29	C–¼Mo	Bolting	SA-574	4042	G40420	...
	30	C–¼Mo	Bolting	SA-574	4140	G41400	...
	31	C–¼Mo	Bolting	SA-574	4037	G40370	...
	32	C–¼Mo	Bolting	SA-574	4042	G40420	...
	33	C–½Mo	Smls. tube	SA-209	T1b	K11422	...
	34	C–½Mo	Wld. tube	SA-250	T1b	K11422	...
	35	C–½Mo	Smls. tube	SA-209	T1	K11522	...
	36	C–½Mo	Smls. & wld. fittings	SA-234	WP1	K12821	...
	37	C–½Mo	Wld. tube	SA-250	T1	K11522	...
	38	C–½Mo	Smls. pipe	SA-335	P1	K11522	...
	39	C–½Mo	Forged pipe	SA-369	FP1	K11522	...

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	0.059	246	210	(1)(2)	
2	0.051	250	214	(1)(2)	
3	0.040	256	221	(1)(2)	
4	0.030	262	226	(1)(2)	
5	0.020	268	232	(1)(2)	
6	0.059	275	239	(1)(2)	
7	0.051	280	243	(1)(2)	
8	0.040	285	250	(1)(2)	
9	0.030	290	255	(1)(2)	
10	0.020	296	260	(1)(2)	
11	...	70	50	...	
12	$3\frac{1}{4} < t \le 6$	71	46.5	...	A08
13	$1\frac{1}{2} < t \le 3\frac{1}{4}$	71	48	...	A08
14	$\frac{5}{8} < t \le 1\frac{1}{2}$	71	49.5	...	
15	$\le \frac{5}{8}$	71	52	...	
16	...	80	60	...	
17	≤ 2	60	50	...	A08
18	≤ 2	60	50	...	A08
19	$\le 1\frac{1}{2}$	70	60	...	A08
20	$\le 1\frac{1}{2}$	70	60	...	A08
21	≤ 1	80	70	...	A08
22	≤ 1	80	70	...	A08
23	$\le \frac{3}{4}$	90	80	...	A08
24	$\le \frac{3}{4}$	90	80	...	A08
25	...	55	30	...	
26	...	55	25	...	
27	$\le 2\frac{1}{2}$	125	105	...	
28	$\ge \frac{5}{8}$	170	135	...	
29	$\ge \frac{5}{8}$	170	135	...	
30	$\ge \frac{5}{8}$	170	135	...	
31	$\le \frac{1}{2}$	180	140	...	
32	$\le \frac{1}{2}$	180	140	...	
33	...	53	28	...	
34	...	53	28	...	
35	...	55	30	...	
36	...	55	30	...	
37	...	55	30	...	
38	...	55	30	...	
39	...	55	30	...	

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	210.0	...	...	...	...	...	...	...	...
	2	214.0	...	...	...	...	...	...	...	...
	3	221.0	...	...	...	...	...	...	...	...
	4	226.0	...	...	...	...	...	...	...	...
	5	232.0	...	...	...	...	...	...	...	...
	6	239.0	...	224.0	...	...	...	...	...	...
	7	243.0	...	228.0	...	...	...	...	...	...
	8	250.0	...	234.0	...	...	...	...	...	...
	9	255.0	...	239.0	...	...	...	...	...	...
	10	260.0	...	244.0	...	...	...	...	...	...
	11	50.0	47.9	45.8	43.6	41.4	...	37.7	...	35.3
A08	12	46.5	...	42.6	...	38.5	...	35.0	...	32.8
A08	13	48.0	...	44.0	...	39.7	...	36.2	...	33.9
	14	49.5	...	45.4	...	41.0	...	37.3	...	34.9
	15	52.0	...	47.7	...	43.0	...	39.2	...	36.7
	16	60.0	57.5	55.0	52.3	49.7	...	45.2	...	42.3
A08	17	50.0	...	45.8	...	41.4	...	37.7	...	35.3
A08	18	50.0	...	45.8	...	41.4	...	37.7	...	35.3
A08	19	60.0	...	55.0	...	49.7	...	45.2	...	42.3
A08	20	60.0	...	55.0	...	49.7	...	45.2	...	42.3
A08	21	70.0	...	64.2	...	57.9	...	52.7	...	49.4
A08	22	70.0	...	64.2	...	57.9	...	52.7	...	49.4
A08	23	80.0	...	73.4	...	66.2	...	60.3	...	56.5
A08	24	80.0	...	73.4	...	66.2	...	60.3	...	56.5
	25	30.0	27.3	25.8	24.7	24.0	...	23.4	...	23.4
	26	25.0	22.7	21.5	20.6	20.0	...	19.5	...	19.5
	27	105.0	...	96.2	...	92.9	...	89.7	...	85.6
	28	135.0	...	126.9	...	121.7	...	117.6	...	114.0
	29	135.0	...	126.9	...	121.7	...	117.6	...	114.0
	30	135.0	...	126.9	...	121.7	...	117.6	...	114.0
	31	140.0	...	131.6	...	126.2	...	121.9	...	118.2
	32	140.0	...	131.6	...	126.2	...	121.9	...	118.2
	33	28.0	26.9	26.3	25.8	25.2	...	24.4	...	23.6
	34	28.0	26.9	26.3	25.8	25.2	...	24.4	...	23.6
	35	30.0	28.9	28.2	27.6	27.1	...	26.1	...	25.3
	36	30.0	28.9	28.2	27.6	27.1	...	26.1	...	25.3
	37	30.0	28.9	28.2	27.6	27.1	...	26.1	...	25.3
	38	30.0	28.9	28.2	27.6	27.1	...	26.1	...	25.3
	39	30.0	28.9	28.2	27.6	27.1	...	26.1	...	25.3

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	...	...	...	...	...	...	...	...	...	...	
11	...	33.9	33.4	32.9	32.2	31.2	29.9	28.1	25.9	25.9	
12	...	31.6	31.1	30.6	29.9	29.0	27.8	26.1	24.1	21.6	A08
13	...	32.6	32.1	31.6	30.9	30.0	28.7	27.0	24.8	22.3	A08
14	...	33.6	33.1	32.6	31.9	30.9	29.6	27.8	25.6	22.0	
15	...	35.3	34.8	34.2	33.5	32.5	31.1	29.2	26.9	24.1	
16	...	40.7	40.1	39.5	38.6	37.5	35.9	33.7	31.0	31.0	
17	...	33.9	33.4	...	...	...	...	...	...	...	A08
18	...	33.9	33.4	...	...	...	...	...	...	...	A08
19	...	40.7	40.1	...	...	...	...	...	...	...	A08
20	...	40.7	40.1	...	...	...	...	...	...	...	A08
21	...	47.5	46.8	...	...	...	...	...	...	...	A08
22	...	47.5	46.8	...	...	...	...	...	...	...	A08
23	...	54.3	53.5	...	...	...	...	...	...	...	A08
24	...	54.3	53.5	...	...	...	...	...	...	...	A08
25	...	23.4	23.4	23.3	22.9	...	...	...	...	...	
26	...	19.5	19.5	19.4	19.1	...	...	...	...	...	
27	...	80.5	77.8	75.2	72.7	70.4	68.3	66.4	64.5	62.4	
28	...	110.4	108.4	106.2	103.7	100.9	97.7	94.1	90.0	85.5	
29	...	110.4	108.4	106.2	103.7	100.9	97.7	94.1	90.0	85.5	
30	...	110.4	108.4	106.2	103.7	100.9	97.7	94.1	90.0	85.5	
31	...	114.5	112.4	110.1	107.6	104.6	101.3	97.5	93.3	88.6	
32	...	114.5	112.4	110.1	107.6	104.6	101.3	97.5	93.3	88.6	
33	...	22.9	22.5	22.0	21.5	20.9	20.3	19.5	18.7	17.7	
34	...	22.9	22.5	22.0	21.5	20.9	20.3	19.5	18.7	17.7	
35	...	24.5	24.1	23.6	23.1	22.4	21.7	20.9	20.0	19.0	
36	...	24.5	24.1	23.6	23.1	22.4	21.7	20.9	20.0	19.0	
37	...	24.5	24.1	23.6	23.1	22.4	21.7	20.9	20.0	19.0	
38	...	24.5	24.1	23.6	23.1	22.4	21.7	20.9	20.0	19.0	
39	...	24.5	24.1	23.6	23.1	22.4	21.7	20.9	20.0	19.0	

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 Designation/ UNS No.	Class/Condition/ Temper
	Ferrous Materials (Cont'd)					
1	C–½Mo	Smls. tube	SA-209	T1a	K12023	...
2	C–½Mo	Wld. tube	SA-250	T1a	K12023	...
3	C–½Mo	Castings	SA-217	WC1	J12524	...
4	C–½Mo	Castings	SA-352	LC1	J12522	...
5	C–½Mo	Cast pipe	SA-426	CP1	J12521	...
6	C–½Mo	Plate	SA-204	A	K11820	...
7	C–½Mo	Wld. pipe	SA-672	L65	K11820	...
8	C–½Mo	Wld. pipe	SA-691	CM-65	K11820	...

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	32	...
2	...	60	32	...
3	...	65	35	...
4	...	65	35	...
5	...	65	35	...
6	...	65	37	...
7	...	65	37	...
8	...	65	37	...

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	32.0	30.8	30.1	29.4	28.9	...	27.9	...	27.0
2	32.0	30.8	30.1	29.4	28.9	...	27.9	...	27.0
3	35.0	33.7	32.9	32.2	31.6	...	30.5	...	29.5
4	35.0	33.7	32.9	32.2	31.6	...	30.5	...	29.5
5	35.0	33.7	32.9	32.2	31.6	...	30.5	...	29.5
6	37.0	35.6	34.8	34.0	33.4	...	32.2	...	31.2
7	37.0	35.6	34.8	34.0	33.4	...	32.2	...	31.2
8	37.0	35.6	34.8	34.0	33.4	...	32.2	...	31.2

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	...	26.2	25.7	25.2	24.6	23.9	23.2	22.3	21.3	20.3
2	...	26.2	25.7	25.2	24.6	23.9	23.2	22.3	21.3	20.3
3	...	28.6	28.1	27.5	26.9	26.2	25.3	24.4	23.3	22.2
4	...	28.6	28.1	27.5	26.9	26.2	25.3	24.4	23.3	22.2
5	...	28.6	28.1	27.5	26.9	26.2	25.3	24.4	23.3	22.2
6	...	30.2	29.7	29.1	28.4	27.7	26.8	25.8	24.7	23.4
7	...	30.2	29.7	29.1	28.4	27.7	26.8	25.8	24.7	23.4
8	...	30.2	29.7	29.1	28.4	27.7	26.8	25.8	24.7	23.4

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 Designation/ UNS No.	Class/Condition/ 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	Forgings	SA-372	G	K13049	70
11	½Cr–⅕Mo	Forgings	SA-372	H	K13547	70
12	½Cr–⅕Mo–V	Plate	SA-517	B	K11630	...
13	½Cr–¼Mo–Si	Plate	SA-517	A	K11856	...
14	½Cr–¼Mo–Si	Forgings	SA-592	A	K11856	...
15	½Cr–½Mo	Smls. pipe	SA-335	P2	K11547	...
16	½Cr–½Mo	Forged pipe	SA-369	FP2	K11547	...
17	½Cr–½Mo	Plate	SA-387	2	K12143	1
18	½Cr–½Mo	Wld. pipe	SA-691	½CR	K12143	...
19	½Cr–½Mo	Smls. tube	SA-213	T2	K11547	...
20	½Cr–½Mo	Cast pipe	SA-426	CP2	J11547	...
21	½Cr–½Mo	Forgings	SA-182	F2	K12122	...
22	½Cr–½Mo	Plate	SA-387	2	K12143	2
23	½Cr–½Mo	Wld. pipe	SA-691	½CR	K12143	...
24	½Cr–1¼Mn–Si	Plate	SA-202	A	K11742	...
25	½Cr–1¼Mn–Si	Plate	SA-202	B	K12542	...
26	¾Cr–½Ni–Cu	Wld. tube	SA-423	1	K11535	...
27	¾Cr–¾Ni–Cu–Al	Pipe	SA-333	4	K11267	...
28	1Cr–⅕Mo	Bolting	SA-193	B7	G41400	...
29	1Cr–⅕Mo	Bolting	SA-193	B7M	G41400	...
30	1Cr–⅕Mo	Bolting	SA-320	L7M	G41400	...
31	1Cr–⅕Mo	Bolting	SA-193	B7	G41400	...
32	1Cr–⅕Mo	Forgings	SA-372	E	K13047	70
33	1Cr–⅕Mo	Forgings	SA-372	F	G41350	70
34	1Cr–⅕Mo	Forgings	SA-372	J	K13548	70
35	1Cr–⅕Mo	Bolting	SA-193	B7	G41400	...
36	1Cr–⅕Mo	Bolting	SA-320	L7	G41400	...
37	1Cr–⅕Mo	Forgings	SA-372	J	G41370	110
38	1Cr–½Mo	Plate	SA-387	12	K11757	1
39	1Cr–½Mo	Wld. pipe	SA-691	1CR	K11757	...
40	1Cr–½Mo	Cast pipe	SA-426	CP12	J11562	...

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	...	51.7	51.4	51.2	50.8	50.3	49.5	48.5	...	...	07
2	...	51.7	51.4	51.2	50.8	50.3	49.5	48.5	...	...	07
3	...	51.7	51.4	51.2	50.8	50.3	49.5	48.5	...	...	07
4	...	51.7	51.4	51.2	50.8	50.3	49.5	48.5	...	...	07
5	...	51.7	51.4	51.2	50.8	50.3	49.5	48.5	...	...	07
6	...	51.7	51.4	51.2	50.8	50.3	49.5	48.5	...	...	07
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	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5	
12	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5	
13	...	30.3	29.9	29.3	28.6	27.7	26.6	25.3	23.8	22.2	
14	...	33.6	33.2	32.6	31.8	30.8	29.6	28.1	26.5	24.6	
15	...	37.8	37.4	36.7	35.8	34.6	33.3	31.6	29.8	27.7	
16	...	42.0	41.5	40.8	39.8	38.5	36.9	35.1	33.1	30.8	
17	...	50.5	49.8	48.9	47.7	46.2	44.3	42.2	39.7	36.9	
18	...	50.5	49.8	48.9	47.7	46.2	44.3	42.2	39.7	36.9	
19	...	54.7	54.0	53.0	51.7	50.0	48.0	45.7	43.0	40.0	
20	...	68.6	67.9	66.7	65.1	62.9	60.3	57.1	53.6	49.7	
21	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5	
22	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5	
23	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5	
24	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5	
25	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5	
26	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5	
27	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5	
28	...	25.2	24.9	24.5	23.9	23.1	22.2	21.1	19.8	18.5	
29	...	46.2	45.7	44.8	43.7	42.3	40.6	38.6	36.4	33.9	
30	...	46.2	45.7	44.8	43.7	42.3	40.6	38.6	36.4	33.9	
31	...	50.5	49.8	48.9	47.7	46.2	44.3	42.2	39.7	36.9	
32	...	50.5	49.8	48.9	47.7	46.2	44.3	42.2	39.7	36.9	
33	...	54.5	54.0	53.2	52.0	50.4	48.5	46.1	43.4	40.2	
34	...	54.5	54.0	53.2	52.0	50.4	48.5	46.1	43.4	40.2	
35	...	54.5	54.0	53.2	52.0	50.4	48.5	46.1	43.4	40.2	
36	...	54.5	54.0	53.2	52.0	50.4	48.5	46.1	43.4	40.2	
37	...	54.5	54.0	53.2	52.0	50.4	48.5	46.1	43.4	40.2	
38	...	54.5	54.0	53.2	52.0	50.4	48.5	46.1	43.4	40.2	
39	...	54.5	54.0	53.2	52.0	50.4	48.5	46.1	43.4	40.2	

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 Designation/ UNS No.	Class/Condition/ Temper
		Ferrous Materials (Cont'd)					
	1	11Cr–Ti	Plate	SA-240	...	S40910	...
	2	11Cr–Ti	Plate	SA-240	...	S40920	...
	3	11Cr–Ti	Plate	SA-240	...	S40930	...
07	4	11Cr–Ti	Smls. & wld. tube	SA-268	TP409	S40900	...
	5	12Cr	Bar	SA-479	403	S40300	A
	6	12Cr	Bar	SA-479	403	S40300	1
	7	12Cr–Al	Plate	SA-240	405	S40500	...
	8	12Cr–Al	Bar	SA-479	405	S40500	...
A08	9	12Cr–Al	Bar	SA/JIS G4303	SUS405	...	...
	10	12Cr–Al	Smls. & wld. tube	SA-268	TP405	S40500	...
	11	12Cr–9Ni–2Cu–1Ti	Bar	SA-564	XM-16	S45500	H1000
	12	12Cr–9Ni–2Cu–1Ti	Forgings	SA-705	XM-16	S45500	H1000
	13	12Cr–9Ni–2Cu–1Ti	Bar	SA-564	XM-16	S45500	H950
	14	12Cr–9Ni–2Cu–1Ti	Forgings	SA-705	XM-16	S45500	H950
	15	12Cr–9Ni–2Cu–1Ti	Bar	SA-564	XM-16	S45500	H900
	16	12Cr–9Ni–2Cu–1Ti	Forgings	SA-705	XM-16	S45500	H900
	17	12Cr–Ti	Smls. & wld. tube	SA-268	...	S40800	...
	18	13Cr	Plate	SA-240	410S	S41008	...
	19	13Cr	Smls. & wld. tube	SA-268	TP410	S41000	...
	20	13Cr	Plate	SA-240	410	S41000	...
	21	13Cr	Forgings	SA-182	F6a	S41000	1
	22	13Cr	Bar	SA-479	410	S41000	...
	23	13Cr	Bar	SA-479	410	S41000	A
	24	13Cr	Bar	SA-479	410	S41000	1
	25	13Cr	Forgings	SA-182	F6a	S41000	2
	26	13Cr	Castings	SA-217	CA15	J91150	...
	27	13Cr	Cast pipe	SA-426	CPCA15	J91150	...
07	28	13Cr	Bolting	SA-193	B6	S41000	...
	29	13Cr–4Ni	Castings	SA-487	CA6NM	J91540	A
	30	13Cr–4Ni	Forgings	SA-182	F6NM	S41500	...
	31	13Cr–8Ni–2Mo	Bar	SA-564	XM-13	S13800	H1150M
	32	13Cr–8Ni–2Mo	Forgings	SA-705	XM-13	S13800	H1150M
	33	13Cr–8Ni–2Mo	Bar	SA-564	XM-13	S13800	H1150
	34	13Cr–8Ni–2Mo	Forgings	SA-705	XM-13	S13800	H1150
	35	13Cr–8Ni–2Mo	Bar	SA-564	XM-13	S13800	H1100
	36	13Cr–8Ni–2Mo	Forgings	SA-705	XM-13	S13800	H1100
	37	13Cr–8Ni–2Mo	Bar	SA-564	XM-13	S13800	H1050
	38	13Cr–8Ni–2Mo	Forgings	SA-705	XM-13	S13800	H1050
	39	13Cr–8Ni–2Mo	Bar	SA-564	XM-13	S13800	H1025
	40	13Cr–8Ni–2Mo	Forgings	SA-705	XM-13	S13800	H1025
	41	13Cr–8Ni–2Mo	Bar	SA-564	XM-13	S13800	H1000
	42	13Cr–8Ni–2Mo	Forgings	SA-705	XM-13	S13800	H1000
	43	13Cr–8Ni–2Mo	Bar	SA-564	XM-13	S13800	H950
	44	13Cr–8Ni–2Mo	Forgings	SA-705	XM-13	S13800	H950

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	25	...	
2	...	55	25	...	
3	...	55	25	...	
4	...	55	25	...	07
5	...	70	40	...	
6	...	70	40	...	
7	...	60	25	...	
8	...	60	25	...	
9	...	60	25	...	A08
10	...	60	30	...	
11	...	205	185	(3)	
12	≥ ½	205	185	(3)(4)	
13	...	220	205	(3)	
14	≥ ½	220	205	(3)(4)	
15	...	235	220	(3)	
16	≥ ½	235	220	(3)(4)	
17	...	55	30	...	
18	...	60	30	...	
19	...	60	30	...	
20	...	65	30	...	
21	...	70	40	...	
22	...	70	40	...	
23	...	70	40	...	
24	...	70	40	...	
25	...	85	55	...	
26	...	90	65	...	
27	...	90	65	...	
28	≤ 4	110	85	...	07
29	...	110	80	...	
30	...	115	90	...	
31	...	125	85	...	
32	...	125	85	...	
33	...	135	90	...	
34	...	135	90	...	
35	...	150	135	...	
36	...	150	135	...	
37	...	175	165	(3)	
38	...	175	165	(3)	
39	...	185	175	(3)	
40	...	185	175	(3)	
41	...	205	190	(3)	
42	...	205	190	(3)	
43	...	220	205	(3)	
44	...	220	205	(3)	

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	23.0	21.7	20.6	19.6	...	18.1	...	17.3
	2	25.0	23.0	21.7	20.6	19.6	...	18.1	...	17.3
	3	25.0	23.0	21.7	20.6	19.6	...	18.1	...	17.3
07	4	25.0	23.0	21.7	20.6	19.6	...	18.1	...	17.3
	5	40.0	37.8	36.8	36.0	35.5	...	34.9	...	34.4
	6	40.0	37.8	36.8	36.0	35.5	...	34.9	...	34.4
	7	25.0	23.6	23.0	22.5	22.2	...	21.8	...	21.5
	8	25.0	23.6	23.0	22.5	22.2	...	21.8	...	21.5
A08	9	25.0	23.6	23.0	22.5	22.2	...	21.8	...	21.5
	10	30.0	28.4	27.6	27.0	26.6	...	26.2	...	25.8
	11	185.0	...	...	...	...	...	...	...	...
	12	185.0	...	...	...	...	...	...	...	...
	13	205.0	...	...	...	...	...	...	...	...
	14	205.0	...	...	...	...	...	...	...	...
	15	220.0	...	...	...	...	...	...	...	...
	16	220.0	...	...	...	...	...	...	...	...
	17	30.0	28.4	27.6	27.0	26.6	...	26.2	...	25.8
	18	30.0	28.4	27.6	27.0	26.6	...	26.2	...	25.8
	19	30.0	28.4	27.6	27.0	26.6	...	26.2	...	25.8
	20	30.0	28.4	27.6	27.0	26.6	...	26.2	...	25.8
	21	40.0	37.8	36.8	36.0	35.5	...	34.9	...	34.4
	22	40.0	37.8	36.8	36.0	35.5	...	34.9	...	34.4
	23	40.0	37.8	36.8	36.0	35.5	...	34.9	...	34.4
	24	40.0	37.8	36.8	36.0	35.5	...	34.9	...	34.4
	25	55.0	52.0	50.6	49.6	48.8	...	48.0	...	47.3
	26	65.0	61.4	59.8	58.6	57.7	...	56.7	...	55.9
	27	65.0	61.4	59.8	58.6	57.7	...	56.7	...	55.9
07	28	85.0	...	78.0	...	75.0	...	73.6	...	72.8
	29	80.0	76.9	75.3	73.9	72.9	...	71.3	...	70.3
	30	90.0	87.7	86.5	85.5	84.6	...	82.8	...	80.8
	31	85.0	...	...	...	...	...	...	...	...
	32	85.0	...	...	...	...	...	...	...	...
	33	90.0	...	...	...	...	...	...	...	...
	34	90.0	...	...	...	...	...	...	...	...
	35	135.0	...	...	...	...	...	...	...	...
	36	135.0	...	...	...	...	...	...	...	...
	37	165.0	...	...	...	...	...	...	...	...
	38	165.0	...	...	...	...	...	...	...	...
	39	175.0	...	...	...	...	...	...	...	...
	40	175.0	...	...	...	...	...	...	...	...
	41	190.0	...	...	...	...	...	...	...	...
	42	190.0	...	...	...	...	...	...	...	...
	43	205.0	...	...	...	...	...	...	...	...
	44	205.0	...	...	...	...	...	...	...	...

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	...	17.0	16.9	16.9	16.8	16.6	16.3	15.9	15.3	14.5	
2	...	17.0	16.9	16.9	16.8	16.6	16.3	15.9	15.3	14.5	
3	...	17.0	16.9	16.9	16.8	16.6	16.3	15.9	15.3	14.5	
4	...	17.0	16.9	16.9	16.8	16.6	16.3	15.9	15.3	14.5	07
5	...	33.7	33.1	32.4	31.4	30.2	28.8	27.1	25.2	23.0	
6	...	33.7	33.1	32.4	31.4	30.2	28.8	27.1	25.2	23.0	
7	...	21.0	20.7	20.2	19.6	18.9	18.0	16.9	15.7	14.4	
8	...	21.0	20.7	20.2	19.6	18.9	18.0	16.9	15.7	14.4	
9	...	21.0	20.7	20.2	19.6	18.9	18.0	16.9	15.7	14.4	A08
10	...	25.3	24.8	24.3	23.6	22.7	21.6	20.3	18.9	17.2	
11	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	
17	...	25.3	24.8	24.3	23.6	22.7	21.6	20.3	18.9	17.2	
18	...	25.3	24.8	24.3	23.6	22.7	21.6	20.3	18.9	17.2	
19	...	25.3	24.8	24.3	23.6	22.7	21.6	20.3	18.9	17.2	
20	...	25.3	24.8	24.3	23.6	22.7	21.6	20.3	18.9	17.2	
21	...	33.7	33.1	32.4	31.4	30.2	28.8	27.1	25.2	23.0	
22	...	33.7	33.1	32.4	31.4	30.2	28.8	27.1	25.2	23.0	
23	...	33.7	33.1	32.4	...	...	...	...	...	...	
24	...	33.7	33.1	32.4	...	...	...	...	...	...	
25	...	46.3	45.5	44.5	43.2	41.6	39.6	37.3	34.6	31.6	
26	...	54.7	53.8	52.6	51.0	49.1	46.8	44.0	40.9	37.3	
27	...	54.7	53.8	52.6	...	...	...	...	...	...	
28	...	71.7	70.7	69.4	67.6	65.2	62.3	58.7	54.6	49.9	07
29	...	69.1	68.2	67.0	65.4	63.4	...	...	...	...	
30	...	78.5	77.2	75.7	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	
33	...	...	...	...	...	...	...	...	...	...	
34	...	...	...	...	...	...	...	...	...	...	
35	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	
39	...	...	...	...	...	...	...	...	...	...	
40	...	...	...	...	...	...	...	...	...	...	
41	...	...	...	...	...	...	...	...	...	...	
42	...	...	...	...	...	...	...	...	...	...	
43	...	...	...	...	...	...	...	...	...	...	
44	...	...	...	...	...	...	...	...	...	...	

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 Designation/ UNS No.	Class/Condition/ Temper
	Ferrous Materials (Cont'd)					
1	15Cr	Smls. & wld. tube	SA-268	TP429	S42900	...
2	15Cr	Plate	SA-240	429	S42900	...
3	15Cr–5Ni–3Cu	Bar	SA-564	XM-12	S15500	H1150M
4	15Cr–5Ni–3Cu	Forgings	SA-705	XM-12	S15500	H1150M
5	15Cr–5Ni–3Cu	Bar	SA-564	XM-12	S15500	H1150
6	15Cr–5Ni–3Cu	Forgings	SA-705	XM-12	S15500	H1150
7	15Cr–5Ni–3Cu	Bar	SA-564	XM-12	S15500	H1100
8	15Cr–5Ni–3Cu	Forgings	SA-705	XM-12	S15500	H1100
9	15Cr–5Ni–3Cu	Bar	SA-564	XM-12	S15500	H1075
10	15Cr–5Ni–3Cu	Forgings	SA-705	XM-12	S15500	H1075
11	15Cr–5Ni–3Cu	Bar	SA-564	XM-12	S15500	H1025
12	15Cr–5Ni–3Cu	Forgings	SA-705	XM-12	S15500	H1025
13	15Cr–5Ni–3Cu	Bar	SA-564	XM-12	S15500	H925
14	15Cr–5Ni–3Cu	Forgings	SA-705	XM-12	S15500	H925
15	15Cr–5Ni–3Cu	Bar	SA-564	XM-12	S15500	H900
16	15Cr–5Ni–3Cu	Forgings	SA-705	XM-12	S15500	H900
17	15Cr–6Ni–Cu–Mo	Bar	SA-564	XM-25	S45000	H1150
18	15Cr–6Ni–Cu–Mo	Forgings	SA-705	XM-25	S45000	H1150
19	15Cr–6Ni–Cu–Mo	Bar	SA-564	XM-25	S45000	H1100
20	15Cr–6Ni–Cu–Mo	Forgings	SA-705	XM-25	S45000	H1100
21	15Cr–6Ni–Cu–Mo	Bar	SA-564	XM-25	S45000	H1050
22	15Cr–6Ni–Cu–Mo	Forgings	SA-705	XM-25	S45000	H1050
23	15Cr–6Ni–Cu–Mo	Bar	SA-564	XM-25	S45000	H1025
24	15Cr–6Ni–Cu–Mo	Forgings	SA-705	XM-25	S45000	H1025
25	15Cr–6Ni–Cu–Mo	Bar	SA-564	XM-25	S45000	H1000
26	15Cr–6Ni–Cu–Mo	Forgings	SA-705	XM-25	S45000	H1000
27	15Cr–6Ni–Cu–Mo	Bar	SA-564	XM-25	S45000	H950
28	15Cr–6Ni–Cu–Mo	Forgings	SA-705	XM-25	S45000	H950
29	15Cr–6Ni–Cu–Mo	Bar	SA-564	XM-25	S45000	H900
30	15Cr–6Ni–Cu–Mo	Forgings	SA-705	XM-25	S45000	H900
31	17Cr	Smls. & wld. tube	SA-268	TP430	S43000	...
32	17Cr	Plate	SA-240	430	S43000	...
33	17Cr	Bar	SA-479	430	S43000	...
34	17Cr–4Ni–1Al	Forgings	SA-705	631	S17700	TH1050
35	17Cr–4Ni–1Al	Forgings	SA-705	631	S17700	RH950
36	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1150M
37	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1150
38	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1150
39	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1150

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	...	29.5	29.0	28.3	27.5	26.4	25.2	23.7	22.0	20.1
2	...	25.3	24.8	24.3	23.6	22.7	21.6	20.3	18.9	17.2
3	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...
7	96.8	...	...	...	...	...	...	...	...	...
8	96.8	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...
31	...	29.5	29.0	28.3	27.5	26.4	25.2	23.7	22.0	20.1
32	...	25.3	24.8	24.3	23.6	22.7	21.6	20.3	18.9	17.2
33	...	33.7	33.1	32.4	31.4	30.2	28.8	27.1	25.2	23.0
34	...	...	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...
37	...	84.7	83.6	82.5	81.1	79.4	76.9	73.2	67.9	60.2
38	...	84.7	83.6	82.5	81.1	79.4	76.9	73.2	67.9	60.2
39	...	84.7	83.6	82.5	81.1	79.4	76.9	73.2	67.9	60.2

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 Designation/ UNS No.	Class/Condition/ Temper
		Ferrous Materials (Cont'd)					
	1	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1100
	2	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1100
	3	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1100
	4	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1075
	5	17Cr–4Ni–4Cu	Plate	SA-693	630	S17400	H1075
	6	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1075
	7	17Cr–4Ni–4Cu	Bar	SA-564	630	S17400	H1025
A08	8	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H1025
A08	9	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H925
A08	10	17Cr–4Ni–4Cu	Forgings	SA-705	630	S17400	H900
07	11	17Cr–4Ni–6Mn	Plate	SA-240	201-1	S20100	...
07	12	17Cr–4Ni–6Mn	Plate	SA-666	201-1	S20100	...
	13	17Cr–4Ni–6Mn	Plate	SA-240	201-2	S20100	...
	14	17Cr–4Ni–6Mn	Plate	SA-666	201-2	S20100	...
	15	17Cr–7Ni	Plate, sheet, strip	SA-240	301	S30100	...
	16	18Cr–2Mo	Plate	SA-240	...	S44400	...
	17	18Cr–2Mo	Smls. & wld. tube	SA-268	...	S44400	...
	18	18Cr–Ti	Smls. & wld. tube	SA-268	TP439	S43035	...
	19	18Cr–Ti	Wld. tube	SA-803	TP439	S43035	...
	20	18Cr–Ti	Smls. & wld. pipe	SA-731	TP439	S43035	...
	21	18Cr–Ti	Bar	SA-479	439	S43035	...
	22	26Cr–3Ni–3Mo	Plate	SA-240	26-3-3	S44660	...
	23	26Cr–3Ni–3Mo	Smls. & wld. tube	SA-268	26-3-3	S44660	...
	24	26Cr–3Ni–3Mo	Wld. tube	SA-803	26-3-3	S44660	...
	25	26Cr–4Ni–Mo	Plate	SA-240	329	S32900	...
	26	26Cr–4Ni–Mo	Smls. & wld. tube	SA-789	...	S32900	...
	27	26Cr–4Ni–Mo	Smls. & wld. pipe	SA-790	...	S32900	...
	28	26Cr–4Ni–Mo–N	Plate	SA-240	...	S32950	...
	29	26Cr–4Ni–Mo–N	Smls. & wld. tube	SA-789	...	S32950	...
	30	26Cr–4Ni–Mo–N	Smls. & wld. pipe	SA-790	...	S32950	...
	31	27Cr	Smls. tube	SA-268	TP446-1	S44600	...
	32	27Cr–1Mo	Forgings	SA-182	FXM-27Cb	S44627	...
	33	27Cr–1Mo	Plate	SA-240	XM-27	S44627	...
	34	27Cr–1Mo	Smls. & wld. tube	SA-268	TPXM-27	S44627	...
	35	27Cr–1Mo	Bar	SA-479	XM-27	S44627	...
	36	27Cr–1Mo	Smls. & wld. pipe	SA-731	TPXM-27	S44627	...
	37	27Cr–1Mo–Ti	Smls. & wld. pipe	SA-731	TPXM-33	S44626	...
	38	27Cr–1Mo–Ti	Plate	SA-240	XM-33	S44626	...
	39	27Cr–1Mo–Ti	Smls. & wld. tube	SA-268	TPXM-33	S44626	...

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	...	140	115	...	
2	...	140	115	...	
3	...	140	115	...	
4	...	145	125	...	
5	...	145	125	...	
6	...	145	125	...	
7	...	155	145	(3)(5)	
8	...	155	145	(3)(5)	A08
9	...	170	155	(3)	A08
10	...	190	170	(3)	A08
11	...	75	38	...	07
12	...	75	38	...	07
13	...	95	45	...	
14	...	95	45	...	
15	...	75	30	...	
16	...	60	40	...	
17	...	60	40	...	
18	...	60	30	...	
19	...	60	30	...	
20	...	60	30	...	
21	...	70	40	...	
22	$\leq 2/10$	85	65	...	
23	$\leq 2/10$	85	65	...	
24	$\leq 2/10$	85	65	...	
25	...	90	70	...	
26	...	90	70	...	
27	...	90	70	...	
28	...	100	70	...	
29	...	100	70	...	
30	...	100	70	...	
31	...	70	40	...	
32	...	60	35	...	
33	...	65	40	...	
34	...	65	40	...	
35	...	65	40	...	
36	...	65	40	...	
37	...	65	40	...	
38	...	68	45	...	
39	...	68	45	...	

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	115.0	109.2	106.3	103.9	101.8	...	98.3	...	95.2
	2	115.0	109.2	106.3	103.9	101.8	...	98.3	...	95.2
	3	115.0	109.2	106.3	103.9	101.8	...	98.3	...	95.2
	4	125.0	118.7	115.6	113.0	110.7	...	106.8	...	103.5
	5	125.0	118.7	115.6	113.0	110.7	...	106.8	...	103.5
	6	125.0	118.7	115.6	113.0	110.7	...	106.8	...	103.5
	7	145.0	...	134.1	...	128.4	...	123.9	...	120.1
A08	8	145.0	137.7	134.1	131.0	128.4	...	123.9	...	120.1
A08	9	155.0	147.2	143.3	140.1	137.3	...	132.4	...	128.4
A08	10	170.0	161.5	157.2	153.6	150.5	...	145.2	...	140.8
07	11	38.0	31.8	28.9	26.6	25.0	...	22.7	...	...
07	12	38.0	31.8	28.9	26.6	25.0	...	22.7	...	...
	13	45.0	37.7	34.2	31.5	29.6	...	26.9	...	...
	14	45.0	37.7	34.2	31.5	29.6	...	26.9	...	...
	15	30.0	...	24.2	...	21.6	...	20.2	...	19.5
	16	40.0	36.5	34.8	33.5	32.4	...	30.8	...	29.4
	17	40.0	36.5	34.8	33.5	32.4	...	30.8	...	29.4
	18	30.0	27.4	25.9	24.6	23.5	...	21.9	...	20.9
	19	30.0	27.4	25.9	24.6	23.5	...	21.9	...	20.9
	20	30.0	27.4	25.9	24.6	23.5	...	21.9	...	20.9
	21	40.0	36.5	34.6	32.8	31.3	...	29.1	...	27.9
	22	65.0	60.6	58.3	56.4	54.7	...	52.3	...	50.6
	23	65.0	60.6	58.3	56.4	54.7	...	52.3	...	50.6
	24	65.0	60.6	58.3	56.4	54.7	...	52.3	...	50.6
	25	70.0	65.3	62.4	59.8	57.6	...	53.9	...	51.3
	26	70.0	65.3	62.4	59.8	57.6	...	53.9	...	51.3
	27	70.0	65.3	62.4	59.8	57.6	...	53.9	...	51.3
	28	70.0	64.9	62.0	59.5	57.3	...	53.8	...	51.3
	29	70.0	64.9	62.0	59.5	57.3	...	53.8	...	51.3
	30	70.0	64.9	62.0	59.5	57.3	...	53.8	...	51.3
	31	40.0	36.5	34.6	32.8	31.3	...	29.1	...	27.9
	32	35.0	32.1	30.3	28.8	27.6	...	25.7	...	24.8
	33	40.0	36.6	34.5	32.8	31.3	...	29.3	...	28.3
	34	40.0	36.6	34.5	32.8	31.3	...	29.3	...	28.3
	35	40.0	36.6	34.5	32.8	31.3	...	29.3	...	28.3
	36	40.0	36.6	34.5	32.8	31.3	...	29.3	...	28.3
	37	40.0	36.9	35.1	33.4	31.9	...	29.4	...	27.7
	38	45.0	41.5	39.5	37.6	35.9	...	33.1	...	31.1
	39	45.0	41.5	39.5	37.6	35.9	...	33.1	...	31.1

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	...	92.7	91.5	90.3	88.9	86.9	84.2	80.2	74.4	66.0	
2	...	92.7	91.5	90.3	88.9	86.9	84.2	80.2	74.4	66.0	
3	...	92.7	91.5	90.3	88.9	86.9	84.2	80.2	74.4	66.0	
4	...	100.8	99.5	98.2	96.6	94.5	91.5	87.2	80.8	71.7	
5	...	100.8	99.5	98.2	96.6	94.5	91.5	87.2	80.8	71.7	
6	...	100.8	99.5	98.2	96.6	94.5	91.5	87.2	80.8	71.7	
7	118.4	...	...	...	...	...	...	...	...	...	
8	118.4	116.9	115.4	113.9	...	...	...	...	...	...	A08
9	...	125.0	123.4	121.7	...	...	...	...	...	...	A08
10	...	137.1	135.3	133.5	...	...	...	...	...	...	A08
11	...	...	...	...	...	...	...	...	...	...	07
12	...	...	...	...	...	...	...	...	...	...	07
13	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	
15	...	18.8	18.3	17.8	17.3	16.7	16.2	15.8	...	...	
16	...	28.0	27.3	26.6	25.9	25.1	24.2	23.2	22.1	20.7	
17	...	28.0	27.3	26.6	25.9	25.1	24.2	23.2	22.1	20.7	
18	...	20.5	20.3	20.2	20.1	19.8	19.4	18.8	17.9	16.6	
19	...	20.5	20.3	20.2	20.1	19.8	19.4	18.8	17.9	16.6	
20	...	20.5	20.3	20.2	20.1	19.8	19.4	18.8	17.9	16.6	
21	...	27.3	27.1	26.9	26.7	26.4	25.9	25.0	23.8	22.2	
22	...	49.7	49.5	49.3	...	...	...	...	...	...	
23	...	49.7	49.5	49.3	...	...	...	...	...	...	
24	...	49.7	49.5	49.3	...	...	...	...	...	...	
25	...	49.6	49.1	48.8	...	...	...	...	...	...	
26	...	49.6	49.1	48.8	...	...	...	...	...	...	
27	...	49.6	49.1	48.8	...	...	...	...	...	...	
28	...	49.6	49.1	48.6	...	...	...	...	...	...	
29	...	49.6	49.1	48.6	...	...	...	...	...	...	
30	...	49.6	49.1	48.6	...	...	...	...	...	...	
31	...	27.3	27.1	26.9	26.7	26.4	25.9	25.0	23.8	22.2	
32	...	24.6	24.6	...	...	...	...	...	...	...	
33	...	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	
34	...	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	
35	...	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	
36	...	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	
37	...	26.7	26.4	26.4	...	...	...	...	...	...	
38	...	30.0	29.7	29.6	...	...	...	...	...	...	
39	...	30.0	29.7	29.6	...	...	...	...	...	...	

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 Designation/ UNS No.	Class/Condition/ Temper
	Ferrous Materials (Cont'd)					
1	29Cr–4Mo	Bar	SA-479	...	S44700	...
2	29Cr–4Mo	Plate	SA-240	...	S44700	...
3	29Cr–4Mo	Smls. & wld. tube	SA-268	29-4	S44700	...
4	29Cr–4Mo–2Ni	Bar	SA-479	...	S44800	...
5	29Cr–4Mo–2Ni	Plate	SA-240	...	S44800	...
6	29Cr–4Mo–2Ni	Smls. & wld. tube	SA-268	29-4-2	S44800	...
7	29Cr–4Mo–Ti	Smls. & wld. tube	SA-268	...	S44735	...
8	Mn–¼Mo	Forgings	SA-372	D	K14508	...
9	Mn–¼Mo–V	Castings	SA-487	2	J13005	A
10	Mn–¼Mo–V	Castings	SA-487	2	J13005	B
11	Mn–½Mo	Plate	SA-302	A	K12021	...
12	Mn–½Mo	Wld. pipe	SA-672	H75	K12021	...
13	Mn–½Mo	Plate	SA-302	B	K12022	...
14	Mn–½Mo	Plate	SA-533	A	K12521	1
15	Mn–½Mo	Plate	SA-533	A	K12521	2
16	Mn–½Mo	Plate	SA-533	A	K12521	3
17	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	1
18	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	2
19	Mn–½Mo–¼Ni	Plate	SA-533	D	K12529	3
20	Mn–½Mo–½Ni	Plate	SA-302	C	K12039	...
21	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	1
22	Mn–½Mo–½Ni	Wld. pipe	SA-672	H80	K12039	...
23	Mn–½Mo–½Ni	Wld. pipe	SA-672	J80	K12539	...
24	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	2
25	Mn–½Mo–½Ni	Wld. pipe	SA-672	J90	K12539	...
26	Mn–½Mo–½Ni	Plate	SA-533	B	K12539	3
27	Mn–½Mo–½Ni	Wld. pipe	SA-672	J100	K12539	...
28	Mn–½Mo–¾Ni	Plate	SA-302	D	K12054	...
29	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	1
30	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	2
31	Mn–½Mo–¾Ni	Plate	SA-533	C	K12554	3
32	Mn–½Ni–V	Plate	SA-225	C	K12524	...
33	Mn–V	Castings	SA-487	1	J13002	A
34	Mn–V	Castings	SA-487	1	J13002	B
35	1½Si–½Mo	Smls. pipe	SA-335	P15	K11578	...
36	½Ni–½Cr–¼Mo–V	Castings	SA-487	4	J13047	A
37	½Ni–½Cr–¼Mo–V	Castings	SA-487	4	J13047	B
38	½Ni–½Cr–¼Mo–V	Castings	SA-487	4	J13047	E
39	½Ni–½Mo–V	Forgings	SA-541	3	K12045	1
40	½Ni–½Mo–V	Forgings	SA-541	3	K12045	2

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	...	88.9	87.6	86.0	84.0	81.6	80.9	79.4	77.8	...
8	...	106.7	105.2	103.2	100.8	97.9	97.1	95.2	93.4	...
9	...	116.0	114.0	112.0	109.0	106.0	...	...	...	...
10	...	124.5	122.7	120.4	117.6	114.2	113.3	111.1	108.9	...
11	...	142.2	140.2	137.6	134.3	130.5	129.5	127.0	124.5	...
12	...	160.0	157.7	154.8	151.1	146.8	145.6	142.8	140.0	...
13	...	26.3	25.0	23.6	22.1	20.5	19.0	17.5	16.0	14.6
14	...	26.3	25.0	23.6	22.1	20.5	19.0	17.5	16.0	14.6
15	...	27.8	26.4	24.9	23.4	21.7	20.1	18.4	16.9	15.4
16	...	30.0	28.6	27.0	25.3	23.5	21.7	19.9	18.3	16.7
17	...	30.0	28.6	27.0	25.3	23.5	21.7	19.9	18.3	16.7
18	...	60.2	59.5	58.7	57.6	56.2	54.6	52.6	50.2	47.3
19	...	73.1	72.3	71.2	69.9	68.3	66.3	63.9	60.9	57.5
20	...	86.0	85.0	83.8	82.2	80.3	78.0	75.1	71.7	67.6
21	...	88.9	87.6	86.0	84.0	81.6	80.9	79.4	77.8	...
22	...	106.7	105.2	103.2	100.8	97.9	97.1	95.2	93.4	...
23	...	116.0	114.0	112.0	109.0	106.0	...	...	...	...
24	...	124.5	122.7	120.4	117.6	114.2	113.3	111.1	108.9	...
25	...	142.2	140.2	137.6	134.3	130.5	129.5	127.0	124.5	...
26	...	160.0	157.7	154.8	151.1	146.8	145.6	142.8	140.0	...
27	...	60.2	59.5	58.7	57.6	56.2	54.6	52.6	50.2	47.3
28	...	73.1	72.3	71.2	69.9	68.3	66.3	63.9	60.9	57.5
29	...	86.0	85.0	83.8	82.2	80.3	78.0	75.1	71.7	67.6
30	...	26.3	25.0	23.6	22.1	20.5	19.0	17.5	16.0	14.6
31	...	26.3	25.0	23.6	22.1	20.5	19.0	17.5	16.0	14.6
32	...	26.3	25.0	23.6	22.1	20.5	19.0	17.5	16.0	14.6
33	...	27.8	26.4	24.9	23.4	21.7	20.1	18.4	16.9	15.4
34	...	28.2	26.8	25.3	23.7	22.0	20.3	18.7	17.1	15.6
35	...	28.2	26.8	25.3	23.7	22.0	20.3	18.7	17.1	15.6
36	...	30.0	28.6	27.0	25.3	23.5	21.7	19.9	18.3	16.7
37	...	30.0	28.6	27.0	25.3	23.5	21.7	19.9	18.3	16.7
38	...	37.5	35.7	33.7	31.6	29.4	27.1	24.9	22.8	20.8
39	...	41.3	39.3	37.1	34.7	32.3	29.8	27.4	25.1	22.9

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 Designation/ UNS No.	Class/Condition/ Temper
		Ferrous Materials (Cont'd)					
	1	3½Ni–1¾Cr–½Mo–V	Forgings	SA-508	4N	K22375	3
	2	3½Ni–1¾Cr–½Mo–V	Forgings	SA-541	4N	K42343	3
	3	3½Ni–1¾Cr–½Mo–V	Forgings	SA-508	4N	K22375	1
	4	3½Ni–1¾Cr–½Mo–V	Forgings	SA-541	5	K42348	1
	5	3½Ni–1¾Cr–½Mo–V	Forgings	SA-508	4N	K22375	2
	6	3½Ni–1¾Cr–½Mo–V	Forgings	SA-541	4N	K42343	2
	7	3½Ni–1¾Cr–½Mo–V	Forgings	SA-541	5	K42348	2
	8	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	1
	9	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	2
	10	4Ni–1½Cr–½Mo–V	Forgings	SA-723	3	K44045	2a
	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	...
	15	8Ni	Forgings	SA-522	II	K71340	...
	16	8Ni	Plate	SA-553	II	K71340	...
	17	9Ni	Smls. & wld. pipe	SA-333	8	K81340	...
	18	9Ni	Smls. & wld. tube	SA-334	8	K81340	...
	19	9Ni	Plate	SA-353	...	K81340	...
	20	9Ni	Smls. & wld. fittings	SA-420	WPL8	K81340	...
	21	9Ni	Forgings	SA-522	I	K81340	...
	22	9Ni	Plate	SA-553	I	K81340	...
	23	25Ni–15Cr–2Ti	Bolting	SA-453	660	S66286	A
	24	25Ni–15Cr–2Ti	Bolting	SA-453	660	S66286	B
	25	25Ni–15Cr–2Ti	Bar	SA-638	660	S66286	...
	26	27Ni–22Cr–7Mo–Mn–Cu–N	Forgings	SA-182	...	S31277	...
	27	27Ni–22Cr–7Mo–Mn–Cu–N	Smls. tube	SA-213	...	S31277	...
	28	27Ni–22Cr–7Mo–Mn–Cu–N	Plate	SA-240	...	S31277	...
	29	27Ni–22Cr–7Mo–Mn–Cu–N	Wld. tube	SA-249	...	S31277	...
	30	27Ni–22Cr–7Mo–Mn–Cu–N	Smls. & wld. pipe	SA-312	...	S31277	...
	31	27Ni–22Cr–7Mo–Mn–Cu–N	Bar	SA-479	...	S31277	...
	32	29Ni–20Cr–3Cu–2Mo	Castings	SA-351	CN7M	J95150	...
A08	33	16Cr–4Ni–6Mn	Plate	SA-240	201LN	S20153	...
	34	16Cr–9Mn–2Ni–N	Plate	SA-240	204	S20400	...
	35	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...
07	36	16Cr–12Ni–2Mo	Forgings	SA-965	F316L	S31603	...
	37	16Cr–12Ni–2Mo	Forgings	SA-182	F316L	S31603	...
	38	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316L	S31603	...
	39	16Cr–12Ni–2Mo	Plate	SA-240	316L	S31603	...
	40	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316L	S31603	...

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	...	105	85	...	
4	...	105	85	...	
5	...	115	100	...	
6	...	115	100	...	
7	...	115	100	...	
8	...	115	100	...	
9	...	135	120	...	
10	...	145	130	...	
11	...	155	140	...	
12	...	175	160	...	
13	...	190	180	...	
14	...	95	65	...	
15	...	100	75	...	
16	...	100	85	...	
17	...	100	75	...	
18	...	100	75	...	
19	...	100	75	...	
20	...	100	75	...	
21	...	100	75	...	
22	...	100	85	...	
23	...	130	85	...	
24	...	130	85	...	
25	...	130	85	...	
26	...	112	52	...	
27	...	112	52	...	
28	...	112	52	...	
29	...	112	52	...	
30	...	112	52	...	
31	...	112	52	...	
32	...	62	25	...	
33	...	95	45	...	A08
34	...	95	48	...	
35	> 5	65	25	...	
36	...	65	25	...	07
37	≤ 5	70	25	...	
38	...	70	25	...	
39	...	70	25	...	
40	...	70	25	...	

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	64.8	63.9	...	62.5	...	61.4
2	70.0	...	65.9	...	63.9	...	62.5	...	61.4
3	85.0	81.8	80.1	78.7	77.5	...	75.8	...	74.5
4	85.0	...	80.1	...	77.5	...	75.8	...	74.5
5	100.0	96.2	94.2	92.5	91.2	...	89.2	...	87.7
6	100.0	...	94.2	...	91.2	...	89.2	...	87.7
7	100.0	...	94.2	...	91.2	...	89.2	...	87.7
8	100.0	97.5	96.0	94.6	93.5	...	91.9	...	90.6
9	120.0	117.0	115.2	113.6	112.2	...	110.3	...	108.8
10	130.0	...	125.0	...	122.0	...	120.0	...	118.0
11	140.0	136.5	134.4	132.5	131.0	...	128.7	...	126.9
12	160.0	156.0	153.6	151.4	149.7	...	147.1	...	145.0
13	180.0	175.5	172.8	170.4	168.4	...	165.5	...	163.2
14	65.0	...	...	...	...	...	...	...	...
15	75.0	72.8	72.0	70.5	67.0	...	...	...	...
16	85.0	82.5	81.6	79.9	75.9	...	...	...	...
17	75.0	72.8	72.0	70.5	67.0	...	...	...	...
18	75.0	72.8	72.0	70.5	67.0	...	...	...	...
19	75.0	72.8	72.0	70.5	67.0	...	...	...	...
20	75.0	72.8	72.0	70.5	67.0	...	...	...	...
21	75.0	72.8	72.0	70.5	67.0	...	...	...	...
22	85.0	82.5	81.6	79.9	75.9	...	...	...	...
23	85.0	...	83.3	...	82.0	...	80.8	...	79.3
24	85.0	...	83.3	...	82.0	...	80.8	...	79.3
25	85.0	...	83.3	...	82.0	...	80.7	...	79.4
26	52.0	50.5	48.2	45.6	43.2	41.2	39.7	38.8	38.3
27	52.0	50.5	48.2	45.6	43.2	41.2	39.7	38.8	38.3
28	52.0	50.5	48.2	45.6	43.2	41.2	39.7	38.8	38.3
29	52.0	50.5	48.2	45.6	43.2	41.2	39.7	38.8	38.3
30	52.0	50.5	48.2	45.6	43.2	41.2	39.7	38.8	38.3
31	52.0	50.5	48.2	45.6	43.2	41.2	39.7	38.8	38.3
32	25.0	...	21.6	...	19.4	...	17.6	...	16.2
A08 33	45.0	...	36.3	...	32.9	...	31.1	...	30.0
34	48.0	40.3	36.4	33.1	30.5	...	26.8	...	24.8
35	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
07 36	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
37	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
38	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
39	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
40	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4

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	...	60.2	59.5	58.7	57.6	56.2	54.6	52.6	50.2	47.3	
2	...	60.2	59.5	58.7	...	...	...	...	...	...	
3	...	73.1	72.3	71.2	69.9	68.3	66.3	63.9	60.9	57.5	
4	...	73.1	72.3	71.2	...	...	...	...	...	...	
5	...	86.0	85.0	83.8	82.2	80.3	78.0	75.1	71.7	67.6	
6	...	86.0	85.0	83.9	...	...	...	...	...	...	
7	...	86.0	85.0	83.9	...	...	...	...	...	...	
8	...	88.9	87.6	86.0	84.0	81.6	80.9	79.4	77.8	...	
9	...	106.7	105.2	103.2	100.8	97.9	97.1	95.2	93.4	...	
10	...	116.0	114.0	112.0	109.0	106.0	...	...	...	...	
11	...	124.5	122.7	120.4	117.6	114.2	113.3	111.1	108.9	...	
12	...	142.2	140.2	137.6	134.3	130.5	129.5	127.0	124.5	...	
13	...	160.0	157.7	154.8	151.1	146.8	145.6	142.8	140.0	...	
14	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	
23	...	77.9	77.2	76.4	75.7	74.9	74.0	73.2	72.3	71.5	
24	...	77.9	77.2	76.4	75.7	74.9	74.0	73.2	72.3	71.5	
25	...	77.9	77.2	76.4	...	...	...	...	...	...	
26	38.1	38.1	38.0	37.9	37.7	37.4	...	...	...	...	
27	38.1	38.1	38.0	37.9	37.7	37.4	...	...	...	...	
28	38.1	38.1	38.0	37.9	37.7	37.4	...	...	...	...	
29	38.1	38.1	38.0	37.9	37.7	37.4	...	...	...	...	
30	38.1	38.1	38.0	37.9	37.7	37.4	...	...	...	...	
31	38.1	38.1	38.0	37.9	37.7	37.4	...	...	...	...	
32	...	15.0	14.5	14.0	...	...	...	...	...	...	
33	...	28.7	27.9	27.0	26.0	25.1	24.2	23.6	23.6	23.6	A08
34	...	23.8	23.5	23.2	23.0	22.7	22.2	21.5	20.5	19.1	
35	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
36	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	07
37	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
38	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
39	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
40	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	

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 Designation/ UNS No.	Class/Condition/ Temper
		Ferrous Materials (Cont'd)					
	1	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316L	S31603	...
	2	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316L	S31603	1
	3	16Cr–12Ni–2Mo	Smls. & wld. fittings	SA-403	316L	S31603	...
	4	16Cr–12Ni–2Mo	Wld. pipe	SA-409	TP316L	S31603	...
	5	16Cr–12Ni–2Mo	Bar	SA-479	316L	S31603	...
	6	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316L	S31603	...
	7	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316L	S31603	...
	8	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316L	S31603	...
A08	9	16Cr–12Ni–2Mo	Bar	SA/JIS G4303	SUS316L	...	...
	10	16Cr–12Ni–2Mo	Castings	SA-351	CF3M	J92800	...
	11	16Cr–12Ni–2Mo	Cast pipe	SA-451	CPF3M	J92800	...
	12	16Cr–12Ni–2Mo	Castings	SA-351	CF8M	J92900	...
	13	16Cr–12Ni–2Mo	Cast pipe	SA-451	CPF8M	J92900	...
	14	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...
07	15	16Cr–12Ni–2Mo	Forgings	SA-965	F316	S31600	...
	16	16Cr–12Ni–2Mo	Forgings	SA-182	F316	S31600	...
	17	16Cr–12Ni–2Mo	Bolting	SA-193	B8M	S31600	1
	18	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316	S31600	...
	19	16Cr–12Ni–2Mo	Plate	SA-240	316	S31600	...
	20	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316	S31600	...
	21	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316	S31600	...
	22	16Cr–12Ni–2Mo	Bolting	SA-320	B8M	S31600	1
	23	16Cr–12Ni–2Mo	Bolting	SA-320	B8MA	S31600	1A
	24	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316	S31600	1
	25	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316	S31600	...
	26	16Cr–12Ni–2Mo	Smls. & wld. fittings	SA-403	316	S31600	...
	27	16Cr–12Ni–2Mo	Wld. pipe	SA-409	TP316	S31600	...
	28	16Cr–12Ni–2Mo	Bar	SA-479	316	S31600	...
	29	16Cr–12Ni–2Mo	Wld. tube	SA-688	TP316	S31600	...
	30	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316	S31600	...
	31	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316	S31600	...
A08	32	16Cr–12Ni–2Mo	Bar	SA/JIS G4303	SUS316	...	...
	33	16Cr–12Ni–2Mo	Bar	SA-276	316	S31600	S
	34	16Cr–12Ni–2Mo	Bolting	SA-193	B8M	S31600	2
	35	16Cr–12Ni–2Mo	Bolting	SA-320	B8M	S31600	2
	36	16Cr–12Ni–2Mo	Bolting	SA-193	B8M2	S31600	...
	37	16Cr–12Ni–2Mo	Bar	SA-276	316	S31600	S
	38	16Cr–12Ni–2Mo	Bar	SA-276	316	S31600	B
	39	16Cr–12Ni–2Mo	Bolting	SA-193	B8M	S31600	2
	40	16Cr–12Ni–2Mo	Bolting	SA-320	B8M	S31600	2
	41	16Cr–12Ni–2Mo	Bolting	SA-193	B8M2	S31600	...
	42	16Cr–12Ni–2Mo	Bar	SA-276	316	S31600	S

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	25	...	
2	...	70	25	...	
3	...	70	25	...	
4	...	70	25	...	
5	...	70	25	...	
6	...	70	25	...	
7	...	70	25	...	
8	...	70	25	...	
9	...	70	25	...	A08
10	...	70	30	...	
11	...	70	30	...	
12	...	70	30	...	
13	...	70	30	...	
14	> 5	70	30	...	
15	...	70	30	...	07
16	≤ 5	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	...	A08
33	$2\frac{1}{2} < t \le 3$	80	55	(4)	
34	$1\frac{1}{4} < t \le 1\frac{1}{2}$	90	50	...	
35	$1\frac{1}{4} < t \le 1\frac{1}{2}$	90	50	...	
36	$2 < t \le 2\frac{1}{2}$	90	65	...	
37	$2 < t \le 2\frac{1}{2}$	90	65	(4)	
38	$1\frac{1}{2} < t \le 1\frac{3}{4}$	95	45	(4)	
39	$1 < t \le 1\frac{1}{4}$	95	65	...	
40	$1 < t \le 1\frac{1}{4}$	95	65	...	
41	≤ 2	95	75	...	
42	≤ 2	95	75	(4)	

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	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
	4	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
	5	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
	6	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
	7	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
	8	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
A08	9	25.0	22.7	21.3	20.1	19.0	...	17.5	...	16.4
	10	30.0	27.3	25.8	24.5	23.3	...	21.4	...	19.9
	11	30.0	27.3	25.8	24.5	23.3	...	21.4	...	19.9
	12	30.0	27.3	25.8	24.5	23.3	...	21.4	...	19.9
	13	30.0	27.3	25.8	24.5	23.3	...	21.4	...	19.9
	14	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
07	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	...	25.9	...	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	...	25.9	...	23.4	...	21.4	...	20.0
	23	30.0	...	25.9	...	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	27.4	25.9	24.6	23.4	...	21.4	...	20.0
	27	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
	28	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
	29	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
	30	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
	31	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
A08	32	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
	33	55.0	...	51.7	...	48.8	...	46.5	...	45.3
	34	50.0	...	47.0	...	44.4	...	42.3	...	41.2
	35	50.0	...	47.0	...	44.4	...	42.3	...	41.2
	36	65.0	...	61.1	...	57.7	...	54.9	...	53.5
	37	65.0	...	61.1	...	57.7	...	54.9	...	53.5
	38	45.0	...	42.3	...	39.9	...	38.0	...	37.0
	39	65.0	...	61.1	...	57.7	...	54.9	...	53.5
	40	65.0	...	61.1	...	57.7	...	54.9	...	53.5
	41	75.0	...	70.5	...	66.5	...	63.4	...	61.7
	42	75.0	...	70.5	...	66.5	...	63.4	...	61.7

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	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
4	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
5	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
6	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
7	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
8	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	
9	...	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5	13.2	A08
10	...	18.8	18.4	18.1	17.8	17.6	17.4	17.3	17.1	17.0	
11	...	18.8	18.4	18.1	17.8	17.6	17.4	17.3	17.1	17.0	
12	...	18.8	18.4	18.1	17.8	17.6	17.4	17.3	17.1	17.0	
13	...	18.8	18.4	18.1	17.8	17.6	17.4	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	07
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	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0	
27	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0	
28	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0	
29	...	18.9	18.5	18.2	17.9	17.7	17.5	17.3	17.1	17.0	
30	...	18.9	18.5	18.2	17.9	17.7	17.5	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	A08
33	...	44.4	...	...	...	...	...	...	...	...	
34	...	40.4	39.9	39.3	38.8	38.3	37.7	37.2	36.7	36.0	
35	...	40.4	39.9	39.3	38.8	38.3	37.7	37.2	36.7	36.0	
36	...	52.5	51.8	51.0	50.4	49.7	49.0	48.4	47.6	46.8	
37	...	52.5	...	...	...	...	...	...	...	...	
38	...	36.3	...	...	...	...	...	...	...	...	
39	...	52.5	51.8	51.0	50.4	49.7	49.0	48.4	47.6	46.8	
40	...	52.5	51.8	51.0	50.4	49.7	49.0	48.4	47.6	46.8	
41	...	60.5	59.8	58.9	58.1	57.4	56.6	55.8	55.0	54.0	
42	...	60.5	...	...	...	...	...	...	...	...	

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 Designation/ UNS No.	Class/Condition/ Temper
		Ferrous Materials (Cont'd)					
	1	16Cr–12Ni–2Mo	Bar	SA-276	316	S31600	B
	2	16Cr–12Ni–2Mo	Bolting	SA-193	B8M	S31600	2
	3	16Cr–12Ni–2Mo	Bolting	SA-320	B8M	S31600	2
	4	16Cr–12Ni–2Mo	Bar	SA-276	316	S31600	B
	5	16Cr–12Ni–2Mo	Bolting	SA-193	B8M	S31600	2
	6	16Cr–12Ni–2Mo	Bolting	SA-320	B8M	S31600	2
	7	16Cr–12Ni–2Mo	Bar	SA-276	316	S31600	B
	8	16Cr–12Ni–2Mo	Bar	SA-276	316	S31600	B
	9	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...
07	10	16Cr–12Ni–2Mo	Forgings	SA-965	F316H	S31609	...
	11	16Cr–12Ni–2Mo	Forgings	SA-182	F316H	S31609	...
	12	16Cr–12Ni–2Mo	Smls. tube	SA-213	TP316H	S31609	...
	13	16Cr–12Ni–2Mo	Plate	SA-240	316H	S31609	...
	14	16Cr–12Ni–2Mo	Wld. tube	SA-249	TP316H	S31609	...
	15	16Cr–12Ni–2Mo	Smls. & wld. pipe	SA-312	TP316H	S31609	...
	16	16Cr–12Ni–2Mo	Wld. pipe	SA-358	316H	S31609	1
	17	16Cr–12Ni–2Mo	Smls. pipe	SA-376	TP316H	S31609	...
	18	16Cr–12Ni–2Mo	Smls. & wld. fittings	SA-403	316H	S31609	...
	19	16Cr–12Ni–2Mo	Bar	SA-479	316H	S31609	...
	20	16Cr–12Ni–2Mo	Wld. pipe	SA-813	TP316H	S31609	...
	21	16Cr–12Ni–2Mo	Wld. pipe	SA-814	TP316H	S31609	...
A08	22	16Cr–12Ni–2Mo	Plate	SA/EN 10028-7	X5CrNiMo17-12-2	...	...
	23	16Cr–12Ni–2Mo–Cb	Plate	SA-240	316Cb	S31640	...
	24	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316LN	S31653	...
07	25	16Cr–12Ni–2Mo–N	Forgings	SA-965	F316LN	S31653	...
	26	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316LN	S31653	...
	27	16Cr–12Ni–2Mo–N	Smls. tube	SA-213	TP316LN	S31653	...
	28	16Cr–12Ni–2Mo–N	Plate	SA-240	316LN	S31653	...
	29	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316LN	S31653	...
	30	16Cr–12Ni–2Mo–N	Smls. & wld. pipe	SA-312	TP316LN	S31653	...
	31	16Cr–12Ni–2Mo–N	Wld. pipe	SA-358	316LN	S31653	1
	32	16Cr–12Ni–2Mo–N	Smls. pipe	SA-376	TP316LN	S31653	...
	33	16Cr–12Ni–2Mo–N	Fittings	SA-403	316LN	S31653	...
	34	16Cr–12Ni–2Mo–N	Bar	SA-479	316LN	S31653	...
	35	16Cr–12Ni–2Mo–N	Wld. tube	SA-688	TP316LN	S31653	...
	36	16Cr–12Ni–2Mo–N	Forgings	SA-182	F316N	S31651	...
	37	16Cr–12Ni–2Mo–N	Smls. tube	SA-213	TP316N	S31651	...
	38	16Cr–12Ni–2Mo–N	Plate	SA-240	316N	S31651	...
	39	16Cr–12Ni–2Mo–N	Wld. tube	SA-249	TP316N	S31651	...

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	$1\frac{1}{4} < t \le 1\frac{1}{2}$	100	50	(4)	
2	$\frac{3}{4} < t \le 1$	100	80	...	
3	$\frac{3}{4} < t \le 1$	100	80	...	
4	$1 < t \le 1\frac{1}{4}$	105	65	(4)	
5	$\le \frac{3}{4}$	110	95	...	
6	$\le \frac{3}{4}$	110	95	...	
7	$\frac{3}{4} < t \le 1$	115	80	(4)	
8	$\le \frac{3}{4}$	125	100	(4)	
9	> 5	70	30	...	
10	...	70	30	...	07
11	≤ 5	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	≤ 3	75	32	...	A08
23	...	75	30	...	
24	> 5	70	30	...	
25	...	70	30	...	07
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	...	80	35	...	
37	...	80	35	...	
38	...	80	35	...	
39	...	80	35	...	

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	...	47.0	...	44.4	...	42.3	...	41.2
	2	80.0	...	69.1	...	65.5	...	59.6	...	55.0
	3	80.0	...	69.1	...	65.5	...	59.6	...	55.0
	4	65.0	...	61.1	...	57.7	...	54.9	...	53.5
	5	95.0	...	79.2	...	71.1	...	65.5	...	61.5
	6	95.0	...	79.2	...	71.1	...	65.5	...	61.5
	7	80.0	...	75.2	...	71.0	...	67.6	...	65.8
	8	100.0	...	94.0	...	88.7	...	84.5	...	82.3
	9	30.0	27.4	25.9	24.6	23.4	...	21.4	...	20.0
07	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
A08	22	32.0	...	27.5	...	24.9	...	22.8	...	21.2
	23	30.0	28.0	26.5	25.1	23.8	...	21.5	...	19.8
	24	30.0	27.1	25.5	24.1	22.9	...	21.0	...	19.5
07	25	30.0	27.1	25.5	24.1	22.9	...	21.0	...	19.5
	26	30.0	27.1	25.5	24.1	22.9	...	21.0	...	19.5
	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	35.0	32.5	31.0	29.7	28.5	...	26.4	...	24.7
	37	35.0	32.5	31.0	29.7	28.5	...	26.4	...	24.7
	38	35.0	32.5	31.0	29.7	28.5	...	26.4	...	24.7
	39	35.0	32.5	31.0	29.7	28.5	...	26.4	...	24.7

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	...	40.4	...	...	...	...	...	...	...	...	
2	...	51.7	49.3	48.4	47.7	47.1	46.6	46.1	45.7	45.3	
3	...	51.7	49.3	48.4	47.7	47.1	46.6	46.1	45.7	45.3	
4	...	52.5	...	...	...	...	...	...	...	...	
5	...	58.3	57.0	55.7	54.5	53.4	52.3	51.3	50.2	49.2	
6	...	58.3	57.0	55.7	54.5	53.4	52.3	51.3	50.2	49.2	
7	...	64.6	...	...	...	...	...	...	...	...	
8	...	80.7	...	...	...	...	...	...	...	...	
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	07
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	...	20.1	19.7	19.3	19.0	18.8	18.6	18.4	18.2	18.1	A08
23	...	18.7	18.3	18.0	17.8	17.6	17.5	17.4	17.3	17.1	
24	...	18.3	17.8	17.3	16.9	16.5	16.1	15.8	15.5	15.3	
25	...	18.3	17.8	17.3	16.9	16.5	16.1	15.8	15.5	15.3	07
26	...	18.3	17.8	17.3	16.9	16.5	16.1	15.8	15.5	15.3	
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	...	23.4	22.8	22.3	21.8	21.3	20.9	20.5	20.1	19.8	
37	...	23.4	22.8	22.3	21.8	21.3	20.9	20.5	20.1	19.8	
38	...	23.4	22.8	22.3	21.8	21.3	20.9	20.5	20.1	19.8	
39	...	23.4	22.8	22.3	21.8	21.3	20.9	20.5	20.1	19.8	

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 Designation/ UNS No.	Class/Condition/ Temper
		Ferrous Materials (Cont'd)					
	1	16Cr–12Ni–2Mo–N	Smls. & wld. pipe	SA-312	TP316N	S31651	...
	2	16Cr–12Ni–2Mo–N	Wld. pipe	SA-358	316N	S31651	1
	3	16Cr–12Ni–2Mo–N	Smls. pipe	SA-376	TP316N	S31651	...
	4	16Cr–12Ni–2Mo–N	Smls. & wld. fittings	SA-403	316N	S31651	...
	5	16Cr–12Ni–2Mo–N	Bar	SA-479	316N	S31651	...
	6	16Cr–12Ni–2Mo–N	Wld. tube	SA-688	TP316N	S31651	...
	7	16Cr–12Ni–2Mo–N	Wld. pipe	SA-813	TP316N	S31651	...
	8	16Cr–12Ni–2Mo–N	Wld. pipe	SA-814	TP316N	S31651	...
07	9	16Cr–12Ni–2Mo–N	Forgings	SA-965	F316N	S31651	...
	10	16Cr–12Ni–2Mo–Ti	Plate	SA-240	316Ti	S31635	...
	11	17.5Cr–17.5Ni–5.3Si	Plate	SA-240	...	S30601	Solution ann.
	12	18Cr–3Ni–12Mn	Plate	SA-240	XM-29	S24000	...
	13	18Cr–3Ni–12Mn	Wld. tube	SA-249	XM-29	S24000	...
	14	18Cr–3Ni–12Mn	Wld. pipe	SA-312	XM-29	S24000	...
	15	18Cr–3Ni–12Mn	Bar	SA-479	XM-29	S24000	...
	16	18Cr–3Ni–12Mn	Wld. tube	SA-688	TPXM-29	S24000	...
	17	18Cr–5Ni–3Mo	Smls. & wld. tube	SA-789	...	S31500	...
	18	18Cr–5Ni–3Mo	Smls. & wld. pipe	SA-790	...	S31500	...
	19	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...
07	20	18Cr–8Ni	Forgings	SA-965	F304L	S30403	...
	21	18Cr–8Ni	Forgings	SA-182	F304L	S30403	...
	22	18Cr–8Ni	Smls. tube	SA-213	TP304L	S30403	...
	23	18Cr–8Ni	Plate	SA-240	304L	S30403	...
	24	18Cr–8Ni	Wld. tube	SA-249	TP304L	S30403	...
	25	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304L	S30403	...
	26	18Cr–8Ni	Wld. pipe	SA-358	304L	S30403	1
	27	18Cr–8Ni	Smls. & wld. fittings	SA-403	304L	S30403	...
	28	18Cr–8Ni	Wld. pipe	SA-409	TP304L	S30403	...
	29	18Cr–8Ni	Bar	SA-479	304L	S30403	...
	30	18Cr–8Ni	Wld. tube	SA-688	TP304L	S30403	...
	31	18Cr–8Ni	Wld. pipe	SA-813	TP304L	S30403	...
	32	18Cr–8Ni	Wld. pipe	SA-814	TP304L	S30403	...
A08	33	18Cr–8Ni	Bar	SA/JIS G4303	SUS304L	...	...
	34	18Cr–8Ni	Forgings	SA-182	F304	S30400	...
	35	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...
	36	18Cr–8Ni	Castings	SA-351	CF3	J92500	...
	37	18Cr–8Ni	Castings	SA-351	CF8	J92600	...
	38	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...
	39	18Cr–8Ni	Cast pipe	SA-451	CPF3	J92500	...
	40	18Cr–8Ni	Cast pipe	SA-451	CPF8	J92600	...
07	41	18Cr–8Ni	Forgings	SA-965	F304	S30400	...
07	42	18Cr–8Ni	Forgings	SA-965	F304H	S30409	...

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	...	80	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	...	07
10	...	75	30	...	
11	...	78	37	...	
12	...	100	55	...	
13	...	100	55	...	
14	...	100	55	...	
15	...	100	55	...	
16	...	100	55	...	
17	...	92	64	...	
18	...	92	64	...	
19	> 5	65	25	...	
20	...	65	25	...	07
21	≤ 5	70	25	...	
22	...	70	25	...	
23	...	70	25	...	
24	...	70	25	...	
25	...	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	...	A08
34	> 5	70	30	...	
35	> 5	70	30	...	
36	...	70	30	...	
37	...	70	30	...	
38	...	70	30	...	
39	...	70	30	...	
40	...	70	30	...	
41	...	70	30	...	07
42	...	70	30	...	07

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
07	9	35.0	32.5	31.0	29.7	28.5	...	26.4	...	24.7
	10	30.0	28.0	26.5	25.1	23.8	...	21.5	...	19.8
	11	37.0	...	30.4	...	27.1	...	24.7	...	22.7
	12	55.0	48.3	44.2	40.6	37.5	...	32.9	...	30.2
	13	55.0	48.3	44.2	40.6	37.5	...	32.9	...	30.2
	14	55.0	48.3	44.2	40.6	37.5	...	32.9	...	30.2
	15	55.0	48.3	44.2	40.6	37.5	...	32.9	...	30.2
	16	55.0	48.3	44.2	40.6	37.5	...	32.9	...	30.2
	17	64.0	55.6	52.3	50.2	49.0	...	47.7	...	46.6
	18	64.0	55.6	52.3	50.2	49.0	...	47.7	...	46.6
	19	25.0	22.7	21.4	20.2	19.2	...	17.5	...	16.4
07	20	25.0	22.7	21.4	20.2	19.2	...	17.5	...	16.4
	21	25.0	22.7	21.4	20.2	19.2	...	17.5	...	16.4
	22	25.0	22.7	21.4	20.2	19.2	...	17.5	...	16.4
	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
A08	33	25.0	22.7	21.4	20.2	19.2	...	17.5	...	16.4
	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	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
	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
07	41	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
07	42	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4

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	07
10	...	18.7	18.3	18.0	17.8	17.6	17.5	17.4	17.3	17.1	
11	...	...	...	...	...	...	...	...	...	...	
12	...	28.7	28.2	27.8	27.3	26.6	25.9	25.1	24.2	23.4	
13	...	28.7	28.2	27.8	27.3	26.6	25.9	25.1	24.2	23.4	
14	...	28.7	28.2	27.8	27.3	26.6	25.9	25.1	24.2	23.4	
15	...	28.7	28.2	27.8	27.3	26.6	25.9	25.1	24.2	23.4	
16	...	28.7	28.2	27.8	27.3	26.6	25.9	25.1	24.2	23.4	
17	...	45.2	44.4	43.6	42.8	42.3	...	...	...	...	
18	...	45.2	44.4	43.6	42.8	42.3	...	...	...	...	
19	...	15.5	15.2	15.0	14.7	14.5	14.3	14.0	13.7	13.3	
20	...	15.5	15.2	15.0	14.7	14.5	14.3	14.0	13.7	13.3	07
21	...	15.5	15.2	15.0	14.7	14.5	14.3	14.0	13.7	13.3	
22	...	15.5	15.2	15.0	14.7	14.5	14.3	14.0	13.7	13.3	
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	A08
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	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5	
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	
41	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5	07
42	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5	07

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 Designation/ UNS No.	Class/Condition/ Temper
		Ferrous Materials (Cont'd)					
	1	18Cr–8Ni	Forgings	SA-182	F304	S30400	...
	2	18Cr–8Ni	Forgings	SA-182	F304H	S30409	...
	3	18Cr–8Ni	Bolting	SA-193	B8	S30400	1
	4	18Cr–8Ni	Smls. tube	SA-213	TP304	S30400	...
	5	18Cr–8Ni	Smls. tube	SA-213	TP304H	S30409	...
	6	18Cr–8Ni	Plate	SA-240	302	S30200	...
	7	18Cr–8Ni	Plate	SA-240	304	S30400	...
	8	18Cr–8Ni	Plate	SA-240	304H	S30409	...
	9	18Cr–8Ni	Wld. tube	SA-249	TP304	S30400	...
	10	18Cr–8Ni	Wld. tube	SA-249	TP304H	S30409	...
	11	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304	S30400	...
	12	18Cr–8Ni	Smls. & wld. pipe	SA-312	TP304H	S30409	...
	13	18Cr–8Ni	Bolting	SA-320	B8	S30400	1
	14	18Cr–8Ni	Bolting	SA-320	B8A	S30400	1A
	15	18Cr–8Ni	Wld. pipe	SA-358	304	S30400	1
	16	18Cr–8Ni	Wld. pipe	SA-358	304H	S30409	1
	17	18Cr–8Ni	Wld. pipe	SA-358	304LN	S30453	1
	18	18Cr–8Ni	Smls. pipe	SA-376	TP304	S30400	...
	19	18Cr–8Ni	Smls. pipe	SA-376	TP304H	S30409	...
	20	18Cr–8Ni	Smls. & wld. fittings	SA-403	304	S30400	...
	21	18Cr–8Ni	Smls. & wld. fittings	SA-403	304H	S30409	...
	22	18Cr–8Ni	Wld. pipe	SA-409	TP304	S30400	...
	23	18Cr–8Ni	Bar	SA-479	302	S30200	...
	24	18Cr–8Ni	Bar	SA-479	304	S30400	...
	25	18Cr–8Ni	Bar	SA-479	304H	S30409	...
	26	18Cr–8Ni	Wld. tube	SA-688	TP304	S30400	...
	27	18Cr–8Ni	Wld. pipe	SA-813	TP304	S30400	...
	28	18Cr–8Ni	Wld. pipe	SA-813	TP304H	S30409	...
	29	18Cr–8Ni	Wld. pipe	SA-814	TP304	S30400	...
	30	18Cr–8Ni	Wld. pipe	SA-814	TP304H	S30409	...
A08	31	18Cr–8Ni	Bar	SA/JIS G4303	SUS302	...	...
A08	32	18Cr–8Ni	Bar	SA/JIS G4303	SUS304	...	...
A08	33	18Cr–8Ni	Plate	SA/EN 10028-7	X5CrNi18-10	...	...
	34	18Cr–8Ni	Castings	SA-351	CF3A	J92500	...
	35	18Cr–8Ni	Castings	SA-351	CF8A	J92600	...
	36	18Cr–8Ni	Cast pipe	SA-451	CPF3A	J92500	...
	37	18Cr–8Ni	Cast pipe	SA-451	CPF8A	J92600	...
	38	18Cr–8Ni	Bolting	SA-320	B8	S30400	2
	39	18Cr–8Ni	Bolting	SA-320	B8	S30400	2
	40	18Cr–8Ni	Bolting	SA-320	B8	S30400	2
	41	18Cr–8Ni	Bolting	SA-320	B8	S30400	2

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	≤ 5	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	...	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	...	A08
32	...	75	30	...	A08
33	≤ 3	75	31	...	A08
34	...	77	35	...	
35	...	77	35	...	
36	...	77	35	...	
37	...	77	35	...	
38	$1\frac{1}{4} < t \le 1\frac{1}{2}$	100	50	(6)	
39	$1 < t \le 1\frac{1}{4}$	105	65	(6)	
40	$\frac{3}{4} < t \le 1$	115	80	(6)	
41	$\le \frac{3}{4}$	125	100	(6)	

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	...	25.0	...	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	...	25.0	...	22.4	...	20.7	...	19.4
14	30.0	...	25.0	...	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
A08 31	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
A08 32	30.0	26.7	25.0	23.6	22.4	...	20.7	...	19.4
A08 33	31.0	...	25.4	...	22.8	...	21.0	...	19.7
34	35.0	31.2	29.2	27.5	26.2	...	24.1	...	22.6
35	35.0	31.2	29.2	27.5	26.2	...	24.1	...	22.6
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	50.0	...	...	...	...	...	...	...	...
39	65.0	...	...	...	...	...	...	...	...
40	80.0	...	...	...	...	...	...	...	...
41	100.0	...	...	...	...	...	...	...	...

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	A08
32	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5	A08
33	...	18.7	18.3	17.9	17.5	17.1	16.8	16.4	16.1	15.8	A08
34	...	21.5	21.0	20.5	20.1	19.7	19.3	18.9	18.5	18.1	
35	...	21.5	21.0	20.5	20.1	19.7	19.3	18.9	18.5	18.1	
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	...	...	...	...	...	...	...	...	...	...	
39	...	...	...	...	...	...	...	...	...	...	
40	...	...	...	...	...	...	...	...	...	...	
41	...	...	...	...	...	...	...	...	...	...	

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 Designation/ UNS No.	Class/Condition/ Temper
		Ferrous Materials (Cont'd)					
	1	18Cr–8Ni–N	Forgings	SA-182	F304LN	S30453	...
07	2	18Cr–8Ni–N	Forgings	SA-965	F304LN	S30453	...
	3	18Cr–8Ni–N	Forgings	SA-182	F304LN	S30453	...
	4	18Cr–8Ni–N	Bolting	SA-193	B8NA	S30451	1A
	5	18Cr–8Ni–N	Smls. tube	SA-213	TP304LN	S30453	...
	6	18Cr–8Ni–N	Plate	SA-240	304LN	S30453	...
	7	18Cr–8Ni–N	Wld. tube	SA-249	TP304LN	S30453	...
	8	18Cr–8Ni–N	Smls. & wld. pipe	SA-312	TP304LN	S30453	...
	9	18Cr–8Ni–N	Smls. pipe	SA-376	TP304LN	S30453	...
	10	18Cr–8Ni–N	Smls. & wld. fittings	SA-403	304LN	S30453	WP
	11	18Cr–8Ni–N	Bar	SA-479	304LN	S30453	...
	12	18Cr–8Ni–N	Wld. tube	SA-688	TP304LN	S30453	...
	13	18Cr–8Ni–N	Wld. pipe	SA-813	TP304LN	S30453	...
	14	18Cr–8Ni–N	Wld. pipe	SA-814	TP304LN	S30453	...
	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	Wld. pipe	SA-358	304N	S30451	1
	21	18Cr–8Ni–N	Smls. pipe	SA-376	TP304N	S30451	...
	22	18Cr–8Ni–N	Smls. & wld. fittings	SA-403	304N	S30451	...
	23	18Cr–8Ni–N	Bar	SA-479	304N	S30451	...
	24	18Cr–8Ni–N	Wld. tube	SA-688	TP304N	S30451	...
	25	18Cr–8Ni–N	Wld. pipe	SA-813	TP304N	S30451	...
	26	18Cr–8Ni–N	Wld. pipe	SA-814	TP304N	S30451	...
07	27	18Cr–8Ni–N	Forgings	SA-965	F304N	S30451	...
	28	18Cr–8Ni–S	Bolting	SA-320	B8F	S30323	1
	29	18Cr–8Ni–S	Bolting	SA-320	B8FA	S30323	1A
	30	18Cr–8Ni–Se	Bolting	SA-320	B8F	S30323	1
	31	18Cr–8Ni–Se	Bolting	SA-320	B8FA	S30323	1A
	32	18Cr–8Ni–4Si–N	Bar	SA-479	...	S21800	...
07	33	18Cr–10Ni–Cb	Forgings	SA-965	F348H	S34809	...
	34	18Cr–10Ni–Cb	Castings	SA-351	CF8C	J92710	...
	35	18Cr–10Ni–Cb	Cast pipe	SA-451	CPF8C	J92710	...
	36	18Cr–10Ni–Cb	Forgings	SA-182	F347	S34700	...
07	37	18Cr–10Ni–Cb	Forgings	SA-965	F347	S34700	...
	38	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...
07	39	18Cr–10Ni–Cb	Forgings	SA-965	F347H	S34709	...

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	07
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	...	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	07
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	...	...	...	...	
31	...	18.4	18.0	17.6	17.2	16.9	...	...	...	...	
32	...	26.4	25.9	25.6	25.4	25.2	25.0	24.9	24.9	24.9	
33	...	17.9	17.6	17.3	17.1	17.0	16.9	16.8	16.8	16.7	07
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	07
38	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1	
39	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1	07

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 Designation/ UNS No.	Class/Condition/ Temper
		Ferrous Materials (Cont'd)					
	1	18Cr–10Ni–Cb	Forgings	SA-182	F348	S34800	...
07	2	18Cr–10Ni–Cb	Forgings	SA-965	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	...
A08	15	18Cr–10Ni–Cb	Bar	SA/JIS G4303	SUS347	...	...
	16	18Cr–10Ni–Cb	Forgings	SA-182	F347H	S34709	...
	17	18Cr–10Ni–Cb	Smls. tube	SA-213	TP347H	S34709	...
	18	18Cr–10Ni–Cb	Plate	SA-240	347H	S34709	...
	19	18Cr–10Ni–Cb	Wld. tube	SA-249	TP347H	S34709	...
	20	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP347H	S34709	...
	21	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP347H	S34709	...
	22	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	347H	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	Bolting	SA-193	B8C	S34700	1
	28	18Cr–10Ni–Cb	Smls. tube	SA-213	TP348	S34800	...
	29	18Cr–10Ni–Cb	Plate	SA-240	348	S34800	...
	30	18Cr–10Ni–Cb	Wld. tube	SA-249	TP348	S34800	...
	31	18Cr–10Ni–Cb	Smls. & wld. pipe	SA-312	TP348	S34800	...
	32	18Cr–10Ni–Cb	Bolting	SA-320	B8C	S34700	1
	33	18Cr–10Ni–Cb	Bolting	SA-320	B8CA	S34700	1A
	34	18Cr–10Ni–Cb	Wld. pipe	SA-358	348	S34800	1
	35	18Cr–10Ni–Cb	Smls. pipe	SA-376	TP348	S34800	...
	36	18Cr–10Ni–Cb	Smls. & wld. fittings	SA-403	348	S34800	...
	37	18Cr–10Ni–Cb	Wld. pipe	SA-409	TP348	S34800	...
	38	18Cr–10Ni–Cb	Bar	SA-479	348	S34800	...
	39	18Cr–10Ni–Cb	Wld. pipe	SA-813	TP348	S34800	...
	40	18Cr–10Ni–Cb	Wld. pipe	SA-814	TP348	S34800	...

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	...	07
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	...	75	30	...	A08
16	≤ 5	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	...	
38	...	75	30	...	
39	...	75	30	...	
40	...	75	30	...	

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
07	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
A08	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	...	27.6	...	25.7	...	24.0	...	22.5
	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	...	27.6	...	25.7	...	24.0	...	22.5
	33	30.0	...	27.6	...	25.7	...	24.0	...	22.5
	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
	38	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
	39	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6
	40	30.0	28.6	27.6	26.6	25.7	...	24.0	...	22.6

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	07
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	A08
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	20.4	20.3	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	20.4	20.3	20.2	20.1	20.1	
33	...	21.5	21.1	20.7	20.5	20.4	20.3	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	
38	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1	
39	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1	
40	...	21.5	21.1	20.7	20.5	20.3	20.2	20.2	20.1	20.1	

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 Designation/ UNS No.	Class/Condition/ 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–Cb	Smls. tube	SA-213	TP347HFG	S34710	...
	11	18Cr–10Ni–Cb	Bolting	SA-320	B8C	S34700	2
	12	18Cr–10Ni–Cb	Bolting	SA-320	B8C	S34700	2
	13	18Cr–10Ni–Cb	Bolting	SA-320	B8C	S34700	2
	14	18Cr–10Ni–Cb	Bolting	SA-320	B8C	S34700	2
	15	18Cr–10Ni–Ti	Smls. & wld. pipe	SA-312	TP321	S32100	...
	16	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...
	17	18Cr–10Ni–Ti	Smls. & wld. pipe	SA-312	TP321H	S32109	...
	18	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321H	S32109	...
	19	18Cr–10Ni–Ti	Forgings	SA-182	F321	S32100	...
07	20	18Cr–10Ni–Ti	Forgings	SA-965	F321	S32100	...
	21	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...
07	22	18Cr–10Ni–Ti	Forgings	SA-965	F321H	S32109	...
	23	18Cr–10Ni–Ti	Forgings	SA-182	F321	S32100	...
	24	18Cr–10Ni–Ti	Bolting	SA-193	B8T	S32100	1
	25	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321	S32100	...
	26	18Cr–10Ni–Ti	Plate	SA-240	321	S32100	...
	27	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321	S32100	...
	28	18Cr–10Ni–Ti	Smls. & wld. pipe	SA-312	TP321	S32100	...
	29	18Cr–10Ni–Ti	Bolting	SA-320	B8T	S32100	1
	30	18Cr–10Ni–Ti	Bolting	SA-320	B8TA	S32100	1A
	31	18Cr–10Ni–Ti	Wld. pipe	SA-358	321	S32100	1
	32	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321	S32100	...
	33	18Cr–10Ni–Ti	Smls. & wld. fittings	SA-403	321	S32100	...
	34	18Cr–10Ni–Ti	Wld. pipe	SA-409	TP321	S32100	...
	35	18Cr–10Ni–Ti	Bar	SA-479	321	S32100	...
	36	18Cr–10Ni–Ti	Wld. pipe	SA-813	TP321	S32100	...
	37	18Cr–10Ni–Ti	Wld. pipe	SA-814	TP321	S32100	...
A08	38	18Cr–10Ni–Ti	Bar	SA/JIS G4303	SUS321	...	...

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	...	80	30	...	
11	$1\frac{1}{4} < t \leq 1\frac{1}{2}$	100	50	(6)	
12	$1 < t \leq 1\frac{1}{4}$	105	65	(6)	
13	$\frac{3}{4} < t \leq 1$	115	80	(6)	
14	$\leq \frac{3}{4}$	125	100	(6)	
15	$> \frac{3}{8}$	70	25	...	
16	$> \frac{3}{8}$	70	25	...	
17	$> \frac{3}{16}$	70	25	...	
18	$> \frac{3}{8}$	70	25	...	
19	> 5	70	30	...	
20	...	70	30	...	07
21	> 5	70	30	...	
22	...	70	30	...	07
23	≤ 5	75	30	...	
24	...	75	30	...	
25	...	75	30	...	
26	...	75	30	...	
27	...	75	30	...	
28	$\leq \frac{3}{8}$	75	30	...	
29	...	75	30	...	
30	...	75	30	...	
31	...	75	30	...	
32	$\leq \frac{3}{8}$	75	30	...	
33	...	75	30	...	
34	...	75	30	...	
35	...	75	30	...	
36	...	75	30	...	
37	...	75	30	...	
38	...	75	30	...	A08

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	...	27.1	...	25.3	...	23.9	...	22.8
	11	50.0	...	...	...	...	...	...	...	...
	12	65.0	...	...	...	...	...	...	...	...
	13	80.0	...	...	...	...	...	...	...	...
	14	100.0	...	...	...	...	...	...	...	...
	15	25.0	23.4	22.5	21.5	20.7	...	19.2	...	17.9
	16	25.0	23.4	22.5	21.5	20.7	...	19.2	...	17.9
	17	25.0	23.4	22.5	21.5	20.7	...	19.2	...	17.9
	18	25.0	23.4	22.5	21.5	20.7	...	19.2	...	17.9
	19	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5
07	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
07	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	...	27.0	...	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	...	27.0	...	24.8	...	23.0	...	21.5
	30	30.0	...	27.0	...	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
A08	38	30.0	28.1	27.0	25.8	24.8	...	23.0	...	21.5

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	...	21.9	21.5	21.2	20.9	20.6	20.4	20.2	19.9	19.7	
11	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	
15	...	16.9	16.5	16.2	15.9	15.7	15.5	15.3	15.2	15.0	
16	...	16.9	16.5	16.2	15.9	15.7	15.5	15.3	15.2	15.0	
17	...	16.9	16.5	16.2	15.9	15.7	15.5	15.3	15.2	15.0	
18	...	16.9	16.5	16.2	15.9	15.7	15.5	15.3	15.2	15.0	
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	07
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	07
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	A08

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 Designation/ UNS No.	Class/Condition/ Temper
	Ferrous Materials (Cont'd)					
1	18Cr–10Ni–Ti	Forgings	SA-182	F321H	S32109	...
2	18Cr–10Ni–Ti	Smls. tube	SA-213	TP321H	S32109	...
3	18Cr–10Ni–Ti	Plate	SA-240	321H	S32109	...
4	18Cr–10Ni–Ti	Wld. tube	SA-249	TP321H	S32109	...
5	18Cr–10Ni–Ti	Smls. & wld. pipe	SA-312	TP321H	S32109	...
6	18Cr–10Ni–Ti	Smls. pipe	SA-376	TP321H	S32109	...
7	18Cr–10Ni–Ti	Smls. & wld. fittings	SA-403	321H	S32109	...
8	18Cr–10Ni–Ti	Bar	SA-479	321H	S32109	...
9	18Cr–10Ni–Ti	Wld. pipe	SA-813	TP321H	S32109	...
10	18Cr–10Ni–Ti	Wld. pipe	SA-814	TP321H	S32109	...
11	18Cr–10Ni–Ti	Bolting	SA-320	B8T	S32100	2
12	18Cr–10Ni–Ti	Bolting	SA-320	B8T	S32100	2
13	18Cr–10Ni–Ti	Bolting	SA-320	B8T	S32100	2
14	18Cr–10Ni–Ti	Bolting	SA-320	B8T	S32100	2
15	18Cr–11Ni	Plate	SA-240	305	S30500	...
16	18Cr–13Ni–3Mo	Forgings	SA-182	F317L	S31703	...
17	18Cr–13Ni–3Mo	Forgings	SA-182	F317L	S31703	...
18	18Cr–13Ni–3Mo	Forgings	SA-182	F317	S31700	...
19	18Cr–13Ni–3Mo	Plate	SA-240	317	S31700	...
20	18Cr–13Ni–3Mo	Plate	SA-240	317L	S31703	...
21	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317	S31700	...
22	18Cr–13Ni–3Mo	Wld. tube	SA-249	TP317L	S31703	...
23	18Cr–13Ni–3Mo	Smls. & wld. pipe	SA-312	TP317	S31700	...
24	18Cr–13Ni–3Mo	Smls. & wld. pipe	SA-312	TP317L	S31703	...
25	18Cr–13Ni–3Mo	Smls. & wld. fittings	SA-403	317	S31700	...
26	18Cr–13Ni–3Mo	Fittings	SA-403	317L	S31703	...
27	18Cr–15Ni–4Si	Forgings	SA-182	...	S30600	Solution ann.
28	18Cr–15Ni–4Si	Plate	SA-240	...	S30600	Solution ann.
29	18Cr–15Ni–4Si	Smls. & wld. pipe	SA-312	...	S30600	Solution ann.
30	18Cr–15Ni–4Si	Bar	SA-479	...	S30600	Solution ann.
31	18Cr–18Ni–2Si	Smls. tube	SA-213	XM-15	S38100	...
32	18Cr–18Ni–2Si	Plate	SA-240	XM-15	S38100	...
33	18Cr–18Ni–2Si	Wld. tube	SA-249	TPXM-15	S38100	...
34	18Cr–18Ni–2Si	Wld. pipe	SA-312	TPXM-15	S38100	...
35	18Cr–20Ni–5.5Si	Smls. tube	SA-213	...	S32615	Solution ann.
36	18Cr–20Ni–5.5Si	Plate	SA-240	...	S32615	Solution ann.
37	18Cr–20Ni–5.5Si	Smls. & wld. pipe	SA-312	...	S32615	Solution ann.
38	18Cr–20Ni–5.5Si	Bar	SA-479	...	S32615	Solution ann.

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	17.9	17.6	17.2	16.9	16.6	16.3	15.9	15.6
2	...	39.9	39.4	38.9	38.3	37.8	37.3	36.7	36.0	35.4
3	...	47.9	47.3	46.6	46.0	45.4	44.7	44.0	43.3	42.4
4	...	47.9	47.3	46.6	46.0	45.4	44.7	44.0	43.3	42.4
5	...	55.9	55.1	54.4	53.7	52.9	52.2	51.3	50.5	49.5
6	...	18.8	18.5	18.1	17.9	17.6	17.4	17.2	17.0	16.9
7	...	19.4	19.0	18.7	18.4	18.2	18.0	17.7	17.4	17.0
8	...	18.7	18.3	18.0	17.6	17.3	16.9	16.6	16.2	15.9
9	...	18.7	18.3	18.0	17.6	17.3	16.9	16.6	16.2	15.9
10	...	18.7	18.3	18.0	17.6	17.3	16.9	16.6	16.2	15.9
11	...	18.7	18.3	18.0	17.6	17.3	16.9	16.6	16.2	15.9
12	...	18.7	18.3	18.0	17.6	17.3	16.9	16.6	16.2	15.9
13	...	18.7	18.3	18.0	17.6	17.3	16.9	16.6	16.2	15.9
14	...	18.7	18.3	18.0	17.6	17.3	16.9	16.6	16.2	15.9
15	...	18.7	18.3	18.0	17.6	17.3	16.9	16.6	16.2	15.9
16	...	18.4	18.0	17.6	17.2	16.9	16.5	16.2	15.9	15.5
17	...	23.2	22.8	22.6	22.4	22.3	22.1	...	...	...
18	...	26.8	26.4	26.2	26.0	25.8	25.6	...	...	...
19	...	26.8	26.4	26.2	26.0	25.8	25.6	...	...	...
20	...	26.8	26.4	26.2	26.0	25.8	25.6	...	...	...
21	...	26.8	26.4	26.2	26.0	25.8	25.6	...	...	...
22	...	27.4	27.0	26.8	26.6	26.4	26.2	...	...	...
23	...	25.7	25.3	25.0	24.8	24.6	24.4	24.1	23.5	22.6
24	...	25.7	25.3	25.0	24.8	24.6	24.4	24.1	23.5	22.6
25	...	25.7	25.3	25.0	24.8	24.6	24.4	24.1	23.5	22.6
26	...	25.7	25.3	25.0	24.8	24.6	24.4	24.1	23.5	22.6 07
27	...	26.5	26.1	25.8	25.5	25.2	25.0	24.7	24.3	23.9
28	...	26.5	26.1	25.8	25.5	25.2	25.0	24.7	24.3	23.9
29	...	26.5	26.1	25.8	25.5	25.2	25.0	24.7	24.3	23.9
30	...	26.5	26.1	25.8	25.5	25.2	25.0	24.7	24.3	23.9
31	...	26.5	26.1	25.8	25.5	25.2	25.0	24.7	24.3	23.9
32	...	26.5	26.1	25.8	25.5	25.2	25.0	24.7	24.3	23.9
33	...	47.9	46.9	...	...	...	...	...	...	...
34	...	47.9	46.9	...	...	...	...	...	...	...
35	...	47.9	46.9	...	...	...	...	...	...	...
36	...	47.9	46.9	...	...	...	...	...	...	...
37	...	47.9	46.9	...	...	...	...	...	...	...
38	...	47.9	46.9	...	...	...	...	...	...	...

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 Designation/ UNS No.	Class/Condition/ Temper
		Ferrous Materials (Cont'd)					
	1	22Cr–13Ni–5Mn	Castings	SA-351	CG6MMN	J93790	...
	2	22Cr–13Ni–5Mn	Forgings	SA-182	FXM-19	S20910	...
	3	22Cr–13Ni–5Mn	Bolting	SA-193	B8R	S20910	Annealed
	4	22Cr–13Ni–5Mn	Bolting	SA-193	B8RA	S20910	Annealed
	5	22Cr–13Ni–5Mn	Smls. tube	SA-213	XM-19	S20910	...
	6	22Cr–13Ni–5Mn	Plate	SA-240	XM-19	S20910	...
	7	22Cr–13Ni–5Mn	Wld. tube	SA-249	TPXM-19	S20910	...
	8	22Cr–13Ni–5Mn	Smls. & wld. pipe	SA-312	TPXM-19	S20910	...
	9	22Cr–13Ni–5Mn	Wld. pipe	SA-358	XM-19	S20910	1
	10	22Cr–13Ni–5Mn	Smls. & wld. fittings	SA-403	XM-19	S20910	...
	11	22Cr–13Ni–5Mn	Bar	SA-479	XM-19	S20910	Annealed
	12	22Cr–13Ni–5Mn	Wld. pipe	SA-813	TPXM-19	S20910	...
	13	22Cr–13Ni–5Mn	Wld. pipe	SA-814	TPXM-19	S20910	...
07	14	22Cr–13Ni–5Mn	Forgings	SA-965	FXM-19	S20910	...
	15	22Cr–13Ni–5Mn	Bar	SA-479	XM-19	S20910	Hot rolled
	16	22Cr–13Ni–5Mn	Bar	SA-479	XM-19	S20910	Hot rolled
	17	22Cr–13Ni–5Mn	Bar	SA-479	XM-19	S20910	Hot rolled
	18	23Cr–4Ni–Mo–Cu	Plate	SA-240	...	S32304	...
	19	23Cr–4Ni–Mo–Cu–N	Smls. & wld. tube	SA-789	...	S32304	...
	20	23Cr–4Ni–Mo–Cu–N	Smls. & wld. pipe	SA-790	...	S32304	...
	21	23Cr–4Ni–Mo–Cu–N	Smls. & wld. tube	SA-789	...	S32304	...
	22	23Cr–12Ni	Smls. & wld. fittings	SA-403	309	S30900	...
	23	23Cr–12Ni	Smls. tube	SA-213	TP309S	S30908	...
	24	23Cr–12Ni	Plate	SA-240	309S	S30908	...
	25	23Cr–12Ni	Wld. tube	SA-249	TP309S	S30908	...
	26	23Cr–12Ni	Smls. & wld. pipe	SA-312	TP309S	S30908	...
	27	23Cr–12Ni	Wld. pipe	SA-358	309S	S30908	1
	28	23Cr–12Ni	Bar	SA-479	309S	S30908	...
	29	23Cr–12Ni	Wld. pipe	SA-813	TP309S	S30908	...
	30	23Cr–12Ni	Wld. pipe	SA-814	TP309S	S30908	...
A08	31	23Cr–12Ni	Bar	SA/JIS G4303	SUS309S	...	...
	32	23Cr–12Ni	Smls. tube	SA-213	TP309H	S30909	...
	33	23Cr–12Ni	Plate	SA-240	309H	S30909	...
	34	23Cr–12Ni	Wld. tube	SA-249	TP309H	S30909	...
	35	23Cr–12Ni	Smls. & wld. pipe	SA-312	TP309H	S30909	...
	36	23Cr–12Ni	Bar	SA-479	309H	S30909	...
	37	23Cr–12Ni–Cb	Smls. tube	SA-213	TP309Cb	S30940	...
	38	23Cr–12Ni–Cb	Plate	SA-240	309Cb	S30940	...
	39	23Cr–12Ni–Cb	Wld. tube	SA-249	TP309Cb	S30940	...
	40	23Cr–12Ni–Cb	Smls. & wld. pipe	SA-312	TP309Cb	S30940	...

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	...	85	42.5	...	
2	...	100	55	...	
3	...	100	55	...	
4	...	100	55	...	
5	...	100	55	...	
6	...	100	55	...	
7	...	100	55	...	
8	...	100	55	...	
9	...	100	55	...	
10	...	100	55	...	
11	...	100	55	...	
12	...	100	55	...	
13	...	100	55	...	
14	...	100	55	...	07
15	$3 < t \le 8$	100	60	...	
16	$2 < t \le 3$	115	75	...	
17	≤ 2	135	105	...	
18	...	87	58	...	
19	> 1	87	58	...	
20	...	87	58	...	
21	≤ 1	100	65	...	
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	...	A08
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	...	

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	42.5	38.4	36.4	34.8	33.4	...	31.5	...	30.0
2	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
3	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
4	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
5	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
6	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
7	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
8	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
9	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
10	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
11	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
12	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
13	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
07 14	55.0	49.8	47.1	45.0	43.3	...	40.7	...	38.8
15	60.0	...	51.4	...	47.2	...	44.4	...	42.4
16	75.0	...	64.2	...	59.0	...	55.5	...	53.0
17	105.0	...	89.9	...	82.6	...	77.8	...	74.2
18	58.0	52.6	49.8	47.8	46.3	...	44.5	...	43.4
19	58.0	52.6	49.8	47.8	46.3	...	44.5	...	43.4
20	58.0	52.6	49.8	47.8	46.3	...	44.5	...	43.4
21	65.0	58.9	55.9	53.6	51.9	...	49.6	...	48.6
22	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
23	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
24	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
25	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
26	30.0	27.6	26.3	25.1	24.2	...	22.7	...	21.6
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
A08 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

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	...	28.9	28.4	28.0	27.6	27.3	27.0	26.7	26.4	26.0	
2	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7	
3	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7	
4	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7	
5	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7	
6	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7	
7	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7	
8	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7	
9	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7	
10	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7	
11	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7	
12	...	37.4	36.8	36.3	35.8	35.3	34.9	34.5	34.1	33.7	
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	07
15	...	40.8	40.1	39.5	39.0	38.5	38.1	37.7	37.2	36.7	
16	...	51.0	50.2	49.4	48.8	48.2	47.6	47.1	46.6	45.9	
17	...	71.4	70.3	69.2	68.3	67.5	66.7	66.0	65.2	64.2	
18	...	42.1	41.3	40.4	39.4	38.6	...	...	...	...	
19	...	42.1	41.3	40.4	39.4	38.6	...	...	...	...	
20	...	42.1	41.3	40.4	39.4	38.6	...	...	...	...	
21	...	47.2	46.3	45.3	...	...	...	...	...	...	
22	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4	
23	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4	
24	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4	
25	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4	
26	...	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.8	18.4	
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	A08
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	

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 Designation/ UNS No.	Class/Condition/ Temper
		Ferrous Materials (Cont'd)					
	1	23Cr–12Ni–Cb	Bar	SA-479	309Cb	S30940	...
	2	23Cr–12Ni–Cb	Wld. pipe	SA-813	TP309Cb	S30940	...
	3	23Cr–12Ni–Cb	Wld. pipe	SA-814	TP309Cb	S30940	...
	4	24Cr–10Ni–4Mo–N	Castings	SA-995	2A	J93345	...
	5	25Cr–4Ni–4Mo–Ti	Plate	SA-240	...	S44635	...
	6	25Cr–4Ni–4Mo–Ti	Wld. tube	SA-268	...	S44635	...
	7	25Cr–5Ni–3Mo–2Cu	Castings	SA-995	1B	J93372	...
	8	25Cr–5Ni–3Mo–2Cu	Plate	SA-240	...	S32550	...
	9	25Cr–5Ni–3Mo–2Cu	Bar	SA-479	...	S32550	...
	10	25Cr–5Ni–3Mo–2Cu	Smls. & wld. tube	SA-789	...	S32550	...
	11	25Cr–5Ni–3Mo–2Cu	Smls. & wld. pipe	SA-790	...	S32550	...
	12	25Cr–6Ni–Mo–N	Plate	SA-240	...	S31200	...
	13	25Cr–6.5Ni–3Mo–N	Smls. & wld. tube	SA-789	...	S31260	...
	14	25Cr–6.5Ni–3Mo–N	Smls. & wld. pipe	SA-790	...	S31260	...
	15	25Cr–6.5Ni–3Mo–N	Plate	SA-240	...	S31260	...
07	16	25Cr–7Ni–3Mo–W–Cu–N	Forgings	SA-182	F54	S39274	...
07	17	25Cr–7Ni–3Mo–W–Cu–N	Smls. & wld. tube	SA-789	...	S39274	...
07	18	25Cr–7Ni–3Mo–W–Cu–N	Smls. & wld. pipe	SA-790	...	S39274	...
07	19	25Cr–7Ni–4Mo–N	Forgings	SA-182	F53	S32750	...
07	20	25Cr–7Ni–4Mo–N	Plate	SA-240	...	S32750	...
	21	25Cr–7Ni–4Mo–N	Smls. & wld. tube	SA-789	...	S32750	...
	22	25Cr–7Ni–4Mo–N	Smls. & wld. pipe	SA-790	...	S32750	...
	23	25Cr–12Ni	Castings	SA-351	CH8	J93400	...
	24	25Cr–12Ni	Cast pipe	SA-451	CPH8	J93400	...
	25	25Cr–12Ni	Castings	SA-351	CH20	J93402	...
	26	25Cr–12Ni	Cast pipe	SA-451	CPH20	J93402	...
	27	25Cr–20Ni	Castings	SA-351	CK20	J94202	...
	28	25Cr–20Ni	Cast pipe	SA-451	CPK20	J94202	...
	29	25Cr–20Ni	Forgings	SA-182	F310	S31000	...
07	30	25Cr–20Ni	Forgings	SA-965	F310	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	Smls. & wld. fittings	SA-403	310S	S31008	...
	37	25Cr–20Ni	Bar	SA-479	310S	S31008	...
	38	25Cr–20Ni	Wld. pipe	SA-813	TP310S	S31008	...
	39	25Cr–20Ni	Wld. pipe	SA-814	TP310S	S31008	...
A08	40	25Cr–20Ni	Bar	SA/JIS G4303	SUS310S	...	...

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	...	95	65	...	
5	...	90	75	...	
6	...	90	75	...	
7	...	100	70	...	
8	...	110	80	...	
9	...	110	80	...	
10	...	110	80	...	
11	...	110	80	...	
12	...	100	65	...	
13	...	100	65	...	
14	...	100	65	...	
15	...	100	70	...	
16	...	116	80	...	07
17	...	116	80	...	07
18	...	116	80	...	07
19	...	116	80	...	07
20	...	116	80	...	07
21	≤ 1	116	80	...	
22	≤ 1	116	80	...	
23	...	65	28	...	
24	...	65	28	...	
25	...	70	30	...	
26	...	70	30	...	
27	...	65	28	...	
28	...	65	28	...	
29	≤ 5	75	30	...	
30	...	75	30	...	07
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	...	A08

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	65.0	56.6	52.4	49.2	46.8	...	43.9	...	42.5
	5	75.0	66.1	62.0	58.7	55.8	...	51.0	...	47.5
	6	75.0	66.1	62.0	58.7	55.8	...	51.0	...	47.5
	7	70.0	...	...	...	...	...	...	...	...
	8	80.0	73.8	70.2	67.0	64.3	...	60.5	...	58.7
	9	80.0	73.8	70.2	67.0	64.3	...	60.5	...	58.7
	10	80.0	73.8	70.2	67.0	64.3	...	60.5	...	58.7
	11	80.0	73.8	70.2	67.0	64.3	...	60.5	...	58.7
	12	65.0	58.6	55.3	52.6	50.4	...	47.5	...	45.5
	13	65.0	59.5	56.6	54.2	52.3	...	49.5	...	47.9
	14	65.0	59.5	56.6	54.2	52.3	...	49.5	...	47.9
	15	70.0	64.1	61.0	58.4	56.3	...	53.3	...	51.5
07	16	80.0	70.6	66.9	64.2	62.1	...	59.3	...	58.2
07	17	80.0	70.6	66.9	64.2	62.1	...	59.3	...	58.2
07	18	80.0	70.6	66.9	64.2	62.1	...	59.3	...	58.2
07	19	80.0	74.0	70.5	67.4	64.7	...	60.7	...	58.3
07	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	80.0	74.0	70.5	67.4	64.7	...	60.7	...	58.3
	23	28.0	24.4	22.9	21.8	21.1	...	20.2	...	19.6
	24	28.0	24.4	22.9	21.8	21.1	...	20.2	...	19.6
	25	30.0	26.1	24.5	23.4	22.6	...	21.7	...	21.0
	26	30.0	26.1	24.5	23.4	22.6	...	21.7	...	21.0
	27	28.0	24.4	22.9	21.8	21.1	...	20.2	...	19.6
	28	28.0	24.4	22.9	21.8	21.1	...	20.2	...	19.6
	29	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
07	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
	39	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4
A08	40	30.0	27.9	26.5	25.3	24.2	...	22.6	...	21.4

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	...	41.4	40.6	39.3	...	...	...	...	...	...	
5	...	45.0	43.5	...	...	...	...	...	...	...	
6	...	45.0	43.5	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	
8	...	58.4	58.2	57.4	55.4	51.5	...	...	...	...	
9	...	58.4	58.2	57.4	55.4	51.5	...	...	...	...	
10	...	58.4	58.2	57.4	55.4	51.5	...	...	...	...	
11	...	58.4	58.2	57.4	55.4	51.5	...	...	...	...	
12	...	43.6	42.2	...	...	...	...	...	...	...	
13	...	46.8	46.3	45.8	45.2	...	...	...	...	...	
14	...	46.8	46.3	45.8	45.2	...	...	...	...	...	
15	...	50.4	49.9	49.4	48.7	...	...	...	...	...	
16	...	58.2	58.2	58.2	58.2	...	...	...	...	...	07
17	...	58.2	58.2	58.2	58.2	...	...	...	...	...	07
18	...	58.2	58.2	58.2	58.2	...	...	...	...	...	07
19	...	57.2	57.0	57.0	57.0	...	...	...	...	...	07
20	...	57.2	57.0	57.0	57.0	...	...	...	...	...	07
21	...	57.2	57.0	57.0	57.0	...	...	...	...	...	
22	...	57.2	57.0	57.0	57.0	...	...	...	...	...	
23	...	19.0	18.6	18.1	17.6	17.1	16.6	16.0	15.4	14.8	
24	...	19.0	18.6	18.1	17.6	17.1	16.6	16.0	15.4	14.8	
25	...	20.3	19.9	19.4	18.9	18.3	17.7	17.1	16.5	15.9	
26	...	20.3	19.9	19.4	18.9	18.3	17.7	17.1	16.5	15.9	
27	...	19.0	18.6	18.1	17.6	17.1	16.6	16.0	15.4	14.8	
28	...	19.0	18.6	18.1	17.6	17.1	16.6	16.0	15.4	14.8	
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	07
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	
39	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2	
40	...	20.6	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2	A08

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 Designation/ UNS No.	Class/Condition/ 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	...
07	13	25Cr–22Ni–2Mo–N	Forgings	SA-182	F310MoLN	S31050	...
	14	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...
	15	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...
	16	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...
	17	25Cr–22Ni–2Mo–N	Plate	SA-240	310MoLN	S31050	...
	18	25Cr–22Ni–2Mo–N	Smls. tube	SA-213	TP310MoLN	S31050	...
	19	25Cr–22Ni–2Mo–N	Wld. tube	SA-249	TP310MoLN	S31050	...
	20	25Cr–22Ni–2Mo–N	Wld. pipe	SA-312	TP310MoLN	S31050	...
07	21	29Cr–6.5Ni–2Mo–N	Plate, sheet, strip	SA-240	...	S32906	...
07	22	29Cr–6.5Ni–2Mo–N	Bar	SA-479	...	S32906	...
07	23	29Cr–6.5Ni–2Mo–N	Smls. tube	SA-789	...	S32906	...
07	24	29Cr–6.5Ni–2Mo–N	Smls. pipe	SA-790	...	S32906	...
07	25	29Cr–6.5Ni–2Mo–N	Plate, sheet, strip	SA-240	...	S32906	...
07	26	29Cr–6.5Ni–2Mo–N	Smls. tube	SA-789	...	S32906	...
07	27	29Cr–6.5Ni–2Mo–N	Smls. pipe	SA-790	...	S32906	...

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	...	...	...	...	...	...	...	...	...	...	07
2	...	...	...	...	...	...	...	...	...	...	07
3	...	...	...	...	...	...	...	...	...	...	07
4	...	...	...	...	...	...	...	...	...	...	07
5	...	...	...	...	...	...	...	...	...	...	07
6	...	...	...	...	...	...	...	...	...	...	
7	...	...	...	...	...	...	...	...	...	...	07
8	...	...	...	...	...	...	...	...	...	...	07
9	...	...	...	...	...	...	...	...	...	...	07
10	...	...	...	...	...	...	...	...	...	...	07
11	...	...	...	...	...	...	...	...	...	...	07
12	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	07
26	...	...	...	...	...	...	...	...	...	...	
27	...	...	...	...	...	...	...	...	...	...	
28	...	...	...	...	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	07
31	...	...	...	...	...	...	...	...	...	...	07
32	...	...	...	...	...	...	...	...	...	...	07
33	...	...	...	...	...	...	...	...	...	...	07
34	...	...	...	...	...	...	...	...	...	...	07
35	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	
37	...	...	...	...	...	...	...	...	...	...	
38	...	...	...	...	...	...	...	...	...	...	
39	...	...	...	...	...	...	...	...	...	...	
40	...	...	...	...	...	...	...	...	...	...	

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 Designation/ UNS No.
		Nonferrous Materials (Cont'd)				
07	1	...	Smls. pipe	SB-42	...	C12200
	2	...	Smls. cond. tube	SB-75	...	C12200
	3	...	Smls. tube	SB-111	...	C12200
07	4	...	Plate, sheet, strip, bar	SB-152	...	C12300
07	5	...	Plate, sheet, strip, bar	SB-152	...	C12300
07	6	...	Plate, sheet, strip, bar	SB-152	...	C12300
07	7	...	Plate, sheet, strip, bar	SB-152	...	C12300
07	8	...	Plate, sheet, strip, bar	SB-152	...	C12300
	9	...	Plate, sheet, strip, bar	SB-152	...	C12300
A08	10	...	...	...	...	...
	11	...	Plate, sheet, strip	SB-152	...	C14200
	12	...	Smls. cond. tube	SB-111	...	C14200
	13	...	Smls. U-bend tube	SB-395	...	C14200
	14	...	Smls. cond. tube	SB-111	...	C14200
	15	...	Smls. cond. tube	SB-111	...	C19200
	16	...	Smls. U-bend tube	SB-395	...	C19200
	17	...	Wld. cond. tube	SB-543	...	C19400
	18	...	Wld. cond. tube	SB-543	...	C19400
	19	...	Smls. cond. tube	SB-111	...	C60800
	20	...	Smls. U-bend tube	SB-395	...	C60800
	21	...	Plate, sheet	SB-169	...	C61400
	22	...	Plate	SB-171	...	C61400
	23	...	Plate, sheet	SB-169	...	C61400
	24	...	Plate	SB-171	...	C61400
	25	...	Plate, sheet	SB-169	...	C61400
	26	...	Plate	SB-171	...	C63000
	27	...	Plate	SB-171	...	C63000
	28	...	Plate	SB-171	...	C63000
	29	...	Forgings	SB-283	...	C64200
	30	...	Forgings	SB-283	...	C64200
	31	...	Plate, sheet	SB-96	...	C65500
	32	...	Smls. pipe & tube	SB-466	...	C70600
	33	...	Wld. pipe	SB-467	...	C70600
	34	...	Bar, rod	SB-151	...	C70600
	35	...	Plate	SB-171	...	C70600
	36	...	Plate, sheet	SB-171	...	C70600
	37	...	Plate	SB-171	...	C70600
	38	...	Plate, sheet	SB-171	...	C70600

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	$\frac{1}{8} < t \leq 3$	45	40	...	07
2	< 4	45	40	...	
3	< 3	45	40	...	
4	...	30	10	...	07
5	...	30	10	...	07
6	...	30	10	...	07
7	...	30	10	...	07
8	...	30	10	...	07
9	...	30	10	...	
10	...	...	...	...	A08
11	...	30	10	...	
12	< 3	36	30	...	
13	...	36	30	...	
14	< 3	45	40	...	
15	< 3	38	12	...	
16	...	38	12	...	
17	...	45	15	...	
18	...	45	22	...	
19	...	50	19	...	
20	...	50	19	...	
21	$2 < t \leq 5$	65	28	...	
22	$2 < t \leq 5$	65	28	...	
23	$\frac{1}{2} < t \leq 2$	70	30	...	
24	≤ 2	70	30	...	
25	$\leq \frac{1}{2}$	72	32	...	
26	$3.5 < t \leq 5$	80	30	...	
27	$2 < t \leq 3.5$	85	33	...	
28	≤ 2	90	36	...	
29	$> 1\frac{1}{2}$	68	23	...	
30	$\leq 1\frac{1}{2}$	70	25	...	
31	≤ 2	50	18	...	
32	...	38	13	...	
33	$> 4\frac{1}{2}$	38	13	...	
34	...	38	15	...	
35	...	40	15	...	
36	≤ 2.5	40	15	...	
37	...	40	15	...	
38	≤ 2.5	40	15	...	

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)								
07	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	...
07	4	10.0	8.5	8.1	8.0	7.8	7.6	7.3	7.0	...
07	5	10.0	8.5	8.1	8.0	7.8	7.6	7.3	7.0	...
07	6	10.0	8.5	8.1	8.0	7.8	7.6	7.3	7.0	...
07	7	10.0	8.5	8.1	8.0	7.8	7.6	7.3	7.0	...
07	8	10.0	8.5	8.1	8.0	7.8	7.6	7.3	7.0	...
	9	10.0	8.5	8.1	8.0	7.8	7.6	7.3	7.0	...
A08	10	...	...	...	...	...	...	...	...	...
	11	10.0	8.5	8.1	8.0	7.8	7.6	7.3	7.0	...
	12	30.0	29.7	29.0	28.1	27.0	25.7	24.4	23.0	...
	13	30.0	29.7	29.0	28.1	27.0	25.7	24.4	23.0	...
	14	40.0	38.3	37.6	36.9	35.7	33.7	30.5	25.5	...
	15	12.0	10.7	10.1	9.6	9.3	9.0	8.8	8.5	...
	16	12.0	10.7	10.1	9.6	9.3	9.0	8.8	8.5	...
	17	15.0	14.8	14.6	14.3	13.8	13.4	12.8	12.3	...
	18	22.0	21.8	21.4	20.9	20.3	19.6	18.8	18.0	...
	19	19.0	18.3	18.3	18.3	18.0	17.5	17.0	16.5	16.0
	20	19.0	18.3	18.3	18.3	18.0	17.5	17.0	16.5	16.0
	21	28.0	27.9	27.7	27.5	27.4	27.2	26.9	26.6	26.3
	22	28.0	27.9	27.7	27.5	27.4	27.2	26.9	26.6	26.3
	23	30.0	29.9	29.7	29.5	29.3	29.1	28.8	28.5	28.2
	24	30.0	29.9	29.7	29.5	29.3	29.1	28.8	28.5	28.2
	25	32.0	31.9	31.7	31.4	31.3	31.1	30.8	30.4	30.1
	26	30.0	29.8	29.3	29.0	28.7	28.5	28.2	27.6	26.4
	27	33.0	32.7	32.3	31.9	31.6	31.3	31.0	30.3	29.0
	28	36.0	35.7	35.2	34.7	34.4	34.2	33.8	33.1	31.7
	29	23.0	...	...	...	...	...	...	...	...
	30	25.0	...	...	...	...	...	...	...	...
	31	18.0	17.9	17.8	17.6	17.4	17.2	16.9	16.6	16.3
	32	13.0	12.6	12.3	12.0	11.7	11.5	11.3	11.1	10.9
	33	13.0	12.6	12.3	12.0	11.7	11.5	11.3	11.1	10.9
	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
	37	15.0	14.6	14.2	13.9	13.6	13.3	13.0	12.8	12.6
	38	15.0	14.6	14.2	13.9	13.6	13.3	13.0	12.8	12.6

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	...	...	...	...	...	...	...	...	...	...	07
2	...	...	...	...	...	...	...	...	...	...	
3	...	...	...	...	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	...	...	...	07
5	...	...	...	...	...	...	...	...	...	...	07
6	...	...	...	...	...	...	...	...	...	...	07
7	...	...	...	...	...	...	...	...	...	...	07
8	...	...	...	...	...	...	...	...	...	...	07
9	...	...	...	...	...	...	...	...	...	...	
10	...	...	...	...	...	...	...	...	...	...	A08
11	...	...	...	...	...	...	...	...	...	...	
12	...	...	...	...	...	...	...	...	...	...	
13	...	...	...	...	...	...	...	...	...	...	
14	...	...	...	...	...	...	...	...	...	...	
15	...	...	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	
17	...	...	...	...	...	...	...	...	...	...	
18	...	...	...	...	...	...	...	...	...	...	
19	...	...	...	...	...	...	...	...	...	...	
20	...	...	...	...	...	...	...	...	...	...	
21	...	...	...	...	...	...	...	...	...	...	
22	...	...	...	...	...	...	...	...	...	...	
23	...	...	...	...	...	...	...	...	...	...	
24	...	...	...	...	...	...	...	...	...	...	
25	...	...	...	...	...	...	...	...	...	...	
26	24.3	21.0	16.1	9.2	...	...	...	...	...	...	
27	26.7	23.1	17.7	10.2	...	...	...	...	...	...	
28	29.2	25.2	19.3	11.1	...	...	...	...	...	...	
29	...	...	...	...	...	...	...	...	...	...	
30	...	...	...	...	...	...	...	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	
32	10.8	10.8	...	...	...	...	...	...	...	...	
33	10.8	10.8	...	...	...	...	...	...	...	...	
34	12.5	12.4	...	...	...	...	...	...	...	...	
35	12.5	12.4	...	...	...	...	...	...	...	...	
36	12.5	12.4	...	...	...	...	...	...	...	...	
37	12.5	12.4	...	...	...	...	...	...	...	...	
38	12.5	12.4	...	...	...	...	...	...	...	...	

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 Designation/ UNS No.	Class/Condition/ Temper
	Nonferrous Materials (Cont'd)					
1	...	Smls. cond. tube	SB-111	...	C70600	O61
2	...	Finned tube	SB-359	...	C70600	O61
3	...	Smls. U-bend tube	SB-395	...	C70600	O61
4	...	Wld. pipe	SB-467	...	C70600	WO61
5	...	Wld. tube	SB-543	...	C70600	WO61
6	...	Wld. pipe	SB-467	...	C70600	WO61
7	...	Wld. tube	SB-543	...	C70600	Light cold worked
8	...	Smls. tube	SB-111	...	C70600	H55
9	...	Wld. pipe	SB-467	...	C70600	Wld. fr. cold rld. strip
10	...	Plate, sheet	SB-171	...	C71500	O25
11	...	Plate, sheet	SB-171	...	C71500	O25
12	...	Smls. cond. tube	SB-111	...	C71500	O61
13	...	Castings	SB-148	...	C95200	M01
14	...	Castings	SB-271	...	C95200	M02
15	...	Castings	SB-505	...	C95200	M07
16	...	Castings	SB-148	...	C95400	M01
17	...	Castings	SB-271	...	C95400	M02
18	99Ni	Plate, sheet, strip	SB-162	...	N02200	As rolled
19	99Ni	Smls. pipe & tube	SB-161	...	N02200	Stress rel.
20	99Ni	Smls. tube	SB-163	...	N02200	Stress rel.
21	99Ni–Low C	Smls. pipe & tube	SB-161	...	N02201	Annealed
22	99Ni–Low C	Smls. & wld. fittings	SB-366	...	N02201	Annealed
23	99Ni–Low C	Bar, rod	SB-160	...	N02201	Hot rolled/ann.
24	99Ni–Low C	Smls. pipe & tube	SB-161	...	N02201	Annealed
25	99Ni–Low C	Smls. tube	SB-163	...	N02201	Annealed
26	99Ni–Low C	Plate, sheet, strip	SB-162	...	N02201	Hot rolled/ann.
27	67Ni–30Cu	Bar	SB-164	...	N04400	Annealed
28	67Ni–30Cu	Smls. pipe & tube	SB-165	...	N04400	Annealed
29	67Ni–30Cu	Forgings	SB-564	...	N04400	Annealed
30	67Ni–30Cu	Plate	SB-127	...	N04400	Annealed
31	67Ni–30Cu	Smls. tube	SB-163	...	N04400	Annealed
32	67Ni–30Cu	Smls. pipe & tube	SB-165	...	N04400	Annealed
33	67Ni–30Cu	Smls. & wld. fittings	SB-366	...	N04400	Annealed
34	67Ni–30Cu	Bar	SB-164	...	N04400	Hot worked
35	67Ni–30Cu	Plate	SB-127	...	N04400	As rolled
36	67Ni–30Cu	Bar, rod	SB-164	...	N04400	Hot worked
37	67Ni–30Cu	Rounds	SB-164	...	N04400	Hot worked
38	67Ni–30Cu	Rounds	SB-164	...	N04400	Hot worked
39	67Ni–30Cu	Rounds	SB-164	...	N04400	CW & SR
40	67Ni–30Cu	Rounds	SB-164	...	N04400	CW & SR

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	12.5	12.4	...	...	...	...	...	...	...	...
2	12.5	12.4	...	...	...	...	...	...	...	...
3	12.5	12.4	...	...	...	...	...	...	...	...
4	12.5	12.4	...	...	...	...	...	...	...	...
5	12.5	12.4	...	...	...	...	...	...	...	...
6	25.0	24.9	...	...	...	...	...	...	...	...
7	29.2	29.0	...	...	...	...	...	...	...	...
8	29.2	29.0	...	...	...	...	...	...	...	...
9	37.5	37.3	...	...	...	...	...	...	...	...
10	14.6	14.4	14.2	14.1	...	...	...	...	...	...
11	16.3	16.0	15.8	15.7	...	...	...	...	...	...
12	14.6	14.4	14.2	14.1	...	...	...	...	...	...
13	21.2	21.2	...	...	...	...	...	...	...	...
14	21.2	21.2	...	...	...	...	...	...	...	...
15	22.1	22.1	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...
18	18.1	17.2	...	...	...	...	...	...	...	...
19	37.0	36.4	35.7	...	...	...	...	...	...	...
20	37.0	36.4	35.7	...	...	...	...	...	...	...
21	9.4	9.4	9.3	9.3	9.2	9.0	8.8	8.6	8.2	7.9
22	9.4	9.4	9.3	9.3	9.2	9.0	8.8	8.6	8.2	7.9
23	9.4	9.4	9.3	9.3	9.2	9.0	8.8	8.6	8.2	7.9
24	11.2	11.2	11.2	11.1	11.0	10.8	10.6	10.3	9.9	9.4
25	11.2	11.2	11.2	11.1	11.0	10.8	10.6	10.3	9.9	9.4
26	11.2	11.2	11.2	11.1	11.0	10.8	10.6	10.3	9.9	9.4
27	19.7	19.7	19.7	19.6	19.4	19.1	18.9	18.8	...	...
28	19.7	19.7	19.7	19.6	19.4	19.1	18.9	18.8	...	...
29	19.7	19.7	19.7	19.6	19.4	19.1	18.9	18.8	...	...
30	22.0	22.0	22.0	21.9	21.7	21.4	21.2	21.1	...	...
31	22.0	22.0	22.0	21.9	21.7	21.4	21.2	21.1	...	...
32	22.0	22.0	22.0	21.9	21.7	21.4	21.2	21.1	...	...
33	22.0	22.0	22.0	21.9	21.7	21.4	21.2	21.1	...	...
34	26.2	26.0	25.8	25.5	25.2	24.7	24.2	23.7	...	...
35	34.9	34.7	34.4	34.0	33.5	32.9	32.3	31.6	...	...
36	34.9	34.7	34.4	34.0	33.5	32.9	32.3	31.6	...	...
37	...	34.7	34.4	34.0	33.5	32.9	...	...	...	...
38	...	34.7	34.4	34.0	33.5	32.9	...	...	...	...
39	...	44.2	42.1	42.1	41.8	40.4	...	...	...	...
40	...	48.1	47.3	46.3	45.3	44.4	...	...	...	...

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 Designation/ UNS No.	Class/Condition/ Temper
		Nonferrous Materials (Cont'd)					
	1	67Ni–30Cu	Smls. tube	SB-163	...	N04400	Stress rel.
	2	67Ni–30Cu	Smls. pipe & tube	SB-165	...	N04400	Stress rel.
	3	67Ni–30Cu	Rounds	SB-164	...	N04400	CW & SR
	4	67Ni–30Cu	Rounds	SB-164	...	N04400	Cold worked
	5	67Ni–30Cu–S	Bar	SB-164	...	N04405	Annealed
	6	67Ni–30Cu–S	Bar	SB-164	...	N04405	Hot worked
A08	7	67Ni–28Cu–3Al	Bolting	SF-468	...	N05500	Ann./aged
A08	8	67Ni–28Cu–3Al	Bolting	SF-468	...	N05500	Ann./aged
	9	47Ni–22Cr–9Mo–18Fe	Plate	SB-435	...	N06002	Annealed
	10	47Ni–22Cr–9Mo–18Fe	Sheet	SB-435	...	N06002	Solution ann.
	11	47Ni–22Cr–9Mo–18Fe	Rod	SB-572	...	N06002	Annealed
	12	47Ni–22Cr–9Mo–18Fe	Smls. & wld. fittings	SB-366	...	N06002	Annealed
	13	47Ni–22Cr–9Mo–18Fe	Sheet	SB-435	...	N06002	Annealed
	14	47Ni–22Cr–9Mo–18Fe	Wld. pipe	SB-619	...	N06002	Solution ann.
	15	47Ni–22Cr–9Mo–18Fe	Smls. pipe & tube	SB-622	...	N06002	Solution ann.
	16	47Ni–22Cr–9Mo–18Fe	Wld. tube	SB-626	...	N06002	Solution ann.
	17	47Ni–22Cr–19Fe–6Mo	Rod	SB-581	...	N06007	Solution ann.
	18	47Ni–22Cr–19Fe–6Mo	Plate, sheet, strip	SB-582	...	N06007	Solution ann.
	19	47Ni–22Cr–19Fe–6Mo	Smls. & wld. fittings	SB-366	...	N06007	Annealed
	20	47Ni–22Cr–19Fe–6Mo	Rod	SB-581	...	N06007	Solution ann.
	21	47Ni–22Cr–19Fe–6Mo	Plate, sheet, strip	SB-582	...	N06007	Solution ann.
	22	47Ni–22Cr–19Fe–6Mo	Wld. pipe	SB-619	...	N06007	Solution ann.
	23	47Ni–22Cr–19Fe–6Mo	Smls. pipe & tube	SB-622	...	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-462	...	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	Plate, sheet, strip	SB-575	...	N06022	Solution ann.
	30	55Ni–21Cr–13.5Mo	Wld. pipe	SB-619	...	N06022	Solution ann.
	31	55Ni–21Cr–13.5Mo	Smls. pipe & tube	SB-622	...	N06022	Solution ann.
	32	55Ni–21Cr–13.5Mo	Wld. tube	SB-626	...	N06022	Solution ann.
	33	40Ni–29Cr–15Fe–5Mo	Smls. & wld. fittings	SB-366	...	N06030	Solution ann.
	34	40Ni–29Cr–15Fe–5Mo	Forgings	SB-462	...	N06030	Solution ann.
	35	40Ni–29Cr–15Fe–5Mo	Rod	SB-581	...	N06030	Solution ann.
	36	40Ni–29Cr–15Fe–5Mo	Plate, sheet, strip	SB-582	...	N06030	Solution ann.
	37	40Ni–29Cr–15Fe–5Mo	Wld. pipe	SB-619	...	N06030	Solution ann.
	38	40Ni–29Cr–15Fe–5Mo	Smls. pipe & tube	SB-622	...	N06030	Solution ann.
	39	40Ni–29Cr–15Fe–5Mo	Wld. tube	SB-626	...	N06030	Solution ann.

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	...	85	55	...	
2	...	85	55	...	
3	$\frac{1}{2} \le t \le 3\frac{1}{2}$	87	60	...	
4	$< \frac{1}{2}$	110	85	...	
5	...	70	25	...	
6	...	75	35	...	
7	1.000–1.500	130	85	...	A08
8	0.250–0.875	130	90	...	A08
9	$> \frac{3}{16}$	95	35	...	
10	$\le \frac{3}{16}$	95	35	...	
11	...	95	35	...	
12	...	100	40	...	
13	$\frac{1}{16} < t \le \frac{3}{16}$	100	40	...	
14	...	100	40	...	
15	...	100	40	...	
16	...	100	40	...	
17	$> \frac{3}{4}$	85	30	...	
18	$> \frac{3}{4}$	85	30	...	
19	...	90	35	...	
20	$\le \frac{3}{4}$	90	35	...	
21	$\le \frac{3}{4}$	90	35	...	
22	...	90	35	...	
23	...	90	35	...	
24	...	90	35	...	
25	...	100	45	...	
26	...	100	45	...	
27	...	100	45	...	
28	...	100	45	...	
29	...	100	45	...	
30	...	100	45	...	
31	...	100	45	...	
32	...	100	45	...	
33	...	85	35	...	
34	...	85	35	...	
35	...	85	35	...	
36	...	85	35	...	
37	...	85	35	...	
38	...	85	35	...	
39	...	85	35	...	

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	55.0	52.9	51.8	51.0	50.4	50.0	49.7	49.5	49.2
2	55.0	52.9	51.8	51.0	50.4	50.0	49.7	49.5	49.2
3	60.0	...	56.6	...	54.9	...	54.0	...	54.0
4	85.0	...	80.2	...	77.8	...	76.5	...	76.5
5	25.0	23.0	21.9	21.0	20.4	20.0	19.7	19.7	19.7
6	35.0	34.6	33.9	33.2	32.5	31.9	31.4	31.0	30.8
A08 7	85.0	...	81.2	...	79.4	...	78.2	...	77.5
A08 8	90.0	...	86.0	...	84.0	...	82.8	...	82.1
9	35.0	32.9	31.5	30.1	28.8	27.7	26.6	25.7	24.8
10	35.0	32.9	31.5	30.1	28.8	27.7	26.6	25.7	24.8
11	35.0	32.9	31.5	30.1	28.8	27.7	26.6	25.7	24.8
12	40.0	37.5	35.9	34.4	33.0	31.6	30.4	29.3	28.4
13	40.0	37.5	35.9	34.4	33.0	31.6	30.4	29.3	28.4
14	40.0	37.5	35.9	34.4	33.0	31.6	30.4	29.3	28.4
15	40.0	37.5	35.9	34.4	33.0	31.6	30.4	29.3	28.4
16	40.0	37.5	35.9	34.4	33.0	31.6	30.4	29.3	28.4
17	30.0	28.1	27.0	25.9	25.0	24.2	23.5	22.9	22.4
18	30.0	28.1	27.0	25.9	25.0	24.2	23.5	22.9	22.4
19	35.0	32.8	31.4	30.2	29.2	28.2	27.4	26.7	26.1
20	35.0	32.8	31.4	30.2	29.2	28.2	27.4	26.7	26.1
21	35.0	32.8	31.4	30.2	29.2	28.2	27.4	26.7	26.1
22	35.0	32.8	31.4	30.2	29.2	28.2	27.4	26.7	26.1
23	35.0	32.8	31.4	30.2	29.2	28.2	27.4	26.7	26.1
24	35.0	32.8	31.4	30.2	29.2	28.2	27.4	26.7	26.1
25	45.0	42.0	40.1	38.4	36.9	35.5	34.3	33.2	32.2
26	45.0	42.0	40.1	38.4	36.9	35.5	34.3	33.2	32.2
27	45.0	42.0	40.1	38.4	36.9	35.5	34.3	33.2	32.2
28	45.0	42.0	40.1	38.4	36.9	35.5	34.3	33.2	32.2
29	45.0	42.0	40.1	38.4	36.9	35.5	34.3	33.2	32.2
30	45.0	42.0	40.1	38.4	36.9	35.5	34.3	33.2	32.2
31	45.0	42.0	40.1	38.4	36.9	35.5	34.3	33.2	32.2
32	45.0	42.0	40.1	38.4	36.9	35.5	34.3	33.2	32.2
33	35.0	31.7	30.0	28.6	27.5	26.6	25.8	25.1	24.6
34	35.0	31.7	30.0	28.6	27.5	26.6	25.8	25.1	24.6
35	35.0	31.7	30.0	28.6	27.5	26.6	25.8	25.1	24.6
36	35.0	31.7	30.0	28.6	27.5	26.6	25.8	25.1	24.6
37	35.0	31.7	30.0	28.6	27.5	26.6	25.8	25.1	24.6
38	35.0	31.7	30.0	28.6	27.5	26.6	25.8	25.1	24.6
39	35.0	31.7	30.0	28.6	27.5	26.6	25.8	25.1	24.6

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	48.7	48.1	47.3	46.3	45.3	44.4	...	...	...	...	
2	48.7	48.1	47.3	46.3	45.3	44.4	...	...	...	...	
3	...	53.0	50.5	50.5	50.1	48.5	...	...	...	...	
4	...	75.1	71.6	71.6	71.0	68.7	...	...	...	...	
5	19.7	19.7	19.7	19.6	19.4	19.1	18.9	18.8	...	...	
6	30.6	30.3	30.1	29.8	29.3	28.8	28.2	27.7	...	...	
7	...	77.1	76.9	76.7	...	...	...	...	...	...	A08
8	...	81.6	81.4	81.2	...	...	...	...	...	...	A08
9	24.1	23.5	23.0	22.6	22.3	22.1	21.9	21.7	21.6	21.5	
10	24.1	23.5	23.0	22.6	22.3	22.1	21.9	21.7	21.6	21.5	
11	24.1	23.5	23.0	22.6	22.3	22.1	21.9	21.7	21.6	21.5	
12	27.5	26.9	26.3	25.8	25.5	25.2	25.0	24.9	24.7	24.6	
13	27.5	26.9	26.3	25.8	25.5	25.2	25.0	24.9	24.7	24.6	
14	27.5	26.9	26.3	25.8	25.5	25.2	25.0	24.9	24.7	24.6	
15	27.5	26.9	26.3	25.8	25.5	25.2	25.0	24.9	24.7	24.6	
16	27.5	26.9	26.3	25.8	25.5	25.2	25.0	24.9	24.7	24.6	
17	22.0	21.6	21.3	21.1	20.9	20.8	20.7	20.6	20.5	20.4	
18	22.0	21.6	21.3	21.1	20.9	20.8	20.7	20.6	20.5	20.4	
19	25.6	25.2	24.9	24.6	24.4	24.2	24.1	24.0	23.9	23.8	
20	25.6	25.2	24.9	24.6	24.4	24.2	24.1	24.0	23.9	23.8	
21	25.6	25.2	24.9	24.6	24.4	24.2	24.1	24.0	23.9	23.8	
22	25.6	25.2	24.9	24.6	24.4	24.2	24.1	24.0	23.9	23.8	
23	25.6	25.2	24.9	24.6	24.4	24.2	24.1	24.0	23.9	23.8	
24	25.6	25.2	24.9	24.6	24.4	24.2	24.1	24.0	23.9	23.8	
25	31.4	30.6	30.0	29.4	29.0	28.6	28.2	27.9	27.7	27.5	
26	31.4	30.6	30.0	29.4	29.0	28.6	28.2	27.9	27.7	27.5	
27	31.4	30.6	30.0	29.4	29.0	28.6	28.2	27.9	27.7	27.5	
28	31.4	30.6	30.0	29.4	29.0	28.6	28.2	27.9	27.7	27.5	
29	31.4	30.6	30.0	29.4	29.0	28.6	28.2	27.9	27.7	27.5	
30	31.4	30.6	30.0	29.4	29.0	28.6	28.2	27.9	27.7	27.5	
31	31.4	30.6	30.0	29.4	29.0	28.6	28.2	27.9	27.7	27.5	
32	31.4	30.6	30.0	29.4	29.0	28.6	28.2	27.9	27.7	27.5	
33	24.1	23.6	23.2	22.8	22.3	21.9	21.5	21.1	20.9	20.7	
34	24.1	23.6	23.2	22.8	22.3	21.9	21.5	21.1	20.9	20.7	
35	24.1	23.6	23.2	22.8	22.3	21.9	21.5	21.1	20.9	20.7	
36	24.1	23.6	23.2	22.8	22.3	21.9	21.5	21.1	20.9	20.7	
37	24.1	23.6	23.2	22.8	22.3	21.9	21.5	21.1	20.9	20.7	
38	24.1	23.6	23.2	22.8	22.3	21.9	21.5	21.1	20.9	20.7	
39	24.1	23.6	23.2	22.8	22.3	21.9	21.5	21.1	20.9	20.7	

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 Designation/ UNS No.	Class/Condition/ Temper
		Nonferrous Materials (Cont'd)					
	1	46Ni–27Cr–23Fe–2.75Si	Rod	SB-166	...	N06045	Solution ann.
	2	46Ni–27Cr–23Fe–2.75Si	Smls. pipe & tube	SB-167	...	N06045	Solution ann.
	3	46Ni–27Cr–23Fe–2.75Si	Plate, sheet, strip	SB-168	...	N06045	Solution ann.
	4	46Ni–27Cr–23Fe–2.75Si	Smls. & wld. fittings	SB-366	...	N06045	Solution ann.
	5	46Ni–27Cr–23Fe–2.75Si	Wld. tube	SB-516	...	N06045	Solution ann.
	6	46Ni–27Cr–23Fe–2.75Si	Wld. pipe	SB-517	...	N06045	Solution ann.
	7	46Ni–27Cr–23Fe–2.75Si	Forgings	SB-564	...	N06045	Solution ann.
	8	59Ni–23Cr–16Mo	Fittings	SB-366	CR5923	N06059	Annealed
	9	59Ni–23Cr–16Mo	Fittings	SB-366	WP5923	N06059	Annealed
	10	59Ni–23Cr–16Mo	Wld. fittings	SB-366	WP5923W	N06059	Annealed
	11	59Ni–23Cr–16Mo	Fittings	SB-366	WP5923WX	N06059	Annealed
	12	59Ni–23Cr–16Mo	Forgings	SB-564	...	N06059	Solution ann.
	13	59Ni–23Cr–16Mo	Rod	SB-574	...	N06059	Solution ann.
	14	59Ni–23Cr–16Mo	Plate, sheet, strip	SB-575	...	N06059	Solution ann.
	15	59Ni–23Cr–16Mo	Wld. pipe	SB-619	...	N06059	Solution ann.
	16	59Ni–23Cr–16Mo	Smls. pipe & tube	SB-622	...	N06059	Solution ann.
	17	59Ni–23Cr–16Mo	Wld. tube	SB-626	...	N06059	Solution ann.
07	18	59Ni–23Cr–16Mo–1.6Cu	Fittings	SB-366	...	N06200	Solution ann.
07	19	59Ni–23Cr–16Mo–1.6Cu	Forgings	SB-462	...	N06200	Solution ann.
07	20	59Ni–23Cr–16Mo–1.6Cu	Forgings	SB-564	...	N06200	Solution ann.
07	21	59Ni–23Cr–16Mo–1.6Cu	Rod	SB-574	...	N06200	Solution ann.
07	22	59Ni–23Cr–16Mo–1.6Cu	Plate, sheet, strip	SB-575	...	N06200	Solution ann.
07	23	59Ni–23Cr–16Mo–1.6Cu	Wld. pipe	SB-619	...	N06200	Solution ann.
07	24	59Ni–23Cr–16Mo–1.6Cu	Smls. pipe & tube	SB-622	...	N06200	Solution ann.
07	25	59Ni–23Cr–16Mo–1.6Cu	Wld. tube	SB-626	...	N06200	Solution ann.
A08	26	60Ni–19Cr–19Mo–1.8Ta	Smls. & wld. fittings	SB-366	...	N06210	Solution ann.
A08	27	60Ni–19Cr–19Mo–1.8Ta	Forgings	SB-564	...	N06210	Solution ann.
A08	28	60Ni–19Cr–19Mo–1.8Ta	Rod	SB-574	...	N06210	Solution ann.
A08	29	60Ni–19Cr–19Mo–1.8Ta	Plate, sheet, strip	SB-575	...	N06210	Solution ann.
A08	30	60Ni–19Cr–19Mo–1.8Ta	Wld. pipe	SB-619	...	N06210	Solution ann.
A08	31	60Ni–19Cr–19Mo–1.8Ta	Smls. pipe & tube	SB-622	...	N06210	Solution ann.
A08	32	60Ni–19Cr–19Mo–1.8Ta	Wld. tube	SB-626	...	N06210	Solution ann.
	33	57Ni–22Cr–14W–2Mo–La	Plate, sheet, strip	SB-435	...	N06230	Solution ann.
	34	57Ni–22Cr–14W–2Mo–La	Forgings	SB-564	...	N06230	Solution ann.
	35	57Ni–22Cr–14W–2Mo–La	Bar	SB-572	...	N06230	Solution ann.
	36	57Ni–22Cr–14W–2Mo–La	Wld. pipe	SB-619	...	N06230	Solution ann.
	37	57Ni–22Cr–14W–2Mo–La	Smls. pipe & tube	SB-622	...	N06230	Solution ann.
	38	57Ni–22Cr–14W–2Mo–La	Wld. tube	SB-626	...	N06230	Solution ann.

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	...	90	35	...	
2	...	90	35	...	
3	...	90	35	...	
4	...	90	35	...	
5	...	90	35	...	
6	...	90	35	...	
7	...	90	35	...	
8	...	100	45	...	
9	...	100	45	...	
10	...	100	45	...	
11	...	100	45	...	
12	...	100	45	...	
13	...	100	45	...	
14	...	100	45	...	
15	...	100	45	...	
16	...	100	45	...	
17	...	100	45	...	
18	...	100	45	...	07
19	...	100	45	...	07
20	...	100	45	...	07
21	...	100	45	...	07
22	...	100	45	...	07
23	...	100	45	...	07
24	...	100	45	...	07
25	...	100	45	...	07
26	...	100	45	...	A08
27	...	100	45	...	A08
28	...	100	45	...	A08
29	...	100	45	...	A08
30	...	100	45	...	A08
31	...	100	45	...	A08
32	...	100	45	...	A08
33	...	110	45	...	
34	...	110	45	...	
35	...	110	45	...	
36	...	110	45	...	
37	...	110	45	...	
38	...	110	45	...	

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	...	31.4	...	28.9	...	27.1	...	26.0
	2	35.0	...	31.4	...	28.9	...	27.1	...	26.0
	3	35.0	...	31.4	...	28.9	...	27.1	...	26.0
	4	35.0	...	31.4	...	28.9	...	27.1	...	26.0
	5	35.0	...	31.4	...	28.9	...	27.1	...	26.0
	6	35.0	...	31.4	...	28.9	...	27.1	...	26.0
	7	35.0	...	31.4	...	28.9	...	27.1	...	26.0
	8	45.0	42.8	40.4	39.1	37.8	36.9	35.8	34.8	33.9
	9	45.0	42.8	40.4	39.1	37.8	36.9	35.8	34.8	33.9
	10	45.0	42.8	40.4	39.1	37.8	36.9	35.8	34.8	33.9
	11	45.0	42.8	40.4	39.1	37.8	36.9	35.8	34.8	33.9
	12	45.0	42.8	40.4	39.1	37.8	36.9	35.8	34.8	33.9
	13	45.0	42.8	40.4	39.1	37.8	36.9	35.8	34.8	33.9
	14	45.0	42.8	40.4	39.1	37.8	36.9	35.8	34.8	33.9
	15	45.0	42.8	40.4	39.1	37.8	36.9	35.8	34.8	33.9
	16	45.0	42.8	40.4	39.1	37.8	36.9	35.8	34.8	33.9
	17	45.0	42.8	40.4	39.1	37.8	36.9	35.8	34.8	33.9
07	18	45.0	...	40.4	...	37.2	...	34.3	...	31.8
07	19	45.0	...	40.4	...	37.2	...	34.3	...	31.8
07	20	45.0	...	40.4	...	37.2	...	34.3	...	31.8
07	21	45.0	...	40.4	...	37.2	...	34.3	...	31.8
07	22	45.0	...	40.4	...	37.2	...	34.3	...	31.8
07	23	45.0	...	40.4	...	37.2	...	34.3	...	31.8
07	24	45.0	...	40.4	...	37.2	...	34.3	...	31.8
07	25	45.0	...	40.4	...	37.2	...	34.3	...	31.8
A08	26	45.0	...	40.0	...	36.8	...	33.9	...	31.4
A08	27	45.0	...	40.0	...	36.8	...	33.9	...	31.4
A08	28	45.0	...	40.0	...	36.8	...	33.9	...	31.4
A08	29	45.0	...	40.0	...	36.8	...	33.9	...	31.4
A08	30	45.0	...	40.0	...	36.8	...	33.9	...	31.4
A08	31	45.0	...	40.0	...	36.8	...	33.9	...	31.4
A08	32	45.0	...	40.0	...	36.8	...	33.9	...	31.4
	33	45.0	...	42.3	...	39.6	...	37.0	...	34.7
	34	45.0	...	42.3	...	39.6	...	37.0	...	34.7
	35	45.0	...	42.3	...	39.6	...	37.0	...	34.7
	36	45.0	...	42.3	...	39.6	...	37.0	...	34.7
	37	45.0	...	42.3	...	39.6	...	37.0	...	34.7
	38	45.0	...	42.3	...	39.6	...	37.0	...	34.7

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	...	25.4	25.3	25.1	25.0	24.9	24.7	24.5	24.3	23.9	
2	...	25.4	25.3	25.1	25.0	24.9	24.7	24.5	24.3	23.9	
3	...	25.4	25.3	25.1	25.0	24.9	24.7	24.5	24.3	23.9	
4	...	25.4	25.3	25.1	25.0	24.9	24.7	24.5	24.3	23.9	
5	...	25.4	25.3	25.1	25.0	24.9	24.7	24.5	24.3	23.9	
6	...	25.4	25.3	25.1	25.0	24.9	24.7	24.5	24.3	23.9	
7	...	25.4	25.3	25.1	25.0	24.9	24.7	24.5	24.3	23.9	
8	33.0	32.1	31.2	30.3	29.4	28.6	27.8	27.0	26.3	25.7	
9	33.0	32.1	31.2	30.3	29.4	28.6	27.8	27.0	26.3	25.7	
10	33.0	32.1	31.2	30.3	29.4	28.6	27.8	27.0	26.3	25.7	
11	33.0	32.1	31.2	30.3	29.4	28.6	27.8	27.0	26.3	25.7	
12	33.0	32.1	31.2	30.3	29.4	28.6	27.8	27.0	26.3	25.7	
13	33.0	32.1	31.2	30.3	29.4	28.6	27.8	27.0	26.3	25.7	
14	33.0	32.1	31.2	30.3	29.4	28.6	27.8	27.0	26.3	25.7	
15	33.0	32.1	31.2	30.3	29.4	28.6	27.8	27.0	26.3	25.7	
16	33.0	32.1	31.2	30.3	29.4	28.6	27.8	27.0	26.3	25.7	
17	33.0	32.1	31.2	30.3	29.4	28.6	27.8	27.0	26.3	25.7	
18	...	29.8	29.1	28.6	28.2	28.0	27.8	27.6	27.2	26.4	07
19	...	29.8	29.1	28.6	28.2	28.0	27.8	27.6	27.2	26.4	07
20	...	29.8	29.1	28.6	28.2	28.0	27.8	27.6	27.2	26.4	07
21	...	29.8	29.1	28.6	28.2	28.0	27.8	27.6	27.2	26.4	07
22	...	29.8	29.1	28.6	28.2	28.0	27.8	27.6	27.2	26.4	07
23	...	29.8	29.1	28.6	28.2	28.0	27.8	27.6	27.2	26.4	07
24	...	29.8	29.1	28.6	28.2	28.0	27.8	27.6	27.2	26.4	07
25	...	29.8	29.1	28.6	28.2	28.0	27.8	27.6	27.2	26.4	07
26	...	29.3	28.4	27.5	26.8	26.2	25.7	25.2	24.9	24.7	A08
27	...	29.3	28.4	27.5	26.8	26.2	25.7	25.2	24.9	24.7	A08
28	...	29.3	28.4	27.5	26.8	26.2	25.7	25.2	24.9	24.7	A08
29	...	29.3	28.4	27.5	26.8	26.2	25.7	25.2	24.9	24.7	A08
30	...	29.3	28.4	27.5	26.8	26.2	25.7	25.2	24.9	24.7	A08
31	...	29.3	28.4	27.5	26.8	26.2	25.7	25.2	24.9	24.7	A08
32	...	29.3	28.4	27.5	26.8	26.2	25.7	25.2	24.9	24.7	A08
33	...	32.9	32.3	31.9	31.6	31.4	31.3	31.3	31.3	31.3	
34	...	32.9	32.3	31.9	31.6	31.4	31.3	31.3	31.3	31.3	
35	...	32.9	32.3	31.9	31.6	31.4	31.3	31.3	31.3	31.3	
36	...	32.9	32.3	31.9	31.6	31.4	31.3	31.3	31.3	31.3	
37	...	32.9	32.3	31.9	31.6	31.4	31.3	31.3	31.3	31.3	
38	...	32.9	32.3	31.9	31.6	31.4	31.3	31.3	31.3	31.3	

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 Designation/ UNS No.	Class/Condition/ Temper
		Nonferrous Materials (Cont'd)					
	1	61Ni–16Mo–16Cr	Smls. & wld. fittings	SB-366	...	N06455	Annealed
	2	61Ni–16Mo–16Cr	Rod	SB-574	...	N06455	Solution ann.
	3	61Ni–16Mo–16Cr	Plate, sheet, strip	SB-575	...	N06455	Solution ann.
	4	61Ni–16Mo–16Cr	Wld. pipe	SB-619	...	N06455	Solution ann.
A08	5	61Ni–16Mo–16Cr	Smls. pipe & tube	SB-622	...	N06455	Solution ann.
	6	61Ni–16Mo–16Cr	Wld. tube	SB-626	...	N06455	Solution ann.
A08	7	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.
A08	8	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.
	9	72Ni–15Cr–8Fe	Smls. & wld. fittings	SB-366	...	N06600	Annealed
A08	10	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Cold drawn/ann.
A08	11	72Ni–15Cr–8Fe	Smls. pipe & tube	SB-167	...	N06600	Hot fin./ann.

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	...	100	40	...	
3	...	100	40	...	
4	...	100	40	...	
5	...	100	40	...	A08
6	...	100	40	...	
7	>5	75	25	...	A08
8	>5	80	30	...	A08
9	...	80	30	...	
10	>5	80	30	...	A08
11	≤5	80	30	...	A08

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	38.2	36.9	35.6	34.5	33.5	32.6	31.8	31.2
	2	40.0	38.2	36.9	35.6	34.5	33.5	32.6	31.8	31.2
	3	40.0	38.2	36.9	35.6	34.5	33.5	32.6	31.8	31.2
	4	40.0	38.2	36.9	35.6	34.5	33.5	32.6	31.8	31.2
A08	5	40.0	38.2	36.9	35.6	34.5	33.5	32.6	31.8	31.2
	6	40.0	38.2	36.9	35.6	34.5	33.5	32.6	31.8	31.2
A08	7	25.0	24.3	23.8	23.3	22.8	22.3	21.9	21.4	21.0
A08	8	30.0	29.2	28.6	28.0	27.4	26.8	26.2	25.7	25.2
	9	30.0	29.2	28.6	28.0	27.4	26.8	26.2	25.7	25.2
A08	10	30.0	29.2	28.6	28.0	27.4	26.8	26.2	25.7	25.2
A08	11	30.0	29.2	28.6	28.0	27.4	26.8	26.2	25.7	25.2

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	30.6	30.2	29.8	29.4	29.0	28.7	28.3	27.9	27.6	27.3	
2	30.6	30.2	29.8	29.4	29.0	28.7	28.3	27.9	27.6	27.3	
3	30.6	30.2	29.8	29.4	29.0	28.7	28.3	27.9	27.6	27.3	
4	30.6	30.2	29.8	29.4	29.0	28.7	28.3	27.9	27.6	27.3	
5	30.6	30.2	29.8	29.4	29.0	28.7	28.3	27.9	27.6	27.3	A08
6	30.6	30.2	29.8	29.4	29.0	28.7	28.3	27.9	27.6	27.3	
7	20.6	20.3	19.9	19.6	19.3	19.1	18.8	18.6	...	...	A08
8	24.7	24.3	23.9	23.5	23.2	22.9	22.6	22.3	...	...	A08
9	24.7	24.3	23.9	23.5	23.2	22.9	22.6	22.3	...	...	
10	24.7	24.3	23.9	23.5	23.2	22.9	22.6	22.3	...	...	A08
11	24.7	24.3	23.9	23.5	23.2	22.9	22.6	22.3	...	...	A08

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 Designation/ UNS No.	Class/Condition/ Temper
		Nonferrous Materials (Cont'd)					
	1	72Ni–15Cr–8Fe	Smls. tube	SB-163	...	N06600	Annealed
	2	72Ni–15Cr–8Fe	Bar	SB-166	...	N06600	Annealed
	3	72Ni–15Cr–8Fe	Plate	SB-168	...	N06600	Annealed
	4	72Ni–15Cr–8Fe	Wld. tube	SB-516	...	N06600	Annealed
	5	72Ni–15Cr–8Fe	Forgings	SB-564	...	N06600	...
A08	6	72Ni–15Cr–8Fe	Pipe, tube	SB-167	...	N06600	Cold drawn/ann.
	7	72Ni–15Cr–8Fe	Wld. pipe	SB-517	...	N06600	Cold drawn/ann.
	8	72Ni–15Cr–8Fe	Smls. tube	SB-163	...	N06600	...
	9	72Ni–15Cr–8Fe	Bar, rod	SB-166	...	N06600	Hot worked
	10	72Ni–15Cr–8Fe	Plate, sheet, strip	SB-168	...	N06600	Hot rolled
	11	72Ni–15Cr–8Fe	Rounds	SB-166	...	N06600	Hot worked
	12	72Ni–15Cr–8Fe	Rounds	SB-166	...	N06600	Hot worked
	13	60Ni–23Cr–Fe	Smls. tube	SB-163	...	N06601	Annealed
	14	60Ni–23Cr–Fe	Bar	SB-166	...	N06601	Annealed
	15	60Ni–23Cr–Fe	Smls. pipe & tube	SB-167	...	N06601	Annealed
	16	60Ni–23Cr–Fe	Plate, sheet, strip	SB-168	...	N06601	Annealed
	17	52Ni–22Cr–13Co–9Mo	Bar, rod	SB-166	...	N06617	Annealed
	18	52Ni–22Cr–13Co–9Mo	Smls. pipe & tube	SB-167	...	N06617	Annealed
	19	52Ni–22Cr–13Co–9Mo	Plate, sheet, strip	SB-168	...	N06617	Annealed
	20	52Ni–22Cr–13Co–9Mo	Forgings	SB-564	...	N06617	Annealed
07	21	60Ni–22Cr–9Mo–3.5Cb	Plate, sheet, strip	SB-443	2	N06625	Solution ann.
07	22	60Ni–22Cr–9Mo–3.5Cb	Smls. pipe & tube	SB-444	2	N06625	Solution ann.
07	23	60Ni–22Cr–9Mo–3.5Cb	Bar	SB-446	2	N06625	Solution ann.
	24	60Ni–22Cr–9Mo–3.5Cb	Smls. & wld. fittings	SB-366	...	N06625	Annealed
07	25	60Ni–22Cr–9Mo–3.5Cb	Bar	SB-446	1	N06625	Annealed
07	26	60Ni–22Cr–9Mo–3.5Cb	Forgings	SB-564	...	N06625	Annealed
07	27	...	...	...	...	...	...
	28	60Ni–22Cr–9Mo–3.5Cb	Plate, sheet, strip	SB-443	1	N06625	Annealed
	29	60Ni–22Cr–9Mo–3.5Cb	Plate, sheet, strip	SB-443	1	N06625	Annealed
	30	60Ni–22Cr–9Mo–3.5Cb	Smls. pipe	SB-444	1	N06625	Annealed
	31	60Ni–22Cr–9Mo–3.5Cb	Bar	SB-446	1	N06625	Annealed
07	32	...	...	...	...	...	...
07	33	60Ni–22Cr–9Mo–3.5Cb	Forgings	SB-564	...	N06625	Annealed
	34	60Ni–22Cr–9Mo–3.5Cb	Wld. tube	SB-704	...	N06625	Annealed
	35	60Ni–22Cr–9Mo–3.5Cb	Wld. pipe	SB-705	...	N06625	Annealed
	36	Ni–Cr–Mo–W	Forgings	SB-564	...	N06686	Solution ann.
	37	Ni–Cr–Mo–W	Rod	SB-574	...	N06686	Solution ann.
	38	Ni–Cr–Mo–W	Plate, sheet, strip	SB-575	...	N06686	Solution ann.
	39	Ni–Cr–Mo–W	Wld. pipe	SB-619	...	N06686	Solution ann.
	40	Ni–Cr–Mo–W	Smls. pipe & tube	SB-622	...	N06686	Solution ann.
	41	Ni–Cr–Mo–W	Wld. tube	SB-626	...	N06686	Solution ann.

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	≤ 3	80	35	...	
2	...	80	35	...	
3	...	80	35	...	
4	...	80	35	...	
5	...	80	35	...	
6	≤ 5	80	35	...	A08
7	...	80	35	...	
8	...	80	40	...	
9	> 3	85	35	...	
10	...	85	35	...	
11	$\frac{1}{2} < t \leq 3$	90	40	...	
12	$\frac{1}{4} \leq t \leq \frac{1}{2}$	95	45	...	
13	≤ 3 O.D.	80	30	...	
14	...	80	30	...	
15	...	80	30	...	
16	...	80	30	...	
17	...	95	35	...	
18	...	95	35	...	
19	...	95	35	...	
20	...	95	35	...	
21	...	100	40	...	07
22	...	100	40	...	07
23	...	100	40	...	07
24	...	110	50	...	
25	$4 < t \leq 10$	110	50	...	07
26	$4 < t \leq 10$	110	50	...	07
27	...	...	...	...	07
28	...	110	55	...	
29	...	120	60	...	
30	...	120	60	...	
31	≤ 4	120	60	...	
32	...	...	...	...	07
33	≤ 4	120	60	...	07
34	...	120	60	...	
35	...	120	60	...	
36	...	100	45	...	
37	...	100	45	...	
38	...	100	45	...	
39	≤ 8	100	45	...	
40	...	100	45	...	
41	$\leq 3\frac{1}{2}$	100	45	...	

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	32.8	32.0	31.5	31.2	30.9	30.7	30.5	30.3
	2	35.0	32.8	32.0	31.5	31.2	30.9	30.7	30.5	30.3
	3	35.0	32.8	32.0	31.5	31.2	30.9	30.7	30.5	30.3
	4	35.0	32.8	32.0	31.5	31.2	30.9	30.7	30.5	30.3
	5	35.0	32.8	32.0	31.5	31.2	30.9	30.7	30.5	30.3
A08	6	35.0	32.8	32.0	31.5	31.2	30.9	30.7	30.5	30.3
	7	35.0	32.8	32.0	31.5	31.2	30.9	30.7	30.5	30.3
	8	40.0	...	36.6	...	35.6	...	35.1	...	34.7
	9	35.0	33.8	33.2	32.7	32.3	32.1	31.9	31.9	31.9
	10	35.0	33.8	33.2	32.7	32.3	32.1	31.9	31.9	31.9
	11	40.0	...	38.0	...	37.0	...	36.4	...	36.4
	12	45.0	...	42.8	...	41.7	...	41.0	...	40.9
	13	30.0	27.8	26.8	25.8	24.9	24.0	23.3	22.7	22.1
	14	30.0	27.8	26.8	25.8	24.9	24.0	23.3	22.7	22.1
	15	30.0	27.8	26.8	25.8	24.9	24.0	23.3	22.7	22.1
	16	30.0	27.8	26.8	25.8	24.9	24.0	23.3	22.7	22.1
	17	35.0	...	31.1	...	28.9	...	27.1	...	25.9
	18	35.0	...	31.1	...	28.9	...	27.1	...	25.9
	19	35.0	...	31.1	...	28.9	...	27.1	...	25.9
	20	35.0	...	31.1	...	28.9	...	27.1	...	25.9
07	21	40.0	38.0	36.9	36.0	35.1	34.3	33.7	33.0	32.5
07	22	40.0	38.0	36.9	36.0	35.1	34.3	33.7	33.0	32.5
07	23	40.0	38.0	36.9	36.0	35.1	34.3	33.7	33.0	32.5
	24	50.0	48.9	48.2	47.5	46.8	46.1	45.4	44.8	44.1
07	25	50.0	48.9	48.2	47.5	46.8	46.1	45.4	44.8	44.1
07	26	50.0	48.9	48.2	47.5	46.8	46.1	45.4	44.8	44.1
07	27	...	...	...	...	...	...	...	...	...
	28	55.0	53.8	53.0	52.2	51.4	50.7	49.9	49.2	48.5
	29	60.0	58.7	57.8	56.9	56.1	55.3	54.5	53.7	52.9
	30	60.0	58.7	57.8	56.9	56.1	55.3	54.5	53.7	52.9
	31	60.0	58.7	57.8	56.9	56.1	55.3	54.5	53.7	52.9
07	32	...	...	...	...	...	...	...	...	...
07	33	60.0	58.7	57.8	56.9	56.1	55.3	54.5	53.7	52.9
	34	60.0	58.7	57.8	56.9	56.1	55.3	54.5	53.7	52.9
	35	60.0	58.7	57.8	56.9	56.1	55.3	54.5	53.7	52.9
	36	45.0	39.5	37.3	36.0	35.1	34.3	33.7	33.1	32.5
	37	45.0	39.5	37.3	36.0	35.1	34.3	33.7	33.1	32.5
	38	45.0	39.5	37.3	36.0	35.1	34.3	33.7	33.1	32.5
	39	45.0	39.5	37.3	36.0	35.1	34.3	33.7	33.1	32.5
	40	45.0	39.5	37.3	36.0	35.1	34.3	33.7	33.1	32.5
	41	45.0	39.5	37.3	36.0	35.1	34.3	33.7	33.1	32.5

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	30.1	29.9	29.7	29.4	29.1	28.7	28.1	27.3	...	...	
2	30.1	29.9	29.7	29.4	29.1	28.7	28.1	27.3	...	...	
3	30.1	29.9	29.7	29.4	29.1	28.7	28.1	27.3	...	...	
4	30.1	29.9	29.7	29.4	29.1	28.7	28.1	27.3	...	...	
5	30.1	29.9	29.7	29.4	29.1	28.7	28.1	27.3	...	...	
6	30.1	29.9	29.7	29.4	29.1	28.7	28.1	27.3	...	...	A08
7	30.1	29.9	29.7	29.4	29.1	28.7	28.1	27.3	...	...	
8	...	34.2	33.9	33.6	33.2	32.8	...	...	...	...	
9	31.9	31.8	31.7	31.5	31.2	30.7	30.1	29.5	28.9	...	
10	31.9	31.8	31.7	31.5	31.2	30.7	30.1	29.5	28.9	...	
11	...	36.4	36.1	35.9	35.4	34.8	...	...	...	...	
12	...	40.9	40.6	40.4	39.8	39.1	...	...	...	...	
13	21.7	21.3	21.1	20.9	20.8	20.7	20.6	20.6	20.6	20.6	
14	21.7	21.3	21.1	20.9	20.8	20.7	20.6	20.6	20.6	20.6	
15	21.7	21.3	21.1	20.9	20.8	20.7	20.6	20.6	20.6	20.6	
16	21.7	21.3	21.1	20.9	20.8	20.7	20.6	20.6	20.6	20.6	
17	...	25.0	24.6	24.3	24.1	23.8	23.7	23.5	23.4	23.3	
18	...	25.0	24.6	24.3	24.1	23.8	23.7	23.5	23.4	23.3	
19	...	25.0	24.6	24.3	24.1	23.8	23.7	23.5	23.4	23.3	
20	...	25.0	24.6	24.3	24.1	23.8	23.7	23.5	23.4	23.3	
21	32.0	31.5	31.2	30.8	30.5	30.2	30.0	29.7	29.6	29.4	07
22	32.0	31.5	31.2	30.8	30.5	30.2	30.0	29.7	29.6	29.4	07
23	32.0	31.5	31.2	30.8	30.5	30.2	30.0	29.7	29.6	29.4	07
24	43.5	42.9	42.4	41.9	41.5	41.1	40.7	40.4	40.2	40.0	
25	43.5	42.9	42.4	41.9	41.5	41.1	40.7	40.4	40.2	40.0	07
26	43.5	42.9	42.4	41.9	41.5	41.1	40.7	40.4	40.2	40.0	07
27	...	...	...	...	...	...	...	...	...	...	07
28	47.9	47.2	46.6	46.1	45.6	45.2	44.8	44.5	44.2	43.9	
29	52.2	51.5	50.9	50.3	49.8	49.3	48.9	48.5	48.2	47.9	
30	52.2	51.5	50.9	50.3	49.8	49.3	48.9	48.5	48.2	47.9	
31	52.2	51.5	50.9	50.3	49.8	49.3	48.9	48.5	48.2	47.9	
32	...	...	...	...	...	...	...	...	...	...	07
33	52.2	51.5	50.9	50.3	49.8	49.3	48.9	48.5	48.2	47.9	07
34	52.2	51.5	50.9	50.3	49.8	49.3	48.9	48.5	48.2	47.9	
35	52.2	51.5	50.9	50.3	49.8	49.3	48.9	48.5	48.2	47.9	
36	31.8	31.2	30.6	30.2	29.9	29.8	29.8	29.8	29.8	29.4	
37	31.8	31.2	30.6	30.2	29.9	29.8	29.8	29.8	29.8	29.4	
38	31.8	31.2	30.6	30.2	29.9	29.8	29.8	29.8	29.8	29.4	
39	31.8	31.2	30.6	30.2	29.9	29.8	29.8	29.8	29.8	29.4	
40	31.8	31.2	30.6	30.2	29.9	29.8	29.8	29.8	29.8	29.4	
41	31.8	31.2	30.6	30.2	29.9	29.8	29.8	29.8	29.8	29.4	

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 Designation/ UNS No.	Class/Condition/ Temper
	Nonferrous Materials (Cont'd)					
1	58Ni–29Cr–9Fe	Smls. tube	SB-163	...	N06690	Annealed
2	58Ni–29Cr–9Fe	Bar, rod	SB-166	...	N06690	Annealed
3	58Ni–29Cr–9Fe	Smls. pipe & tube	SB-167	...	N06690	Annealed
4	58Ni–29Cr–9Fe	Plate, sheet, strip	SB-168	...	N06690	Annealed
5	58Ni–29Cr–9Fe	Forgings	SB-564	...	N06690	Annealed
6	58Ni–29Cr–9Fe	Smls. tube	SB-163	...	N06690	Annealed
7	49Ni–25Cr–18Fe–6Mo	Plate, sheet, strip	SB-582	...	N06975	Solution ann.
8	49Ni–25Cr–18Fe–6Mo	Wld. pipe	SB-619	...	N06975	Solution ann.
9	49Ni–25Cr–18Fe–6Mo	Smls. pipe & tube	SB-622	...	N06975	Solution ann.
10	49Ni–25Cr–18Fe–6Mo	Wld. tube	SB-626	...	N06975	Solution ann.
11	47Ni–22Cr–20Fe–7Mo	Rod	SB-581	...	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	Plate, sheet, strip	SB-582	...	N06985	Annealed
16	47Ni–22Cr–20Fe–7Mo	Wld. pipe	SB-619	...	N06985	Annealed
17	47Ni–22Cr–20Fe–7Mo	Smls. pipe & tube	SB-622	...	N06985	Annealed
18	47Ni–22Cr–20Fe–7Mo	Wld. tube	SB-626	...	N06985	Annealed
19	35Ni–35Fe–20Cr–Cb	Forgings	SB-462	...	N08020	Annealed
20	35Ni–35Fe–20Cr–Cb	Plate	SB-463	...	N08020	Annealed
21	35Ni–35Fe–20Cr–Cb	Bar	SB-473	...	N08020	Annealed
22	35Ni–35Fe–20Cr–Cb	Smls. pipe & tube	SB-729	...	N08020	Annealed
23	35Ni–35Fe–20Cr–Cb	Wld. pipe	SB-464	...	N08020	Wld. ann.
24	35Ni–35Fe–20Cr–Cb	Wld. tube	SB-468	...	N08020	Wld. ann.
25	35Ni–35Fe–20Cr–Cb	Smls. & wld. fittings	SB-366	...	N08020	Annealed
26	37Ni–33Fe–23Cr–4Mo–Cu	Plate, sheet, strip	SB-463	...	N08024	Annealed
27	37Ni–33Fe–23Cr–4Mo–Cu	Wld. pipe	SB-464	...	N08024	Wld. ann.
28	37Ni–33Fe–23Cr–4Mo–Cu	Wld. tube	SB-468	...	N08024	Wld. ann.
29	35Ni–30Fe–24Cr–6Mo–Cu	Plate, sheet, strip	SB-463	...	N08026	Annealed
30	35Ni–30Fe–24Cr–6Mo–Cu	Wld. pipe	SB-464	...	N08026	Wld. ann.
31	35Ni–30Fe–24Cr–6Mo–Cu	Wld. tube	SB-468	...	N08026	Wld. ann.
32	31Ni–31Fe–29Cr–Mo	Smls. tube	SB-668	...	N08028	Annealed
33	31Ni–31Fe–29Cr–Mo	Plate, sheet, strip	SB-709	...	N08028	Annealed
34	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Smls. & wld. fittings	SB-366	...	N08031	Solution ann.
35	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Forgings	SB-564	...	N08031	Solution ann.
36	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Rod	SB-581	...	N08031	Solution ann.
37	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Wld. pipe	SB-619	...	N08031	Solution ann.
38	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Smls. pipe & tube	SB-622	...	N08031	Solution ann.
39	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Plate, sheet, strip	SB-625	...	N08031	Solution ann.
40	31Ni–33Fe–27Cr–6.5Mo–Cu–N	Wld. tube	SB-626	...	N08031	Solution ann.

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	24.8	24.5	24.1	23.8	23.5	23.2	22.9	22.7	22.4	22.1	
2	24.8	24.5	24.1	23.8	23.5	23.2	22.9	22.7	22.4	22.1	
3	24.8	24.5	24.1	23.8	23.5	23.2	22.9	22.7	22.4	22.1	
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	...	32.6	32.2	31.8	31.4	31.0	...	...	...	...	
10	...	38.7	38.7	...	...	...	...	...	...	...	
11	18.8	18.3	17.9	17.4	17.1	16.7	16.4	16.1	15.8	15.5	
12	18.8	18.3	17.9	17.4	17.1	16.7	16.4	16.1	15.8	15.5	
13	18.8	18.3	17.9	17.4	17.1	16.7	16.4	16.1	15.8	15.5	
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	27.2	26.7	26.3	26.0	25.7	25.6	25.4	25.3	25.1	24.8	
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	...	...	...	...	...	...	07
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	18.4	17.8	17.4	17.1	...	...	...	...	...	...	
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	...	...	...	...	
38	26.6	25.9	25.5	25.3	25.3	25.3	...	...	...	...	

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 Designation/ UNS No.	Class/Condition/ Temper
		Nonferrous Materials (Cont'd)					
	1	62Ni–28Mo–5Fe	Plate	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	Sheet, 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
07	11	62Ni–25Mo–8Cr–2Fe	Smls. & wld. fittings	SB-366	...	N10242	Annealed
07	12	62Ni–25Mo–8Cr–2Fe	Plate, sheet, strip	SB-434	...	N10242	Annealed
07	13	62Ni–25Mo–8Cr–2Fe	Forgings	SB-564	...	N10242	Annealed
07	14	62Ni–25Mo–8Cr–2Fe	Rod	SB-573	...	N10242	Annealed
07	15	62Ni–25Mo–8Cr–2Fe	Wld. pipe	SB-619	...	N10242	Solution ann.
07	16	62Ni–25Mo–8Cr–2Fe	Smls. pipe & tube	SB-622	...	N10242	Solution ann.
07	17	62Ni–25Mo–8Cr–2Fe	Wld. tube	SB-626	...	N10242	Solution ann.
	18	54Ni–16Mo–15Cr	Smls. & wld. fittings	SB-366	...	N10276	Solution ann.
	19	54Ni–16Mo–15Cr	Forgings	SB-462	...	N10276	Solution ann.
	20	54Ni–16Mo–15Cr	Forgings	SB-564	...	N10276	Solution ann.
	21	54Ni–16Mo–15Cr	Rod	SB-574	...	N10276	Solution ann.
	22	54Ni–16Mo–15Cr	Plate, sheet, strip	SB-575	...	N10276	Solution ann.
	23	54Ni–16Mo–15Cr	Wld. pipe	SB-619	...	N10276	Solution ann.
	24	54Ni–16Mo–15Cr	Smls. pipe & tube	SB-622	...	N10276	Solution ann.
	25	54Ni–16Mo–15Cr	Wld. tube	SB-626	...	N10276	Solution ann.
	26	Ni–28Mo–3Fe–1.3Cr–0.25Al	Plate, sheet, strip	SB-333	...	N10629	Solution ann.
	27	Ni–28Mo–3Fe–1.3Cr–0.25Al	Rod	SB-335	...	N10629	Solution ann.
	28	Ni–28Mo–3Fe–1.3Cr–0.25Al	Smls. & wld. fittings	SB-366	...	N10629	Solution ann.
	29	Ni–28Mo–3Fe–1.3Cr–0.25Al	Forgings	SB-564	...	N10629	Solution ann.
	30	Ni–28Mo–3Fe–1.3Cr–0.25Al	Wld. pipe	SB-619	...	N10629	Solution ann.
	31	Ni–28Mo–3Fe–1.3Cr–0.25Al	Smls. pipe & tube	SB-622	...	N10629	Solution ann.
	32	Ni–28Mo–3Fe–1.3Cr–0.25Al	Wld. tube	SB-626	...	N10629	Solution ann.
	33	65Ni–28Mo–2Fe	Smls. & wld. fittings	SB-366	...	N10665	Annealed
	34	65Ni–28Mo–2Fe	Wld. pipe	SB-619	...	N10665	Annealed
	35	65Ni–28Mo–2Fe	Wld. tube	SB-626	...	N10665	Annealed
	36	65Ni–28Mo–2Fe	Plate, sheet, strip	SB-333	...	N10665	Solution ann.
	37	65Ni–28Mo–2Fe	Rod	SB-335	...	N10665	Solution ann.
	38	65Ni–28Mo–2Fe	Forgings	SB-462	...	N10665	Solution ann.
A08	39	65Ni–28Mo–2Fe	Forgings	SB-564	...	N10665	Solution ann.
	40	65Ni–28Mo–2Fe	Wld. pipe	SB-619	...	N10665	Solution ann.
	41	65Ni–28Mo–2Fe	Smls. pipe & tube	SB-622	...	N10665	Solution ann.
	42	65Ni–28Mo–2Fe	Wld. tube	SB-626	...	N10665	Solution ann.

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	...	105	45	...	07
12	...	105	45	...	07
13	...	105	45	...	07
14	...	105	45	...	07
15	...	105	45	...	07
16	...	105	45	...	07
17	...	105	45	...	07
18	...	100	41	...	
19	...	100	41	...	
20	...	100	41	...	
21	...	100	41	...	
22	...	100	41	...	
23	...	100	41	...	
24	...	100	41	...	
25	...	100	41	...	
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	...	
36	...	110	51	...	
37	...	110	51	...	
38	...	110	51	...	
39	...	110	51	...	A08
40	...	110	51	...	
41	...	110	51	...	
42	...	110	51	...	

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
07	11	45.0	...	42.3	...	39.2	...	37.0	...	35.9
07	12	45.0	...	42.3	...	39.2	...	37.0	...	35.9
07	13	45.0	...	42.3	...	39.2	...	37.0	...	35.9
07	14	45.0	...	42.3	...	39.2	...	37.0	...	35.9
07	15	45.0	...	42.3	...	39.2	...	37.0	...	35.9
07	16	45.0	...	42.3	...	39.2	...	37.0	...	35.9
07	17	45.0	...	42.3	...	39.2	...	37.0	...	35.9
	18	41.0	38.8	37.3	35.9	34.5	33.2	32.0	30.9	29.8
	19	41.0	38.8	37.3	35.9	34.5	33.2	32.0	30.9	29.8
	20	41.0	38.8	37.3	35.9	34.5	33.2	32.0	30.9	29.8
	21	41.0	38.8	37.3	35.9	34.5	33.2	32.0	30.9	29.8
	22	41.0	38.8	37.3	35.9	34.5	33.2	32.0	30.9	29.8
	23	41.0	38.8	37.3	35.9	34.5	33.2	32.0	30.9	29.8
	24	41.0	38.8	37.3	35.9	34.5	33.2	32.0	30.9	29.8
	25	41.0	38.8	37.3	35.9	34.5	33.2	32.0	30.9	29.8
	26	51.0	...	47.1	...	44.4	...	42.2	...	40.5
	27	51.0	...	47.1	...	44.4	...	42.2	...	40.5
	28	51.0	...	47.1	...	44.4	...	42.2	...	40.5
	29	51.0	...	47.1	...	44.4	...	42.2	...	40.5
	30	51.0	...	47.1	...	44.4	...	42.2	...	40.5
	31	51.0	...	47.1	...	44.4	...	42.2	...	40.5
	32	51.0	...	47.1	...	44.4	...	42.2	...	40.5
	33	51.0	49.2	47.9	46.6	45.4	44.3	43.4	42.6	41.9
	34	51.0	49.2	47.9	46.6	45.4	44.3	43.4	42.6	41.9
	35	51.0	49.2	47.9	46.6	45.4	44.3	43.4	42.6	41.9
	36	51.0	49.2	47.9	46.6	45.4	44.3	43.4	42.6	41.9
	37	51.0	49.2	47.9	46.6	45.4	44.3	43.4	42.6	41.9
	38	51.0	49.2	47.9	46.6	45.4	44.3	43.4	42.6	41.9
A08	39	51.0	49.2	47.9	46.6	45.4	44.3	43.4	42.6	41.9
	40	51.0	49.2	47.9	46.6	45.4	44.3	43.4	42.6	41.9
	41	51.0	49.2	47.9	46.6	45.4	44.3	43.4	42.6	41.9
	42	51.0	49.2	47.9	46.6	45.4	44.3	43.4	42.6	41.9

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	...	35.5	35.4	35.2	34.8	34.3	33.6	33.0	32.5	32.4	07
12	...	35.5	35.4	35.2	34.8	34.3	33.6	33.0	32.5	32.4	07
13	...	35.5	35.4	35.2	34.8	34.3	33.6	33.0	32.5	32.4	07
14	...	35.5	35.4	35.2	34.8	34.3	33.6	33.0	32.5	32.4	07
15	...	35.5	35.4	35.2	34.8	34.3	33.6	33.0	32.5	32.4	07
16	...	35.5	35.4	35.2	34.8	34.3	33.6	33.0	32.5	32.4	07
17	...	35.5	35.4	35.2	34.8	34.3	33.6	33.0	32.5	32.4	07
18	28.9	28.0	27.3	26.7	26.1	25.7	25.3	25.1	24.9	24.8	
19	28.9	28.0	27.3	26.7	26.1	25.7	25.3	25.1	24.9	24.8	
20	28.9	28.0	27.3	26.7	26.1	25.7	25.3	25.1	24.9	24.8	
21	28.9	28.0	27.3	26.7	26.1	25.7	25.3	25.1	24.9	24.8	
22	28.9	28.0	27.3	26.7	26.1	25.7	25.3	25.1	24.9	24.8	
23	28.9	28.0	27.3	26.7	26.1	25.7	25.3	25.1	24.9	24.8	
24	28.9	28.0	27.3	26.7	26.1	25.7	25.3	25.1	24.9	24.8	
25	28.9	28.0	27.3	26.7	26.1	25.7	25.3	25.1	24.9	24.8	
26	...	39.2	38.7	38.3	37.9	37.7	37.4	37.3	37.1	...	
27	...	39.2	38.7	38.3	37.9	37.7	37.4	37.3	37.1	...	
28	...	39.2	38.7	38.3	37.9	37.7	37.4	37.3	37.1	...	
29	...	39.2	38.7	38.3	37.9	37.7	37.4	37.3	37.1	...	
30	...	39.2	38.7	38.3	37.9	37.7	37.4	37.3	37.1	...	
31	...	39.2	38.7	38.3	37.9	37.7	37.4	37.3	37.1	...	
32	...	39.2	38.7	38.3	37.9	37.7	37.4	37.3	37.1	...	
33	41.3	40.8	40.3	39.8	39.3	38.7	38.0	37.3	36.5	35.8	
34	41.3	40.8	40.3	39.8	39.3	38.7	38.0	37.3	36.5	35.8	
35	41.3	40.8	40.3	39.8	39.3	38.7	38.0	37.3	36.5	35.8	
36	41.3	40.8	40.3	39.8	39.3	38.7	38.0	37.3	36.5	35.8	
37	41.3	40.8	40.3	39.8	39.3	38.7	38.0	37.3	36.5	35.8	
38	41.3	40.8	40.3	39.8	39.3	38.7	38.0	37.3	36.5	35.8	
39	41.3	40.8	40.3	39.8	39.3	38.7	38.0	37.3	36.5	35.8	A08
40	41.3	40.8	40.3	39.8	39.3	38.7	38.0	37.3	36.5	35.8	
41	41.3	40.8	40.3	39.8	39.3	38.7	38.0	37.3	36.5	35.8	
42	41.3	40.8	40.3	39.8	39.3	38.7	38.0	37.3	36.5	35.8	

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 Designation/ UNS No.	Class/Condition/ Temper
		Nonferrous Materials (Cont'd)					
	1	65Ni–29.5Mo–2Fe–2Cr	Plate, sheet, strip	SB-333	...	N10675	Solution ann.
	2	65Ni–29.5Mo–2Fe–2Cr	Rod	SB-335	...	N10675	Solution ann.
	3	65Ni–29.5Mo–2Fe–2Cr	Smls. & wld. fittings	SB-366	...	N10675	Solution ann.
	4	65Ni–29.5Mo–2Fe–2Cr	Forgings	SB-462	...	N10675	Solution ann.
	5	65Ni–29.5Mo–2Fe–2Cr	Forgings	SB-564	...	N10675	Solution ann.
	6	65Ni–29.5Mo–2Fe–2Cr	Wld. pipe	SB-619	...	N10675	Solution ann.
	7	65Ni–29.5Mo–2Fe–2Cr	Smls. pipe & tube	SB-622	...	N10675	Solution ann.
	8	65Ni–29.5Mo–2Fe–2Cr	Wld. tube	SB-626	...	N10675	Solution ann.
	9	37Ni–30Co–28Cr–2.7Si	Plate, sheet, strip	SB-435	...	N12160	Solution ann.
	10	37Ni–30Co–28Cr–2.7Si	Forgings	SB-564	...	N12160	Solution ann.
	11	37Ni–30Co–28Cr–2.7Si	Bar	SB-572	...	N12160	Solution ann.
	12	37Ni–30Co–28Cr–2.7Si	Wld. pipe	SB-619	...	N12160	Solution ann.
	13	37Ni–30Co–28Cr–2.7Si	Smls. pipe & tube	SB-622	...	N12160	Solution ann.
	14	37Ni–30Co–28Cr–2.7Si	Wld. tube	SB-626	...	N12160	Solution ann.
	15	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Smls. & wld. fittings	SB-366	...	R20033	Solution ann.
	16	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Forgings	SB-564	...	R20033	Solution ann.
	17	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Wld. pipe	SB-619	...	R20033	Solution ann.
	18	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Smls. pipe & tube	SB-622	...	R20033	Solution ann.
	19	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Plate, sheet, strip	SB-625	...	R20033	Solution ann.
	20	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Wld. tube	SB-626	...	R20033	Solution ann.
	21	33Cr–31Ni–32Fe–1.5Mo–0.6Cu–N	Rod	SB-649	...	R20033	Solution ann.
	22	21Ni–30Fe–22Cr–18Co–3Mo–3W	Plate, sheet, strip	SB-435	...	R30556	Annealed
	23	21Ni–30Fe–22Cr–18Co–3Mo–3W	Rod	SB-572	...	R30556	Annealed
	24	21Ni–30Fe–22Cr–18Co–3Mo–3W	Wld. pipe	SB-619	...	R30556	Annealed
	25	21Ni–30Fe–22Cr–18Co–3Mo–3W	Smls. pipe & tube	SB-622	...	R30556	Annealed
	26	21Ni–30Fe–22Cr–18Co–3Mo–3W	Wld. tube	SB-626	...	R30556	Annealed
	27	Co–26Cr–9Ni–5Mo–3Fe–2W	Rod	SB-815	...	R31233	Solution ann.
	28	Co–26Cr–9Ni–5Mo–3Fe–2W	Plate, sheet, strip	SB-818	...	R31233	Solution ann.
07	29	Ti	Plate, sheet, strip	SB-265	1	R50250	Annealed
A08	30	Ti	Smls. & wld. tube	SB-338	1	R50250	Annealed
A08	31	Ti	Bar, billet	SB-348	1	R50250	Annealed
A08	32	Ti	Forgings	SB-381	F-1	R50250	Annealed
A08	33	Ti	Smls. pipe	SB-861	1	R50250	Annealed
A08	34	Ti	Wld. pipe	SB-862	1	R50250	Annealed
	35	Ti	Castings	SB-367	C-2	R50400	...
	36	Ti	Plate, sheet, strip	SB-265	2	R50400	Annealed
	37	Ti	Smls. & wld. tube	SB-338	2	R50400	Annealed

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	...	110	51	...	
6	...	110	51	...	
7	...	110	51	...	
8	...	110	51	...	
9	...	90	35	...	
10	...	90	35	...	
11	...	90	35	...	
12	...	90	35	...	
13	...	90	35	...	
14	...	90	35	...	
15	...	109	55	...	
16	...	109	55	...	
17	...	109	55	...	
18	...	109	55	...	
19	...	109	55	...	
20	...	109	55	...	
21	...	109	55	...	
22	...	100	45	...	
23	...	100	45	...	
24	...	100	45	...	
25	...	100	45	...	
26	...	100	45	...	
27	...	130	55	...	
28	...	130	55	...	
29	...	35	20	...	07
30	...	35	20	...	A08
31	...	35	20	...	A08
32	...	35	20	...	A08
33	...	35	20	...	A08
34	...	35	20	...	A08
35	...	50	40	...	
36	...	50	40	...	
37	...	50	40	...	

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
5	51.0	...	47.8	...	45.4	...	43.2	...	41.1
6	51.0	...	47.8	...	45.4	...	43.2	...	41.1
7	51.0	...	47.8	...	45.4	...	43.2	...	41.1
8	51.0	...	47.8	...	45.4	...	43.2	...	41.1
9	35.0	...	30.8	...	27.5	...	24.7	...	22.5
10	35.0	...	30.8	...	27.5	...	24.7	...	22.5
11	35.0	...	30.8	...	27.5	...	24.7	...	22.5
12	35.0	...	30.8	...	27.5	...	24.7	...	22.5
13	35.0	...	30.8	...	27.5	...	24.7	...	22.5
14	35.0	...	30.8	...	27.5	...	24.7	...	22.5
15	55.0	...	46.3	...	42.1	...	39.2	...	37.1
16	55.0	...	46.3	...	42.1	...	39.2	...	37.1
17	55.0	...	46.3	...	42.1	...	39.2	...	37.1
18	55.0	...	46.3	...	42.1	...	39.2	...	37.1
19	55.0	...	46.3	...	42.1	...	39.2	...	37.1
20	55.0	...	46.3	...	42.1	...	39.2	...	37.1
21	55.0	...	46.3	...	42.1	...	39.2	...	37.1
22	45.0	40.8	38.4	36.4	34.7	33.2	32.0	31.0	30.2
23	45.0	40.8	38.4	36.4	34.7	33.2	32.0	31.0	30.2
24	45.0	40.8	38.4	36.4	34.7	33.2	32.0	31.0	30.2
25	45.0	40.8	38.4	36.4	34.7	33.2	32.0	31.0	30.2
26	45.0	40.8	38.4	36.4	34.7	33.2	32.0	31.0	30.2
27	55.0	...	48.2	...	42.8	...	38.3	...	35.1
28	55.0	...	48.2	...	42.8	...	38.3	...	35.1
07 29	20.0	16.1	14.0	12.3	10.8	9.4	8.2	7.1	6.3
A08 30	20.0	16.1	14.0	12.3	10.8	9.4	8.2	7.1	6.3
A08 31	20.0	16.1	14.0	12.3	10.8	9.4	8.2	7.1	6.3
A08 32	20.0	16.1	14.0	12.3	10.8	9.4	8.2	7.1	6.3
A08 33	20.0	16.1	14.0	12.3	10.8	9.4	8.2	7.1	6.3
A08 34	20.0	16.1	14.0	12.3	10.8	9.4	8.2	7.1	6.3
35	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
36	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
37	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8

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	...	39.4	38.7	38.1	37.6	37.3	37.0	36.8	36.6	36.3	
6	...	39.4	38.7	38.1	37.6	37.3	37.0	36.8	36.6	36.3	
7	...	39.4	38.7	38.1	37.6	37.3	37.0	36.8	36.6	36.3	
8	...	39.4	38.7	38.1	37.6	37.3	37.0	36.8	36.6	36.3	
9	...	21.1	20.7	20.4	20.3	20.3	20.3	20.3	20.3	20.3	
10	...	21.1	20.7	20.4	20.3	20.3	20.3	20.3	20.3	20.3	
11	...	21.1	20.7	20.4	20.3	20.3	20.3	20.3	20.3	20.3	
12	...	21.1	20.7	20.4	20.3	20.3	20.3	20.3	20.3	20.3	
13	...	21.1	20.7	20.4	20.3	20.3	20.3	20.3	20.3	20.3	
14	...	21.1	20.7	20.4	20.3	20.3	20.3	20.3	20.3	20.3	
15	...	35.7	35.2	34.7	34.3	33.9	33.6	33.2	...	...	
16	...	35.7	35.2	34.7	34.3	33.9	33.6	33.2	...	...	
17	...	35.7	35.2	34.7	34.3	33.9	33.6	33.2	...	...	
18	...	35.7	35.2	34.7	34.3	33.9	33.6	33.2	...	...	
19	...	35.7	35.2	34.7	34.3	33.9	33.6	33.2	...	...	
20	...	35.7	35.2	34.7	34.3	33.9	33.6	33.2	...	...	
21	...	35.7	35.2	34.7	34.3	33.9	33.6	33.2	...	...	
22	29.5	28.9	28.4	28.0	27.6	27.3	27.0	26.7	26.5	26.2	
23	29.5	28.9	28.4	28.0	27.6	27.3	27.0	26.7	26.5	26.2	
24	29.5	28.9	28.4	28.0	27.6	27.3	27.0	26.7	26.5	26.2	
25	29.5	28.9	28.4	28.0	27.6	27.3	27.0	26.7	26.5	26.2	
26	29.5	28.9	28.4	28.0	27.6	27.3	27.0	26.7	26.5	26.2	
27	...	33.0	32.3	31.8	31.3	30.8	30.2	29.4	28.3	26.8	
28	...	33.0	32.3	31.8	31.3	30.8	30.2	29.4	28.3	26.8	
29	5.7	5.3	...	...	...	...	...	...	...	...	07
30	5.7	5.3	...	...	...	...	...	...	...	...	A08
31	5.7	5.3	...	...	...	...	...	...	...	...	A08
32	5.7	5.3	...	...	...	...	...	...	...	...	A08
33	5.7	5.3	...	...	...	...	...	...	...	...	A08
34	5.7	5.3	...	...	...	...	...	...	...	...	A08
35	12.6	11.4	...	...	...	...	...	...	...	...	
36	12.6	11.4	...	...	...	...	...	...	...	...	
37	12.6	11.4	...	...	...	...	...	...	...	...	

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 Designation/ UNS No.	Class/Condition/ Temper
		Nonferrous Materials (Cont'd)					
	1	Ti	Bar, billet	SB-348	2	R50400	Annealed
	2	Ti	Forgings	SB-381	F-2	R50400	Annealed
	3	Ti	Smls. pipe	SB-861	2	R50400	Annealed
	4	Ti	Wld. pipe	SB-862	2	R50400	Annealed
A08	5	Ti	Plate, sheet, strip	SB-265	2H	R50400	Annealed
A08	6	Ti	Smls. & wld. tube	SB-338	2H	R50400	Annealed
A08	7	Ti	Bar, billet	SB-348	2H	R50400	Annealed
A08	8	Ti	Smls. fittings	SB-363	WPT2H	R50400	Annealed
A08	9	Ti	Wld. fittings	SB-363	WPT2HW	R50400	Annealed
A08	10	Ti	Forgings	SB-381	F-2H	R50400	Annealed
A08	11	Ti	Smls. pipe	SB-861	2H	R50400	Annealed
A08	12	Ti	Wld. pipe	SB-862	2H	R50400	Annealed
	13	Ti	Plate, sheet, strip	SB-265	3	R50550	Annealed
	14	Ti	Smls. & wld. tube	SB-338	3	R50550	Annealed
	15	Ti	Bar, billet	SB-348	3	R50550	Annealed
	16	Ti	Castings	SB-367	C-3	R50550	Annealed
	17	Ti	Forgings	SB-381	F-3	R50550	Annealed
	18	Ti	Smls. pipe	SB-861	3	R50550	Annealed
	19	Ti	Wld. pipe	SB-862	3	R50550	Annealed
07	20	Ti–Pd	Plate, sheet, strip	SB-265	11	R52250	Annealed
07	21	Ti–Pd	Plate, sheet, strip	SB-265	17	R52252	Annealed
07	22	Ti–Ru	Plate, sheet, strip	SB-265	27	R52254	Annealed
	23	Ti–Pd	Plate, sheet, strip	SB-265	7	R52400	Annealed
	24	Ti–Pd	Smls. & wld. tube	SB-338	7	R52400	Annealed
	25	Ti–Pd	Bar, billet	SB-348	7	R52400	Annealed
	26	Ti–Pd	Forgings	SB-381	F-7	R52400	Annealed
	27	Ti–Pd	Smls. pipe	SB-861	7	R52400	Annealed
	28	Ti–Pd	Wld. pipe	SB-862	7	R52400	Annealed
A08	29	Ti–0.15Pd	Plate, sheet, strip	SB-265	7H	R52400	Annealed
A08	30	Ti–0.15Pd	Smls. & wld. tube	SB-338	7H	R52400	Annealed
A08	31	Ti–0.15Pd	Bar, billet	SB-348	7H	R52400	Annealed
A08	32	Ti–0.15Pd	Smls. fittings	SB-363	WPT7H	R52400	Annealed
A08	33	Ti–0.15Pd	Wld. fittings	SB-363	WPT7HW	R52400	Annealed
A08	34	Ti–0.15Pd	Forgings	SB-381	F-7H	R52400	Annealed
A08	35	Ti–0.15Pd	Smls. pipe	SB-861	7H	R52400	Annealed
A08	36	Ti–0.15Pd	Wld. pipe	SB-862	7H	R52400	Annealed
A08	37	Ti–0.05Pd	Plate, sheet, strip	SB-265	16H	R52402	Annealed
A08	38	Ti–0.05Pd	Smls. & wld. tube	SB-338	16H	R52402	Annealed
A08	39	Ti–0.05Pd	Bar, billet	SB-348	16H	R52402	Annealed
A08	40	Ti–0.05Pd	Smls. fittings	SB-363	WPT16H	R52402	Annealed
A08	41	Ti–0.05Pd	Wld. fittings	SB-363	WPT16HW	R52402	Annealed

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	...	50	40	...	
2	...	50	40	...	
3	...	50	40	...	
4	...	50	40	...	
5	...	58	40	...	A08
6	...	58	40	...	A08
7	...	58	40	...	A08
8	...	58	40	...	A08
9	...	58	40	...	A08
10	...	58	40	...	A08
11	...	58	40	...	A08
12	...	58	40	...	A08
13	...	65	55	...	
14	...	65	55	...	
15	...	65	55	...	
16	...	65	55	...	
17	...	65	55	...	
18	...	65	55	...	
19	...	65	55	...	
20	...	35	20	...	07
21	...	35	20	...	07
22	...	35	20	...	07
23	...	50	40	...	
24	...	50	40	...	
25	...	50	40	...	
26	...	50	40	...	
27	...	50	40	...	
28	...	50	40	...	
29	...	58	40	...	A08
30	...	58	40	...	A08
31	...	58	40	...	A08
32	...	58	40	...	A08
33	...	58	40	...	A08
34	...	58	40	...	A08
35	...	58	40	...	A08
36	...	58	40	...	A08
37	...	58	40	...	A08
38	...	58	40	...	A08
39	...	58	40	...	A08
40	...	58	40	...	A08
41	...	58	40	...	A08

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	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
	2	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
	3	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
	4	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
A08	5	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	6	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	7	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	8	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	9	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	10	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	11	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	12	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
	13	55.0	48.4	44.0	39.8	35.7	32.0	28.6	25.5	22.5
	14	55.0	48.4	44.0	39.8	35.7	32.0	28.6	25.5	22.5
	15	55.0	48.4	44.0	39.8	35.7	32.0	28.6	25.5	22.5
	16	55.0	48.4	44.0	39.8	35.7	32.0	28.6	25.5	22.5
	17	55.0	48.4	44.0	39.8	35.7	32.0	28.6	25.5	22.5
	18	55.0	48.4	44.0	39.8	35.7	32.0	28.6	25.5	22.5
	19	55.0	48.4	44.0	39.8	35.7	32.0	28.6	25.5	22.5
07	20	20.0	16.1	14.0	12.3	10.8	9.4	8.2	7.1	6.3
07	21	20.0	16.1	14.0	12.3	10.8	9.4	8.2	7.1	6.3
07	22	20.0	16.1	14.0	12.3	10.8	9.4	8.2	7.1	6.3
	23	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
	24	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
	25	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
	26	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
	27	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
	28	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
A08	29	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	30	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	31	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	32	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	33	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	34	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	35	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	36	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	37	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	38	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	39	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	40	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	41	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1

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	12.6	11.4	...	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	...	...	...	
3	12.6	11.4	...	...	...	...	...	...	...	...	
4	12.6	11.4	...	...	...	...	...	...	...	...	
5	12.6	11.4	...	...	...	...	...	...	...	...	A08
6	12.6	11.4	...	...	...	...	...	...	...	...	A08
7	12.6	11.4	...	...	...	...	...	...	...	...	A08
8	12.6	11.4	...	...	...	...	...	...	...	...	A08
9	12.6	11.4	...	...	...	...	...	...	...	...	A08
10	12.6	11.4	...	...	...	...	...	...	...	...	A08
11	12.6	11.4	...	...	...	...	...	...	...	...	A08
12	12.6	11.4	...	...	...	...	...	...	...	...	A08
13	19.8	17.1	...	...	...	...	...	...	...	...	
14	19.8	17.1	...	...	...	...	...	...	...	...	
15	19.8	17.1	...	...	...	...	...	...	...	...	
16	...	...	...	...	...	...	...	...	...	...	
17	19.8	17.1	...	...	...	...	...	...	...	...	
18	19.8	17.1	...	...	...	...	...	...	...	...	
19	19.8	17.1	...	...	...	...	...	...	...	...	
20	5.7	5.3	...	...	...	...	...	...	...	...	07
21	5.7	5.3	...	...	...	...	...	...	...	...	07
22	5.7	5.3	...	...	...	...	...	...	...	...	07
23	12.6	11.4	...	...	...	...	...	...	...	...	
24	12.6	11.4	...	...	...	...	...	...	...	...	
25	12.6	11.4	...	...	...	...	...	...	...	...	
26	12.6	11.4	...	...	...	...	...	...	...	...	
27	12.6	11.4	...	...	...	...	...	...	...	...	
28	12.6	11.4	...	...	...	...	...	...	...	...	
29	12.6	11.4	...	...	...	...	...	...	...	...	A08
30	12.6	11.4	...	...	...	...	...	...	...	...	A08
31	12.6	11.4	...	...	...	...	...	...	...	...	A08
32	12.6	11.4	...	...	...	...	...	...	...	...	A08
33	12.6	11.4	...	...	...	...	...	...	...	...	A08
34	12.6	11.4	...	...	...	...	...	...	...	...	A08
35	12.6	11.4	...	...	...	...	...	...	...	...	A08
36	12.6	11.4	...	...	...	...	...	...	...	...	A08
37	12.6	11.4	...	...	...	...	...	...	...	...	A08
38	12.6	11.4	...	...	...	...	...	...	...	...	A08
39	12.6	11.4	...	...	...	...	...	...	...	...	A08
40	12.6	11.4	...	...	...	...	...	...	...	...	A08
41	12.6	11.4	...	...	...	...	...	...	...	...	A08

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 Designation/ UNS No.	Class/Condition/ Temper
		Nonferrous Materials (Cont'd)					
A08	1	Ti–0.05Pd	Forgings	SB-381	F-16H	R52402	Annealed
A08	2	Ti–0.05Pd	Smls. pipe	SB-861	16H	R52402	Annealed
A08	3	Ti–0.05Pd	Wld. pipe	SB-862	16H	R52402	Annealed
	4	Ti–Ru	Plate, sheet, strip	SB-265	26	R52404	Annealed
	5	Ti–Ru	Smls. & wld. tube	SB-338	26	R52404	Annealed
	6	Ti–Ru	Bar, billet	SB-348	26	R52404	Annealed
	7	Ti–Ru	Smls. fittings	SB-363	WPT26	R52404	Annealed
	8	Ti–Ru	Wld. fittings	SB-363	WPT26W	R52404	Annealed
	9	Ti–Ru	Forgings	SB-381	F-26	R52404	Annealed
	10	Ti–Ru	Smls. pipe	SB-861	26	R52404	Annealed
	11	Ti–Ru	Wld. pipe	SB-862	26	R52404	Annealed
A08	12	Ti–0.10Ru	Plate, sheet, strip	SB-265	26H	R52404	Annealed
A08	13	Ti–0.10Ru	Smls. & wld. tube	SB-338	26H	R52404	Annealed
A08	14	Ti–0.10Ru	Bar, billet	SB-348	26H	R52404	Annealed
A08	15	Ti–0.10Ru	Smls. fittings	SB-363	WPT26H	R52404	Annealed
A08	16	Ti–0.10Ru	Wld. fittings	SB-363	WPT26HW	R52404	Annealed
A08	17	Ti–0.10Ru	Forgings	SB-381	F-26H	R52404	Annealed
A08	18	Ti–0.10Ru	Smls. pipe	SB-861	26H	R52404	Annealed
A08	19	Ti–0.10Ru	Wld. pipe	SB-862	26H	R52404	Annealed
	20	Ti–0.3Mo–0.8Ni	Plate, sheet, strip	SB-265	12	R53400	Annealed
	21	Ti–0.3Mo–0.8Ni	Smls. & wld. tube	SB-338	12	R53400	Annealed
	22	Ti–0.3Mo–0.8Ni	Bar, billet	SB-348	12	R53400	Annealed
	23	Ti–0.3Mo–0.8Ni	Forgings	SB-381	F-12	R53400	Annealed
	24	Ti–0.3Mo–0.8Ni	Smls. pipe	SB-861	12	R53400	Annealed
	25	Ti–0.3Mo–0.8Ni	Wld. pipe	SB-862	12	R53400	Annealed
	26	Ti–3Al–2.5V	Plate, sheet, strip	SB-265	9	R56320	Annealed
	27	Ti–3Al–2.5V	Smls. & wld. tube	SB-338	9	R56320	Annealed
	28	Ti–3Al–2.5V	Bar, billet	SB-348	9	R56320	Annealed

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	...	58	40	...	A08
2	...	58	40	...	A08
3	...	58	40	...	A08
4	...	50	40	...	
5	...	50	40	...	
6	...	50	40	...	
7	...	50	40	...	
8	...	50	40	...	
9	...	50	40	...	
10	...	50	40	...	
11	...	50	40	...	
12	...	58	40	...	A08
13	...	58	40	...	A08
14	...	58	40	...	A08
15	...	58	40	...	A08
16	...	58	40	...	A08
17	...	58	40	...	A08
18	...	58	40	...	A08
19	...	58	40	...	A08
20	...	70	50	...	
21	...	70	50	...	
22	...	70	50	...	
23	...	70	50	...	
24	...	70	50	...	
25	...	70	50	...	
26	...	90	70	...	
27	...	90	70	...	
28	...	90	70	...	

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)								
A08	1	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	2	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	3	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
	4	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
	5	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
	6	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
	7	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
	8	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
	9	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
	10	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
	11	40.0	34.5	31.5	28.6	25.6	22.6	19.6	17.0	14.8
A08	12	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	13	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	14	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	15	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	16	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	17	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	18	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
A08	19	40.0	34.9	32.2	28.4	25.2	22.0	18.6	16.3	14.1
	20	50.0	45.0	41.5	38.1	35.0	32.2	29.4	27.7	26.0
	21	50.0	45.0	41.5	38.1	35.0	32.2	29.4	27.7	26.0
	22	50.0	45.0	41.5	38.1	35.0	32.2	29.4	27.7	26.0
	23	50.0	45.0	41.5	38.1	35.0	32.2	29.4	27.7	26.0
	24	50.0	45.0	41.5	38.1	35.0	32.2	29.4	27.7	26.0
	25	50.0	45.0	41.5	38.1	35.0	32.2	29.4	27.7	26.0
	26	70.0	65.1	61.1	58.1	55.3	52.5	49.7	46.9	44.8
	27	70.0	65.1	61.1	58.1	55.3	52.5	49.7	46.9	44.8
	28	70.0	65.1	61.1	58.1	55.3	52.5	49.7	46.9	44.8

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	12.6	11.4	...	...	...	...	...	...	...	...	A08
2	12.6	11.4	...	...	...	...	...	...	...	...	A08
3	12.6	11.4	...	...	...	...	...	...	...	...	A08
4	12.6	11.4	...	...	...	...	...	...	...	...	
5	12.6	11.4	...	...	...	...	...	...	...	...	
6	12.6	11.4	...	...	...	...	...	...	...	...	
7	12.6	11.4	...	...	...	...	...	...	...	...	
8	12.6	11.4	...	...	...	...	...	...	...	...	
9	12.6	11.4	...	...	...	...	...	...	...	...	
10	12.6	11.4	...	...	...	...	...	...	...	...	
11	12.6	11.4	...	...	...	...	...	...	...	...	
12	12.6	11.4	...	...	...	...	...	...	...	...	A08
13	12.6	11.4	...	...	...	...	...	...	...	...	A08
14	12.6	11.4	...	...	...	...	...	...	...	...	A08
15	12.6	11.4	...	...	...	...	...	...	...	...	A08
16	12.6	11.4	...	...	...	...	...	...	...	...	A08
17	12.6	11.4	...	...	...	...	...	...	...	...	A08
18	12.6	11.4	...	...	...	...	...	...	...	...	A08
19	12.6	11.4	...	...	...	...	...	...	...	...	A08
20	24.8	24.0	...	...	...	...	...	...	...	...	
21	24.8	24.0	...	...	...	...	...	...	...	...	
22	24.8	24.0	...	...	...	...	...	...	...	...	
23	24.8	24.0	...	...	...	...	...	...	...	...	
24	24.8	24.0	...	...	...	...	...	...	...	...	
25	24.8	24.0	...	...	...	...	...	...	...	...	
26	43.4	41.3	...	...	...	...	...	...	...	...	
27	43.4	41.3	...	...	...	...	...	...	...	...	
28	43.4	41.3	...	...	...	...	...	...	...	...	

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 Designation/ UNS No.	Class/Condition/ Temper
	Nonferrous Materials (Cont'd)					
1	Ti–3Al–2.5V	Wld. fittings	SB-363	WPT9	R56320	Annealed
2	Ti–3Al–2.5V	Wld. fittings	SB-363	WPT9W	R56320	Annealed
3	Ti–3Al–2.5V	Forgings	SB-381	F-9	R56320	Annealed
4	Ti–3Al–2.5V	Smls. pipe	SB-861	9	R56320	Annealed
5	Ti–3Al–2.5V	Wld. pipe	SB-862	9	R56320	Annealed
6	99.2Zr	Forgings	SB-493	...	R60702	Annealed
7	99.2Zr	Smls. tube	SB-523	...	R60702	Annealed
8	99.2Zr	Wld. tube	SB-523	...	R60702	Annealed
9	99.2Zr	Bar, wire	SB-550	...	R60702	Annealed
10	99.2Zr	Plate, sheet, strip	SB-551	...	R60702	Annealed
11	99.2Zr	Smls. & wld. pipe	SB-658	...	R60702	Annealed

SUBPART 2
PHYSICAL PROPERTIES TABLES

INTRODUCTION A08

Subpart 2 of Section II, Part D provides, to the extent possible, physical properties for most of the alloys used in Code construction. Included in this Subpart are tables of thermal expansion (instantaneous, mean, and linear), thermal conductivity and thermal diffusivity, and modulus of elasticity. These values are all listed as a function of temperature from 70°F to as high as 1650°F. Subpart 2 also contains tables of density and Poisson's ratio for ferrous and nonferrous alloys.

All of the properties provided in Subpart 2 are considered typical. They are neither average nor minimum. Thermal–physical properties such as thermal expansion, thermal conductivity, and thermal diffusivity are affected more by alloy content than by crystal structure or heat treatment. Due to the permitted range for elements comprising alloys (specification ranges of chemical compositions), the thermal–physical properties described in Tables TE-1 through TE-5 and Table TCD should be considered to have an associated uncertainty of ±10%.

Moduli of elasticity and Poisson's ratio are also typical values, but the values of modulus of elasticity, shown as a function of temperature in Tables TM-1 through TM-5, tend to be closer to average values since their temperature dependency is factored against an "average" room-temperature value.

For those alloys for which physical properties are not yet addressed in Subpart 2, the user of the Code may use other authoritative sources for the needed information. In those instances, the user is encouraged to bring the information to the attention of the ASME Boiler and Pressure Vessel Committee so it might be added to Subpart 2. Information should be directed to:

Secretary
ASME Boiler and Pressure Vessel Committee
Three Park Avenue
New York, NY 10016-5990
Telephone: (212) 591-8533
Fax: (212) 591-8501

TABLE TE-1
THERMAL EXPANSION FOR FERROUS MATERIALS

Temperature, °F	Coefficients for Carbon and Low Alloy Steels (Group 1) [Note (1)]			Coefficients for Other Low Alloy Steels (Group 2) [Note (2)]			Coefficients for 5Cr–1Mo and 29Cr–7Ni–2Mo–N Steels		
	A	B	C	A	B	C	A	B	C
70	6.4	6.4	0	7.0	7.0	0	6.4	6.4	0
100	6.6	6.5	0.2	7.1	7.1	0.3	6.6	6.5	0.2
150	6.8	6.6	0.6	7.3	7.2	0.7	6.8	6.6	0.6
200	7.0	6.7	1.0	7.5	7.3	1.1	7.0	6.7	1.0
250	7.2	6.8	1.5	7.6	7.3	1.6	7.1	6.8	1.5
300	7.3	6.9	1.9	7.8	7.4	2.0	7.2	6.9	1.9
350	7.5	7.0	2.4	7.9	7.5	2.5	7.3	6.9	2.3
400	7.7	7.1	2.8	8.0	7.6	3.0	7.3	7.0	2.8
450	7.8	7.2	3.3	8.1	7.6	3.5	7.4	7.0	3.2
500	8.0	7.3	3.7	8.3	7.7	4.0	7.4	7.1	3.7
550	8.2	7.3	4.2	8.4	7.8	4.5	7.5	7.1	4.1
600	8.3	7.4	4.7	8.4	7.8	5.0	7.6	7.2	4.6
650	8.5	7.5	5.2	8.5	7.9	5.5	7.7	7.2	5.0
700	8.7	7.6	5.7	8.6	7.9	6.0	7.7	7.2	5.5
750	8.8	7.7	6.3	8.7	8.0	6.5	7.8	7.3	5.9
800	9.0	7.8	6.8	8.8	8.0	7.0	7.9	7.3	6.4
850	9.1	7.9	7.4	8.8	8.1	7.6	8.0	7.4	6.9
900	9.2	7.9	7.9	8.9	8.1	8.1	8.1	7.4	7.4
950	9.3	8.0	8.5	9.0	8.2	8.6	8.1	7.4	7.9
1000	9.4	8.1	9.0	9.0	8.2	9.2	8.2	7.5	8.4
1050	9.4	8.1	9.6	9.0	8.3	9.7	8.3	7.5	8.8
1100	9.5	8.2	10.1	9.1	8.3	10.3	8.3	7.6	9.3
1150	9.5	8.3	10.7	9.1	8.3	10.8	8.4	7.6	9.8
1200	9.5	8.3	11.3	9.1	8.4	11.4	8.4	7.6	10.3
1250	9.5	8.4	11.9	9.1	8.4	11.9	8.5	7.7	10.9
1300	9.5	8.4	12.4	9.1	8.4	12.5	8.6	7.7	11.4
1350	...	...	...	9.1	8.5	13.0	8.7	7.7	11.9
1400	...	...	...	9.0	8.5	13.5	8.9	7.8	12.4
1450	...	...	...	8.9	8.5	14.1	...	...	...
1500	...	...	...	8.8	8.5	14.6	...	...	...

TABLE TE-4 (CONT'D)
THERMAL EXPANSION FOR NICKEL ALLOYS

Temperature, °F	Coefficients for R20033		
	A	B	C
70	7.8	7.8	0
100	7.9	7.9	0.3
150	8.2	8.0	0.8
200	8.4	8.1	1.3
250	8.6	8.2	1.8
300	8.7	8.3	2.3
350	8.8	8.4	2.8
400	8.7	8.5	3.3
450	8.7	8.5	3.9
500	8.6	8.5	4.4
550	8.7	8.5	4.9
600	8.8	8.5	5.4
650	9.0	8.6	6.0
700	9.4	8.6	6.5
750	9.7	8.7	7.1
800	9.9	8.8	7.7
850	9.9	8.8	8.3
900	9.3	8.9	8.9
950	...	...	...
1000	...	...	...
1050	...	...	...
1100	...	...	...
1150	...	...	...
1200	...	...	...
1250	...	...	...
1300	...	...	...
1350	...	...	...
1400	...	...	...
1450	...	...	...
1500	...	...	...
1550	...	...	...
1600	...	...	...
1650	...	...	...

GENERAL NOTE: Coefficient A is the instantaneous coefficient of thermal expansion × 10^{-6} (in./in./°F). Coefficient B is the mean coefficient of thermal expansion × 10^{-6} (in./in./°F) in going from 70°F to indicated temperature. Coefficient C is the linear thermal expansion (in./100 ft) in going from 70°F to indicated temperature.

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TABLE TE-5
THERMAL EXPANSION FOR TITANIUM ALLOYS

Temperature, °F	Coefficients for Titanium Alloy, Grades 1, 2, 2H, 3, 7, 7H, 11, 12, 16, 16H, 17, 26, 26H, and 27			Coefficients for Titanium Alloy, Grade 9		
	A	B	C	A	B	C
70	4.6	4.6	0	4.7	4.7	0
100	4.7	4.7	0.2	4.8	4.7	0.2
150	4.8	4.7	0.5	4.8	4.8	0.5
200	4.8	4.7	0.7	4.9	4.8	0.8
250	4.8	4.8	1.0	5.1	4.9	1.1
300	4.9	4.8	1.3	5.2	4.9	1.4
350	4.9	4.8	1.6	5.3	5.0	1.7
400	5.0	4.8	1.9	5.3	5.0	2.0
450	5.0	4.8	2.2	5.3	5.1	2.3
500	5.1	4.9	2.5	5.3	5.1	2.6
550	5.1	4.9	2.8	5.5	5.1	2.9
600	5.2	4.9	3.1	6.4	5.2	3.3
650	5.3	4.9	3.4	...	...	...
700	5.5	5.0	3.8	...	...	...
750	5.9	5.0	4.1	...	...	...
800	6.6	5.1	4.5	...	...	...

GENERAL NOTE: Coefficient A is the instantaneous coefficient of thermal expansion × 10^{-6} (in./in./°F). Coefficient B is the mean coefficient of thermal expansion × 10^{-6} (in./in./°F) in going from 70°F to indicated temperature. Coefficient C is the linear thermal expansion (in./100 ft) in going from 70°F to indicated temperature.

TABLE TCD
NOMINAL COEFFICIENTS OF THERMAL CONDUCTIVITY (TC) AND THERMAL DIFFUSIVITY (TD)

	Carbon and Low Alloy Steels									
	Material Group A [Note (1)] Plain Carbon		Material Group B [Note (2)]		Material Group C [Note (3)]		Material Group D [Note (4)]		Material Group E [Note (5)]	
Temp., °F	TC	TD	TC	TD	TC	TD	TC	TD	TC	TD
70	34.9	0.700	27.3	0.530	23.7	0.459	21.0	0.408	15.9	0.311
100	34.7	0.676	27.6	0.520	23.6	0.451	21.0	0.401	16.2	0.311
150	34.2	0.641	27.8	0.504	23.5	0.437	21.2	0.392	16.7	0.312
200	33.7	0.611	27.8	0.487	23.5	0.424	21.3	0.384	17.1	0.313
250	33.0	0.585	27.6	0.471	23.4	0.412	21.4	0.377	17.5	0.312
300	32.3	0.560	27.3	0.455	23.4	0.401	21.5	0.371	17.8	0.311
350	31.6	0.537	26.9	0.440	23.3	0.390	21.5	0.364	18.0	0.308
400	30.9	0.516	26.5	0.426	23.1	0.379	21.5	0.357	18.2	0.304
450	30.1	0.495	26.1	0.412	23.0	0.368	21.5	0.350	18.4	0.299
500	29.4	0.474	25.7	0.399	22.7	0.357	21.4	0.342	18.5	0.294
550	28.7	0.454	25.3	0.386	22.5	0.347	21.3	0.333	18.5	0.287
600	28.0	0.433	24.9	0.373	22.2	0.336	21.1	0.324	18.5	0.280
650	27.3	0.414	24.5	0.360	21.9	0.325	20.9	0.314	18.5	0.273
700	26.6	0.394	24.1	0.346	21.6	0.314	20.7	0.304	18.5	0.265
750	26.0	0.375	23.7	0.333	21.3	0.303	20.5	0.294	18.4	0.258
800	25.3	0.356	23.2	0.319	21.0	0.292	20.2	0.284	18.3	0.250
850	24.6	0.337	22.8	0.305	20.6	0.281	20.0	0.274	18.2	0.242
900	23.8	0.318	22.3	0.291	20.3	0.269	19.7	0.263	18.1	0.234
950	23.1	0.301	21.7	0.277	20.0	0.258	19.4	0.253	17.9	0.226
1000	22.4	0.283	21.1	0.263	19.7	0.247	19.1	0.242	17.8	0.217
1050	21.6	0.266	20.5	0.250	19.4	0.235	18.8	0.230	17.6	0.208
1100	20.9	0.249	19.8	0.234	19.1	0.223	18.5	0.218	17.4	0.199
1150	20.1	0.232	19.0	0.219	18.7	0.212	18.3	0.205	17.2	0.188
1200	19.4	0.215	18.3	0.204	18.3	0.200	18.0	0.192	17.0	0.177
1250	18.6	0.199	17.6	0.185	17.7	0.183	17.7	0.177	16.8	0.164
1300	17.9	0.179	16.9	0.157	16.6	0.164	17.3	0.160	16.5	0.150
1350	17.2	0.138	16.2	0.120	15.7	0.137	16.3	0.137	16.2	0.135
1400	16.6	0.083	15.7	0.078	15.3	0.077	15.6	0.073	15.8	0.117
1450	16.0	0.155	15.2	0.160	15.1	0.128	15.4	0.124	15.6	0.143
1500	15.5	0.166	14.9	0.172	15.1	0.200	15.3	0.197	15.7	0.161
1550	...	...	...	...	...	...	...	...	...	...

TABLE TCD (CONT'D)
NOMINAL COEFFICIENTS OF THERMAL CONDUCTIVITY (TC) AND THERMAL DIFFUSIVITY (TD)

	High Nickel Alloys (Cont'd)									
	Ni–Mo–Cr–Fe N10003		65Ni–25Mo–8Cr–2Fe N10242		Ni–Mo–Cr N10276		N10629		Ni–Mo N10665	
Temp., °F	TC	TD	TC	TD	TC	TD	TC	TD	TC	TD
70	...	...	6.3	0.117	...	...	6.4	0.124	...	...
100	...	...	6.4	0.120	5.9	...	6.5	...	6.8	0.128
150	6.2	0.114	6.7	0.124	6.2	...	6.8	...	6.9	0.129
200	6.5	0.120	7.0	0.128	6.4	...	7.0	...	7.0	0.130
250	6.8	0.124	7.2	0.131	6.7	...	7.2	...	7.2	0.132
300	7.0	0.126	7.5	0.134	7.0	...	7.4	...	7.3	0.133
350	7.2	0.128	7.7	0.137	7.2	...	7.6	...	7.5	0.135
400	7.4	0.129	8.0	0.140	7.5	...	7.8	...	7.6	0.137
450	7.6	0.130	8.2	0.142	7.8	...	8.0	...	7.8	0.139
500	7.9	0.133	8.5	0.145	8.1	...	8.2	...	8.0	0.141
550	8.1	0.135	8.8	0.148	8.4	...	8.4	...	8.2	0.144
600	8.3	0.139	9.0	0.152	8.7	...	8.7	...	8.4	0.146
650	8.5	0.143	9.3	0.155	8.9	...	8.9	...	8.6	0.149
700	8.7	0.147	9.5	0.159	9.2	...	9.1	...	8.9	0.151
750	9.0	0.151	9.8	0.163	9.5	...	9.3	...	9.1	0.154
800	9.2	0.155	10.1	0.167	9.8	...	9.5	...	9.4	0.157
850	9.5	0.158	10.3	0.171	10.1	...	9.7	...	9.7	0.160
900	9.8	0.160	10.6	0.175	10.4	...	9.9	...	10.0	0.164
950	10.1	0.161	10.8	0.179	10.7	...	10.1	...	10.3	0.167
1000	10.4	0.160	11.1	0.182	11.0	...	10.3	...	10.7	0.171
1050	10.7	0.159	11.3	0.185	11.3	...	10.5	...	11.0	0.175
1100	11.1	0.158	11.6	0.188	11.5	...	10.8	...	11.4	0.179
1150	11.4	0.157	11.9	0.190	11.8	...	11.3	...	11.8	0.184
1200	11.7	0.157	12.1	0.191	12.1	...	12.0	...	12.2	0.188
1250	12.1	0.161	12.4	0.191	...	...	...	...	...	...
1300	12.5	0.171	12.7	0.189	...	...	...	...	...	...
1350	12.9	...	12.9	0.187	...	...	...	...	...	...
1400	13.3	...	13.2	0.183	...	...	...	...	...	...
1450	13.7	...	13.4	0.178	...	...	...	...	...	...
1500	14.2	...	13.7	0.172	...	...	...	...	...	...
1550	...	...	...	...	...	...	...	...	...	...

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TABLE TCD (CONT'D)
NOMINAL COEFFICIENTS OF THERMAL CONDUCTIVITY (TC) AND THERMAL DIFFUSIVITY (TD)

	High Nickel Alloys (Cont'd)						Titanium Alloys			
	N10675		N12160		R20033		Titanium (Gr. 1, 2, 2H, 3, 7, 7H, 11, 12, 16, 16H,17, 26, 26H, and 27)		Titanium Grade 9	
Temp., °F	TC	TD	TC	TD	TC	TD	TC	TD	TC	TD
70	6.5	0.115	6.3	0.115	7.7	0.130	12.7	0.359	5.1	0.145
100	6.6	0.117	6.4	0.116	7.9	...	12.5	0.352	5.2	0.147
150	6.8	0.120	6.6	0.117	8.1	...	12.2	0.341	5.5	0.150
200	6.9	0.123	6.8	0.119	8.4	...	12.0	0.330	5.7	0.152
250	7.1	0.126	7.1	0.122	8.6	...	11.9	0.321	5.9	0.155
300	7.3	0.129	7.3	0.124	8.8	...	11.7	0.313	6.1	0.158
350	7.5	0.132	7.6	0.127	9.1	...	11.6	0.306	6.2	0.160
400	7.7	0.135	7.9	0.130	9.3	...	11.5	0.300	6.4	0.163
450	8.0	0.137	8.2	0.134	9.5	...	11.4	0.294	6.6	0.166
500	8.2	0.140	8.5	0.138	9.8	...	11.3	0.290	6.7	0.168
550	8.4	0.143	8.8	0.142	10.0	...	11.2	0.286	6.8	0.170
600	8.7	0.146	9.1	0.146	10.3	...	11.2	0.283	6.9	0.172
650	8.9	0.149	9.4	0.150	10.5	...	11.2	0.280	...	...
700	9.2	0.151	9.8	0.154	10.7	...	11.2	0.278	...	...
750	9.4	0.154	10.1	0.158	11.0	...	11.2	0.276	...	...
800	9.7	0.157	10.5	0.162	11.2	...	11.2	0.275	...	...
850	9.9	0.161	10.9	0.165	11.4	...	11.2	0.274	...	...
900	10.2	0.164	11.2	0.169	11.6	...	11.3	0.273	...	...
950	10.5	0.167	11.6	0.171	...	...	11.4	0.272	...	...
1000	10.7	0.170	12.0	0.174	...	...	11.4	0.271	...	...
1050	11.0	0.174	12.4	0.176	...	...	11.5	0.270	...	...
1100	11.3	0.177	12.8	0.178	...	...	11.6	0.270	...	...
1150	11.6	0.180	13.1	0.180	...	...	...	...	...	...
1200	11.8	0.183	13.5	0.181	...	...	...	...	...	...
1250	12.1	0.185	13.9	0.182	...	...	...	...	...	...
1300	12.4	0.187	14.2	0.183	...	...	...	...	...	...
1350	12.7	0.188	14.5	0.183	...	...	...	...	...	...
1400	13.0	0.188	14.8	0.185	...	...	...	...	...	...
1450	13.3	0.186	15.0	0.186	...	...	...	...	...	...
1500	13.7	0.183	15.1	0.188	...	...	...	...	...	...
1550	...	...	...	...	...	...	...	...	...	...

TABLE TM-5
MODULI OF ELASTICITY *E* OF TITANIUM AND ZIRCONIUM FOR GIVEN TEMPERATURES

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Material Grade/UNS No.	Modulus of Elasticity E = Value Given × 10^6 psi, for Temperature, °F, of							
	70	200	300	400	500	600	700	800
Titanium Alloys								
1 (R50250)	15.5	15.0	14.6	14.0	13.3	12.6	11.9	11.2
2, 2H (R50400)	15.5	15.0	14.6	14.0	13.3	12.6	11.9	11.2
3 (R50550)	15.5	15.0	14.6	14.0	13.3	12.6	11.9	11.2
7, 7H (R52400)	15.5	15.0	14.6	14.0	13.3	12.6	11.9	11.2
9 (R56320)	15.9	15.3	14.6	13.9	13.2	12.4	...	...
11 (R52250)	15.5	15.0	14.6	14.0	13.3	12.6	11.9	11.2
12 (R53400)	15.5	15.0	14.6	14.0	13.3	12.6	11.9	11.2
16, 16H (R52402)	15.5	15.0	14.6	14.0	13.3	12.6	11.9	11.2
17 (R52252)	15.5	15.0	14.6	14.0	13.3	12.6	11.9	11.2
26, 26H (R52404)	15.5	15.0	14.6	14.0	13.3	12.6	11.9	11.2
27 (R52254)	15.5	15.0	14.6	14.0	13.3	12.6	11.9	11.2
Zirconium Alloys								
702 (R60702)	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4
705 (R60705)	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2

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Table NF-1
DELETED

Table NF-2
DELETED

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TABLE PRD
POISSON'S RATIO AND DENSITY OF MATERIALS

A08

Material	Poisson's Ratio	Density, lb/in.^{3}
Ferrous Materials		
Carbon steels	0.30	0.280
Cast irons	0.29	0.260
Low alloy steels		
C–Mo steels	0.30	0.280
½Cr to 1¼Cr steels	0.30	0.280
1¾Cr to 3Cr steels	0.30	0.280
5Cr to 9Cr steels	0.30	0.280
Mn, Mn–Mo, and Si steels	0.30	0.280
Ni steels	0.30	0.280
PH stainless: S15500, S17400, S17700	0.31	0.280
High alloy steels (200 series)	0.31	0.282
High alloy steels (300 series)	0.31	0.290
High-Si stainless: S30600, S30601, S32615, and S38815	0.31	0.275
5–7% Mo stainless: S32050, S31254, S31266, S31277, and S32654	0.31	0.293
High alloy steels (400 series)	0.31	0.280
PH stainless: S66286	0.31	0.286
Cast high alloy steels	0.30	0.283
Nonferrous Materials		
Aluminum Base		
Alclad 3003	0.33	0.098
Alclad 3004	0.33	0.098
Alclad 6061	0.33	0.098
A02040	0.33	0.101
A03560	0.33	0.097
A24430	0.33	0.097
A91060	0.33	0.098
A91100	0.33	0.098
A92014	0.33	0.101
A92024	0.33	0.100
A93003	0.33	0.099
A93004	0.33	0.098
A95052	0.33	0.097
A95083	0.33	0.096
A95086	0.33	0.096
A95154	0.33	0.096
A95254	0.33	0.096
A95454	0.33	0.097
A95456	0.33	0.096
A95652	0.33	0.096
A96061	0.33	0.098
A96063	0.33	0.097
Chromium Base		
R20033	0.31	0.285
Nonferrous Materials (Cont'd)		
Cobalt Base		
R30556	0.31	0.297
R31233	0.31	0.306
Copper Base		
C10200, C10400, C10500, and C10700	0.33	0.323
C11000	0.33	0.321
C12000, C12200, C12300, and C14200	0.33	0.323
C19200	0.33	0.320
C19400	0.33	0.322
C23000	0.33	0.316
C28000	0.33	0.303
C36500	0.33	0.304
C37700	0.33	0.305
C44300, C44400, and C44500	0.33	0.308
C46400 and C46500	0.33	0.304
C60800	0.33	0.295
C61400	0.33	0.285
C63000	0.33	0.274
C64200	0.33	0.278
C65100	0.33	0.316
C65500 and C66100	0.33	0.308
C68700	0.33	0.301
C70400, C70600, C71000, C71500, and C72200	0.33	0.323
C83600	0.33	0.318
C99200	0.33	0.312
C93700	0.33	0.320
C95200	0.31	0.276
C95400	0.32	0.269
C97600	0.33	0.321
Nickel Base		
N02200 and N02201	0.31	0.321
N04400 and N04405	0.31	0.320
N05500	0.31	0.300
N06002	0.31	0.300
N06022	0.31	0.314
N06030	0.31	0.297
N06045	0.31	0.289
N06059	0.31	0.311
N06200	0.31	0.307
N06230	0.31	0.324
N06455	0.31	0.312
N06600	0.31	0.300
N06601	0.31	0.291
N06617	0.31	0.302

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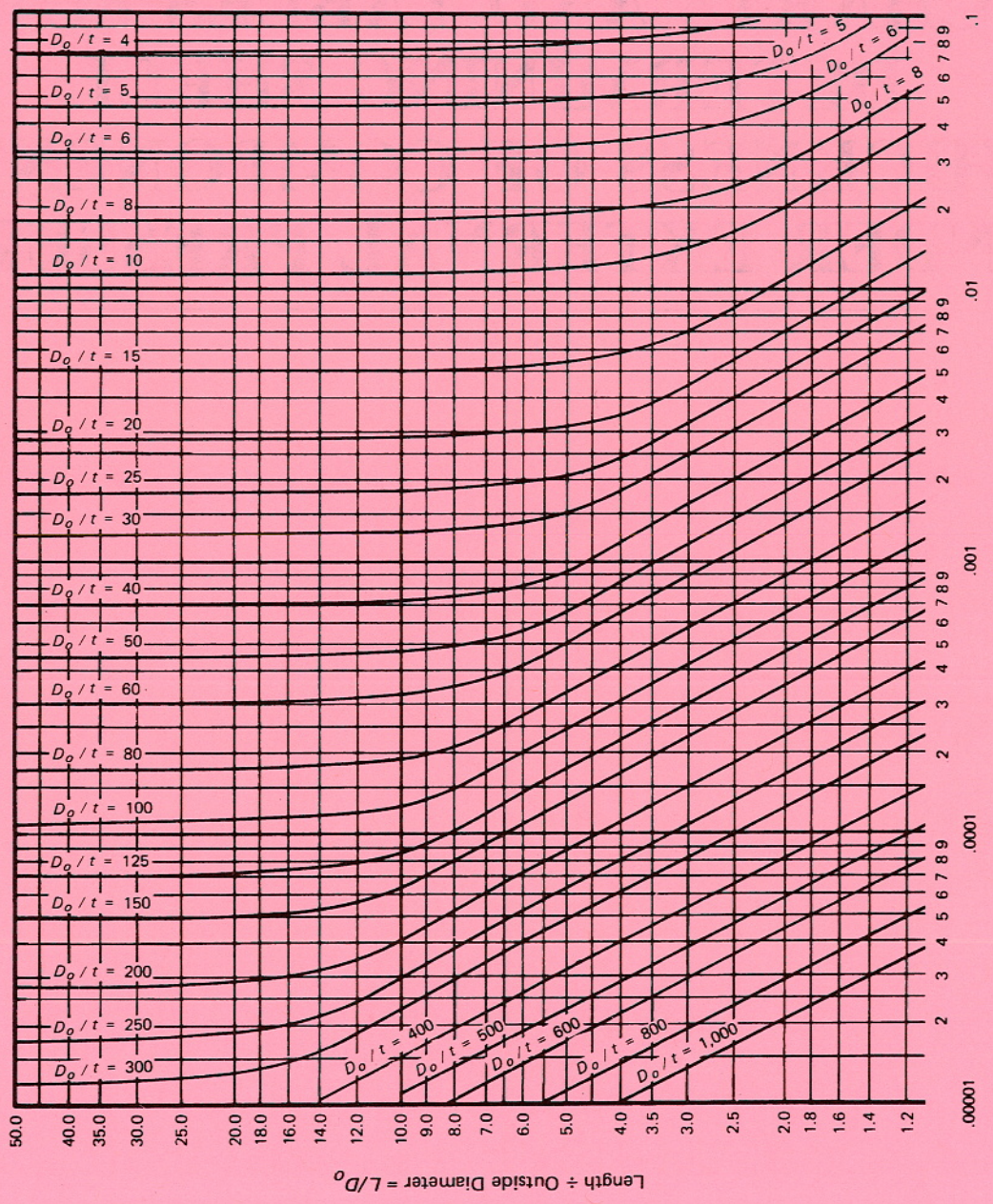
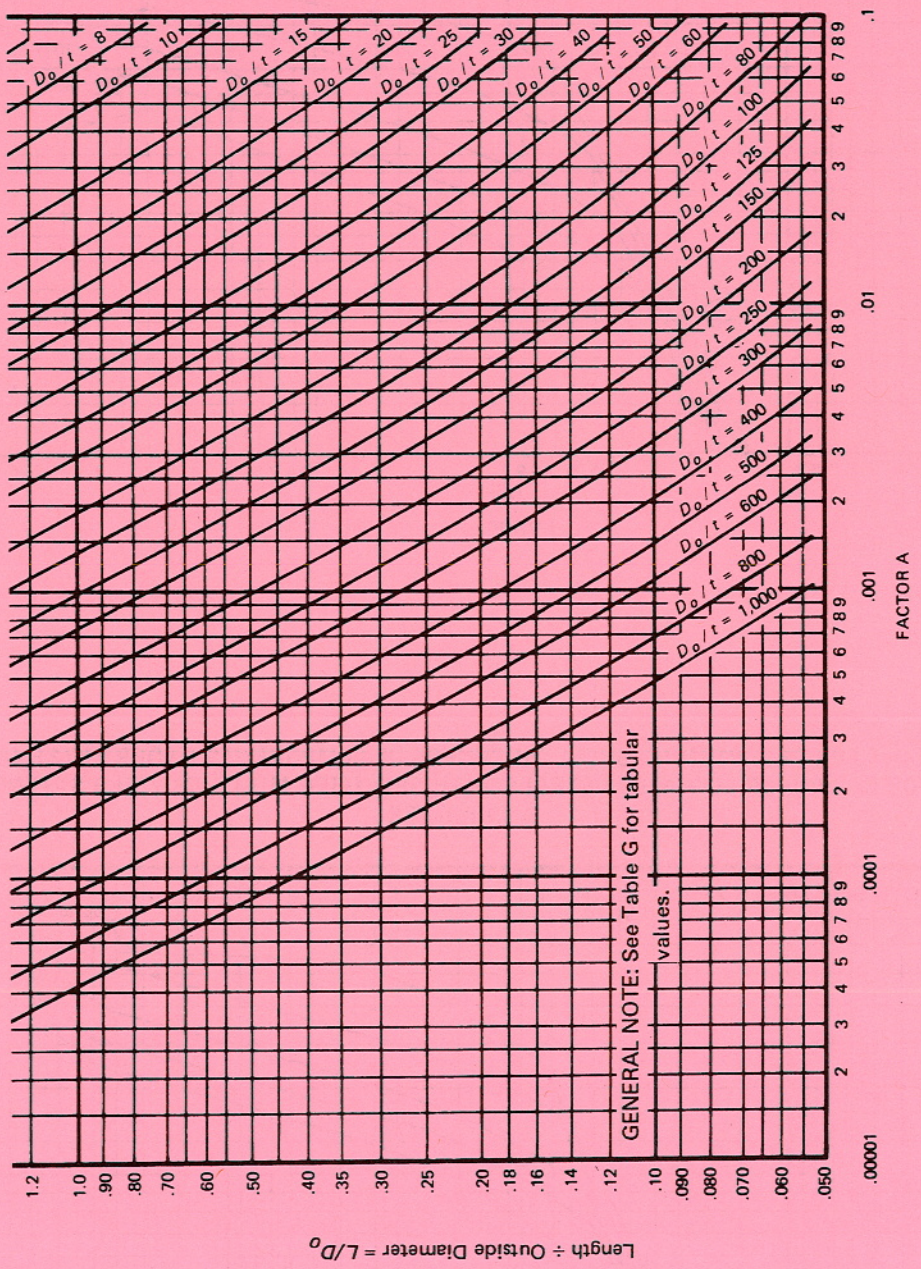
TABLE PRD
POISSON'S RATIO AND DENSITY OF MATERIALS (CONT'D)

Material	Poisson's Ratio	Density, lb/in.^{3}
Nonferrous Materials (Cont'd)		
Nickel Base (Cont'd)		
N06625	0.31	0.305
N06686	0.31	0.315
N06690	0.31	0.293
N06975	0.31	0.295
N06985	0.31	0.300
N07718	0.31	0.297
N07750	0.31	0.298
N08020	0.31	0.291
N08024	0.31	0.293
N08026	0.31	0.294
N08028	0.31	0.289
N08031	0.31	0.293
N08330	0.31	0.290
N08367 and J94651	0.31	0.291
N08800, N08810, and N08811	0.31	0.290
N08825	0.31	0.294
N08904	0.31	0.291
N08925	0.31	0.294
Nonferrous Materials (Cont'd)		
Nickel Base (Cont'd)		
N08926	0.31	0.291
N10001	0.31	0.331
N10003	0.31	0.320
N10242	0.31	0.327
N10276	0.31	0.320
N10629	0.31	0.332
N10665 and N10675	0.31	0.333
N12160	0.31	0.292
Titanium Base		
R50250, R50400, R50550, R52250, R52252, R52254, R52400, R52402, R52404, and R53400	0.32	0.163
R56320 and R56323	0.32	0.162
Zirconium Base		
R60702, R60704, and R60705	0.35	0.234

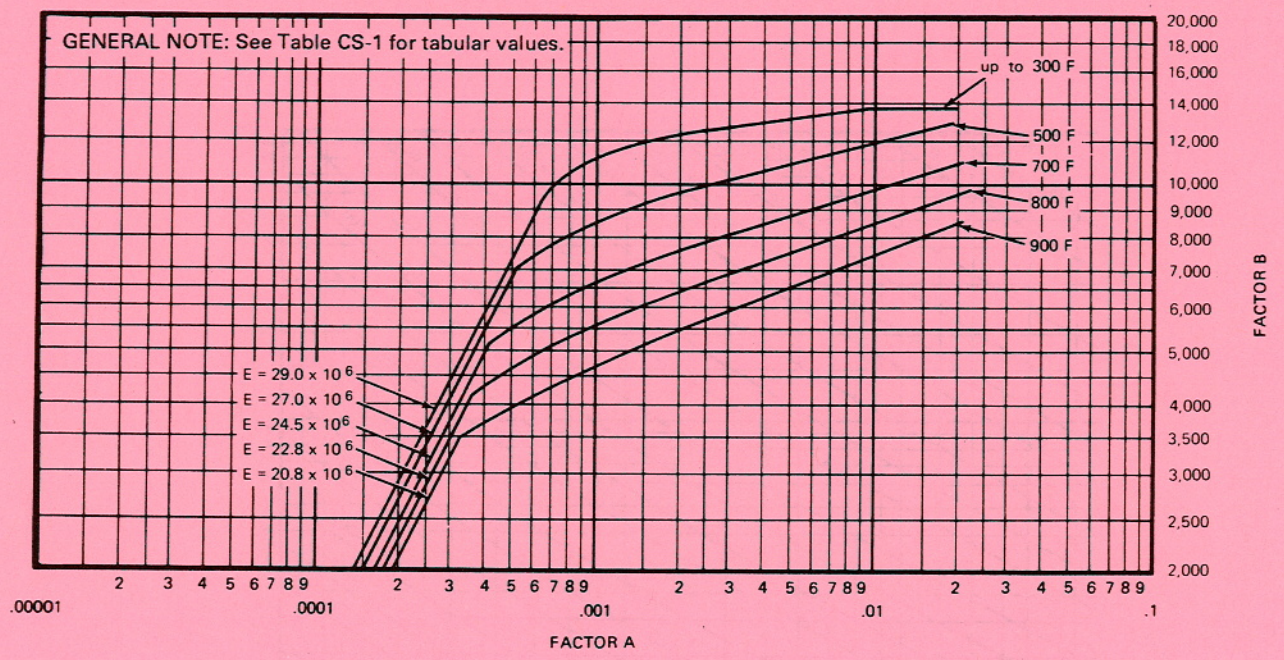
SUBPART 3
CHARTS AND TABLES FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE

A08 FIG. G GEOMETRIC CHART FOR COMPONENTS UNDER EXTERNAL OR COMPRESSIVE LOADINGS (FOR ALL MATERIALS) [NOTE (14)]




Do / t = 8
Do / t = 10
Do / t = 15
Do / t = 20
Do / t = 25
Do / t = 30
Do / t = 40
Do / t = 50
Do / t = 60
Do / t = 80
Do / t = 100
Do / t = 125
Do / t = 150
Do / t = 200
Do / t = 250
Do / t = 300
Do / t = 400
Do / t = 500
Do / t = 600
Do / t = 800
Do / t = 1,000
GENERAL NOTE: See Table G for tabular values.
Length ÷ Outside Diameter = L/Do
FACTOR A

A08 FIG. CS-1 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR CARBON OR LOW ALLOY STEELS WITH SPECIFIED MINIMUM YIELD STRENGTH LESS THAN 30,000 psi



A08 FIG. CS-2 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR CARBON OR LOW ALLOY STEELS WITH SPECIFIED MINIMUM YIELD STRENGTH 30,000 psi AND HIGHER

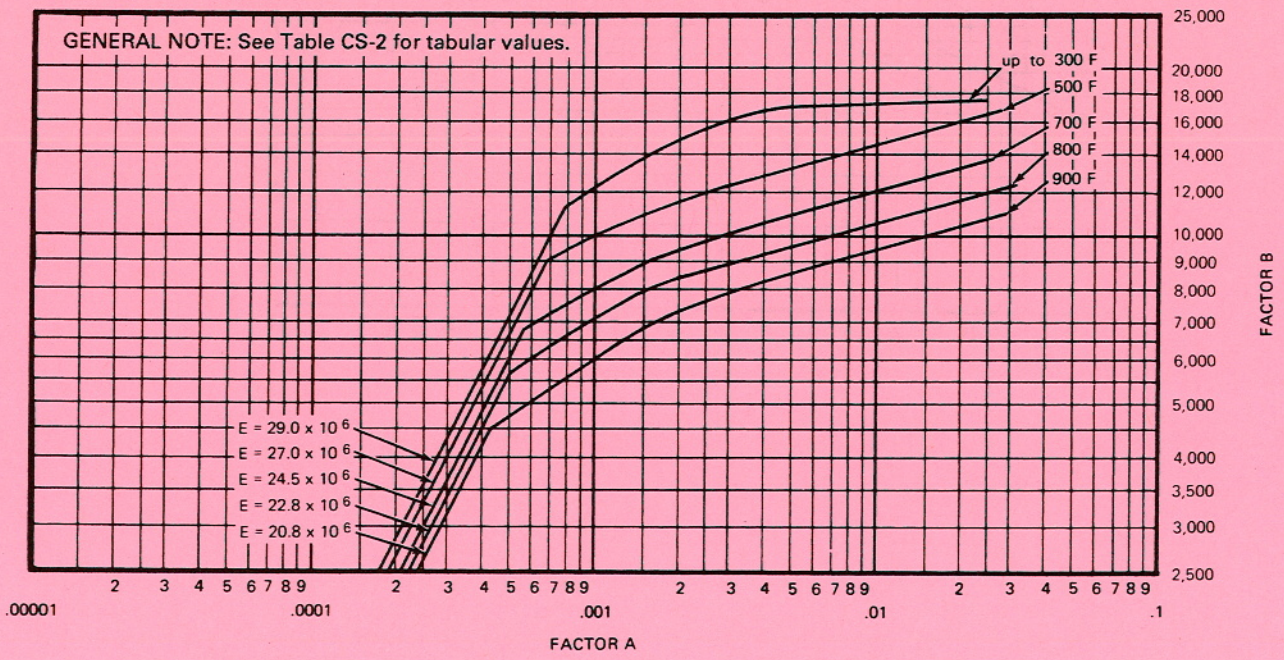


FIG. CS-3 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR CARBON STEEL AND LOW ALLOY STEELS WITH SPECIFIED MINIMUM YIELD STRENGTH 38,000 psi AND HIGHER FOR TEMPERATURES 300°F AND LESS A08

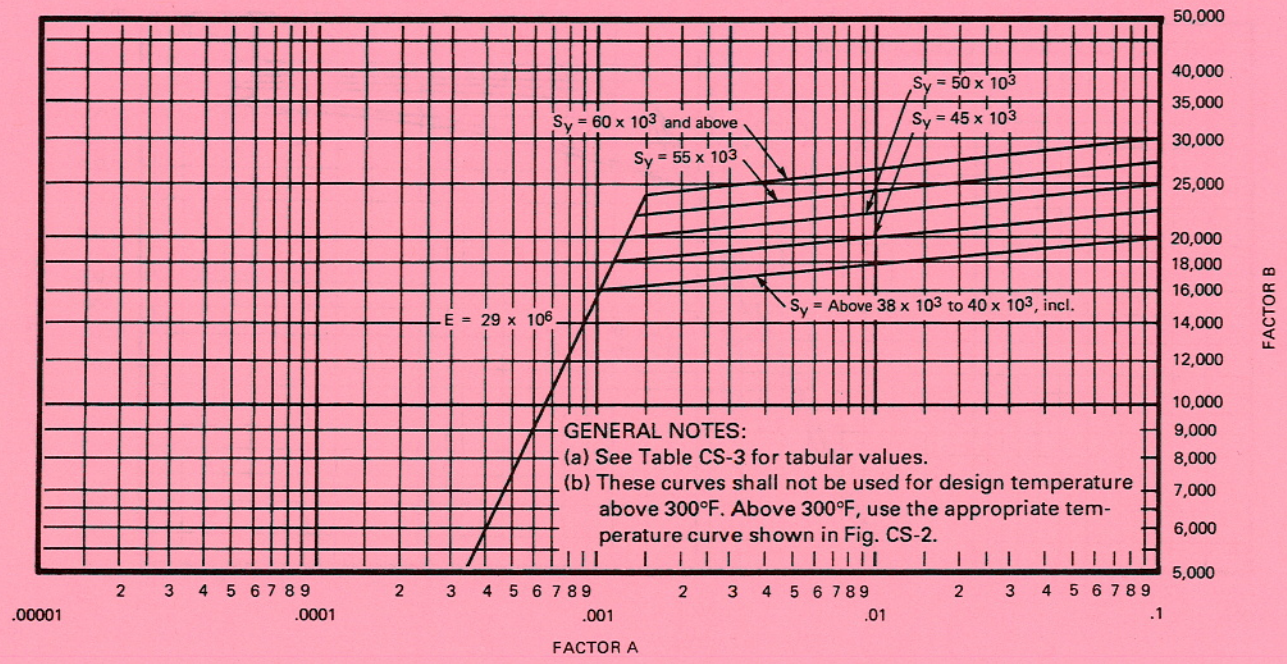
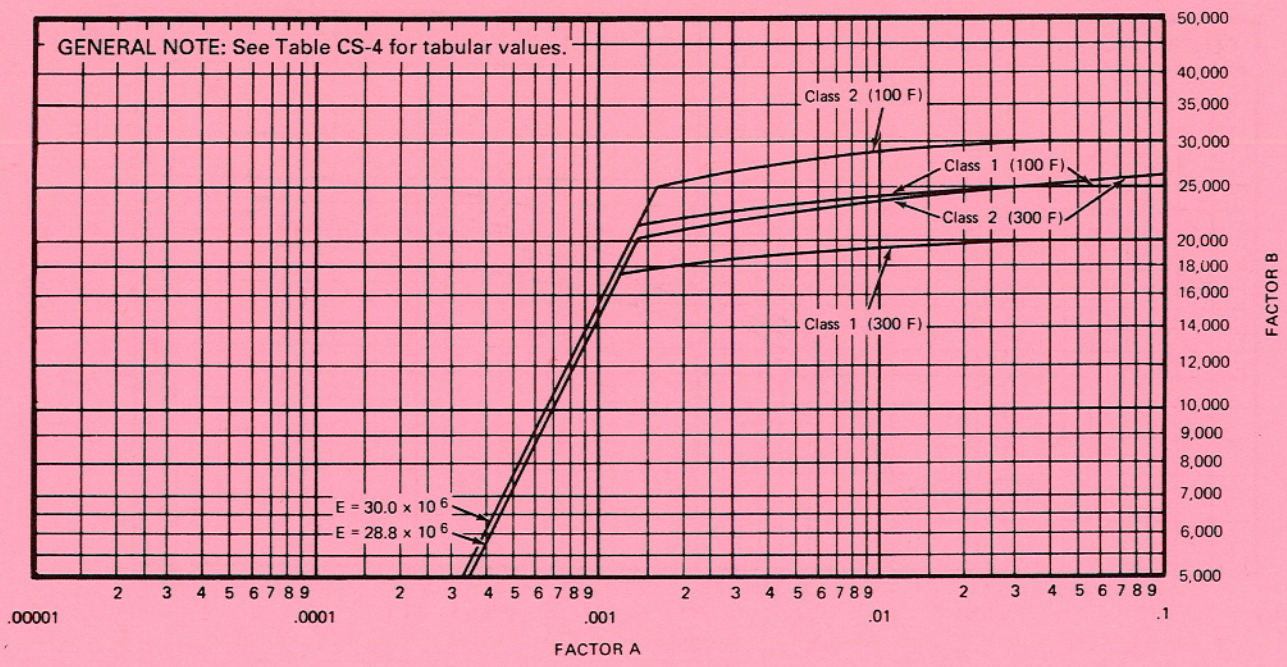
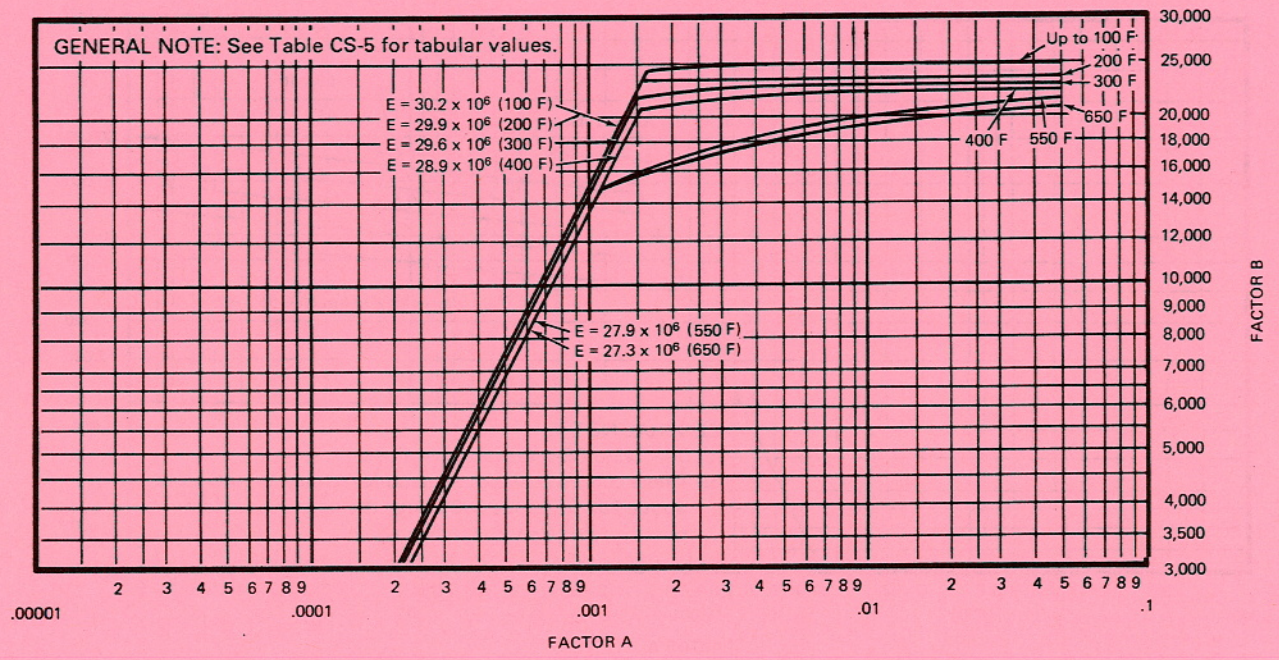


FIG. CS-4 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR SA-537 THICKNESS 2½ in. AND LESS A08



A08 FIG. CS-5 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR SA-508 CLASS 1, GRADES 2 AND 3; SA-508 CLASS 2, GRADE 2; SA-533 CLASS 1, GRADES A, B, C, AND D; SA-533 CLASS 2, GRADES A, B, C, AND D; OR SA-541 GRADES 2 AND 3



A08 FIG. CS-6 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR CARBON STEEL WITH SPECIFIED MINIMUM YIELD STRENGTH OF 20,000 psi

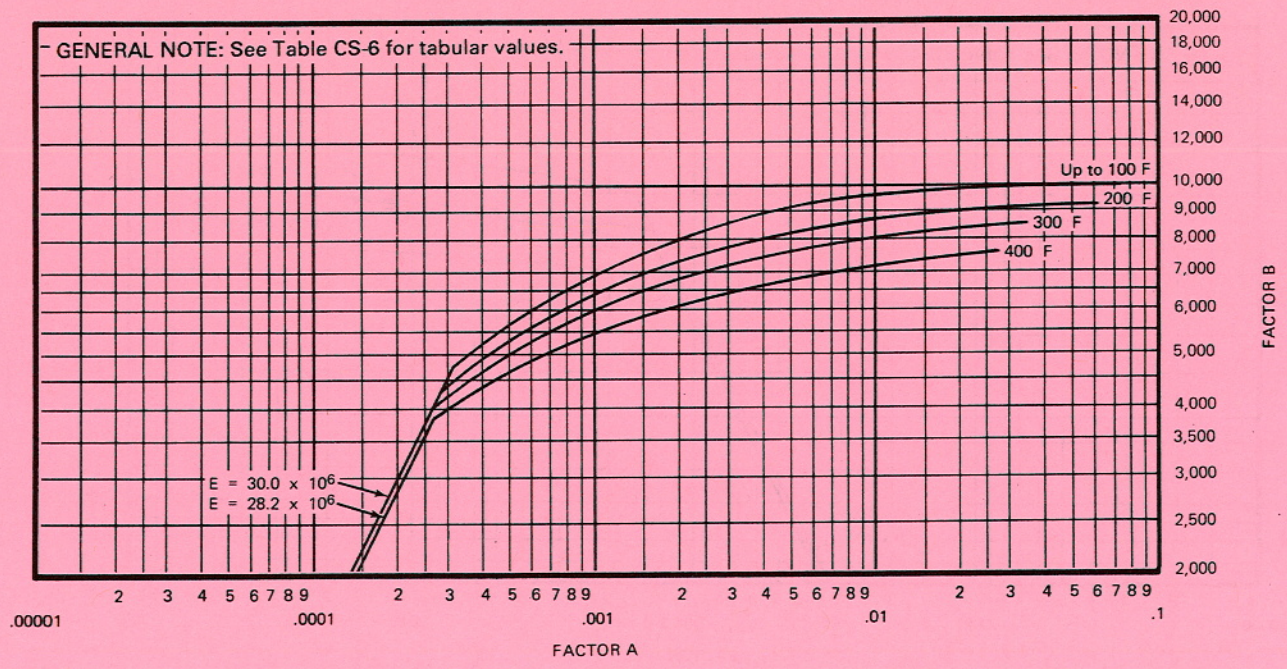


FIG. HT-1 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR QUENCHED AND TEMPERED LOW ALLOY STEEL WITH SPECIFIED MINIMUM YIELD STRENGTH OF 100,000 psi AND THICKNESS 2½ in. AND LESS A08

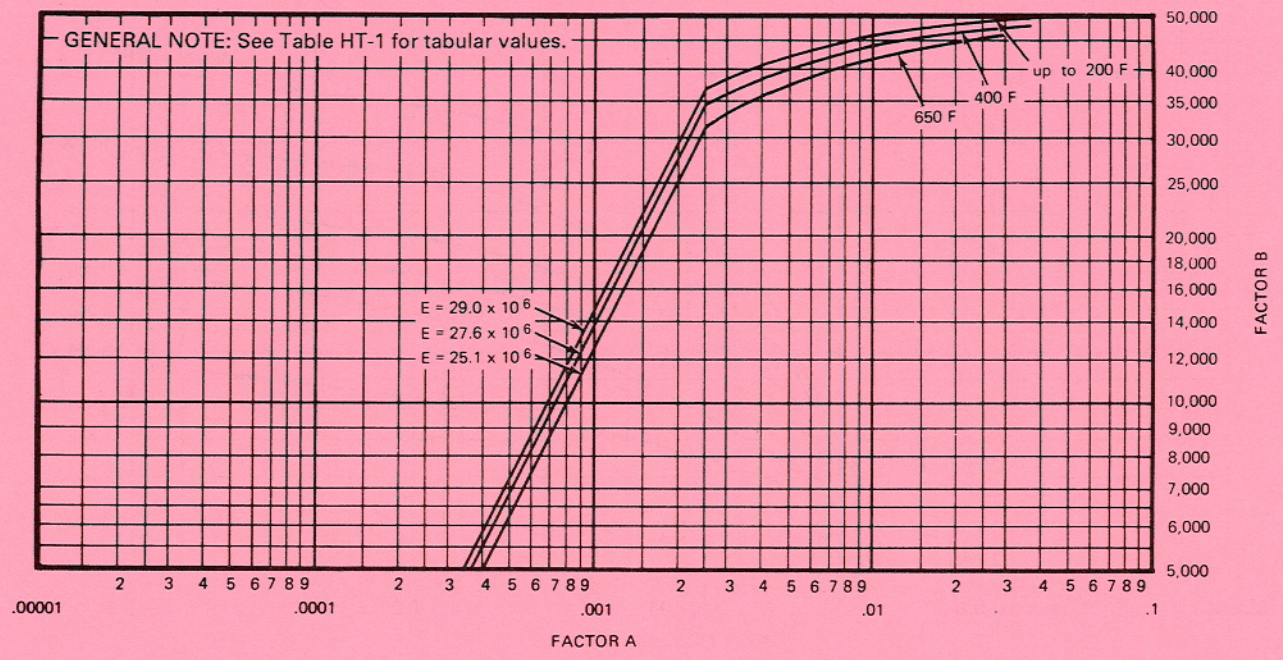
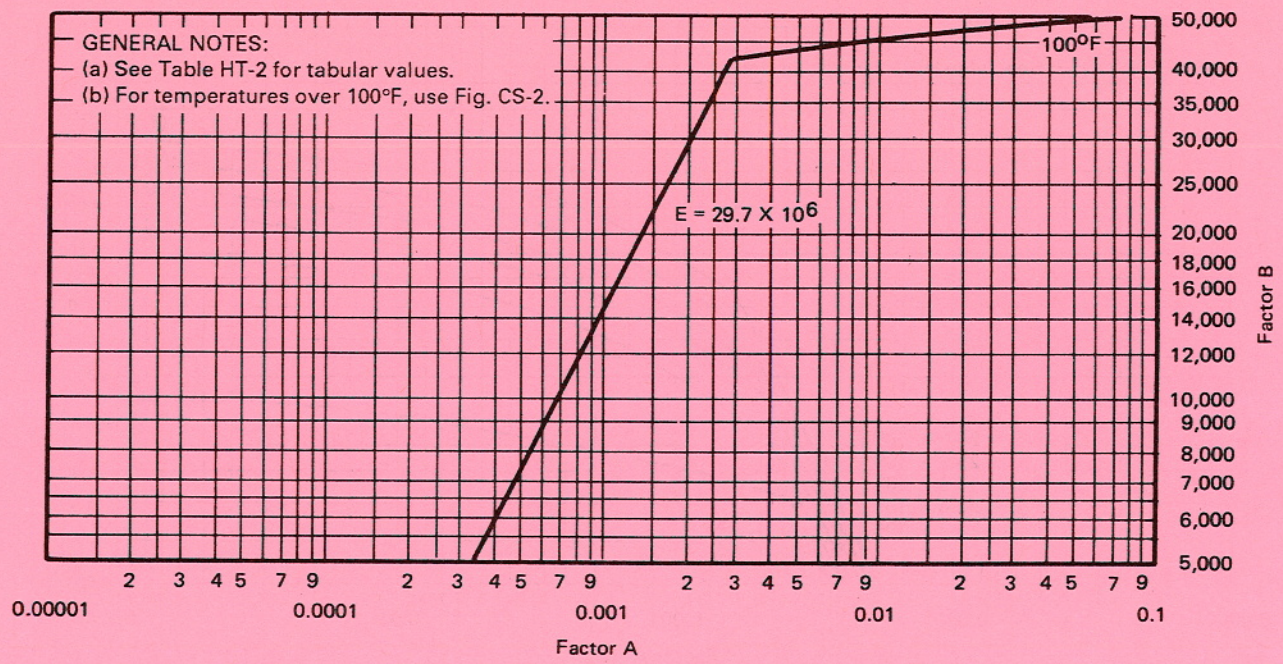
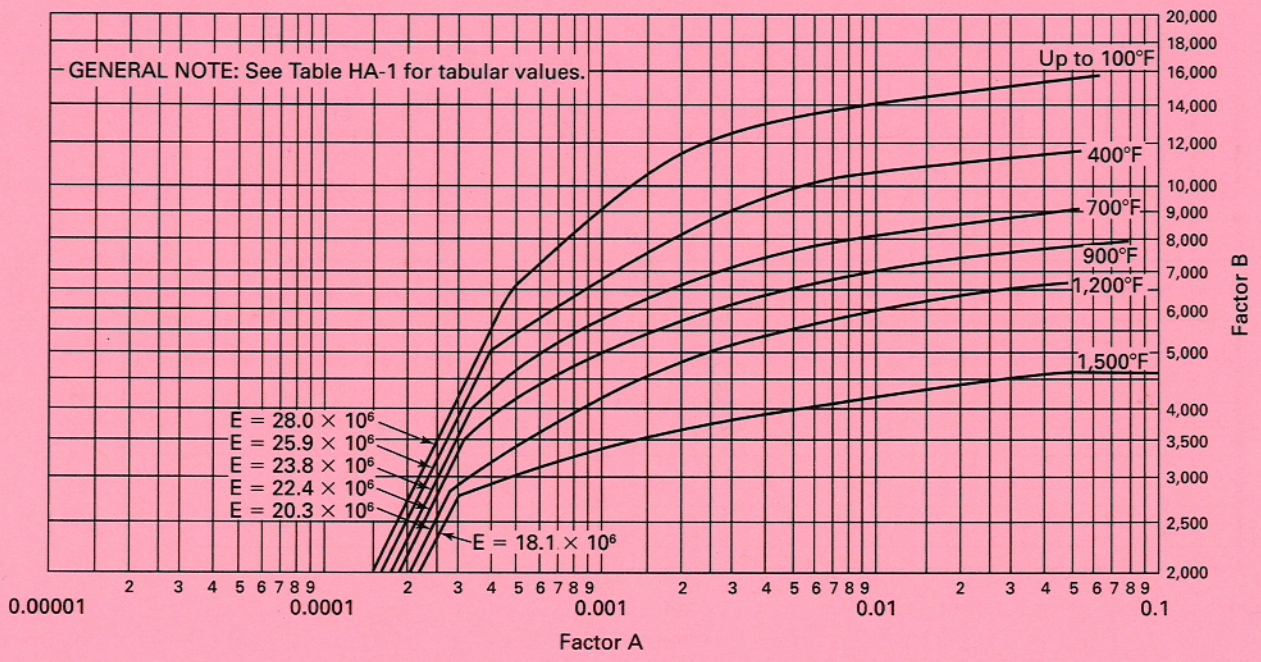


FIG. HT-2 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR SA-508 GRADE 4N, CLASS 2 OR SA-543 TYPES B AND C, CLASS 2 WITH SPECIFIED MINIMUM YIELD STRENGTH OF 100,000 psi A08



A08 FIG. HA-1 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR AUSTENITIC STEEL 18Cr–8Ni, TYPE 304



A08 FIG. HA-2 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR AUSTENITIC STEEL 16Cr–12Ni–2Mo, TYPE 316

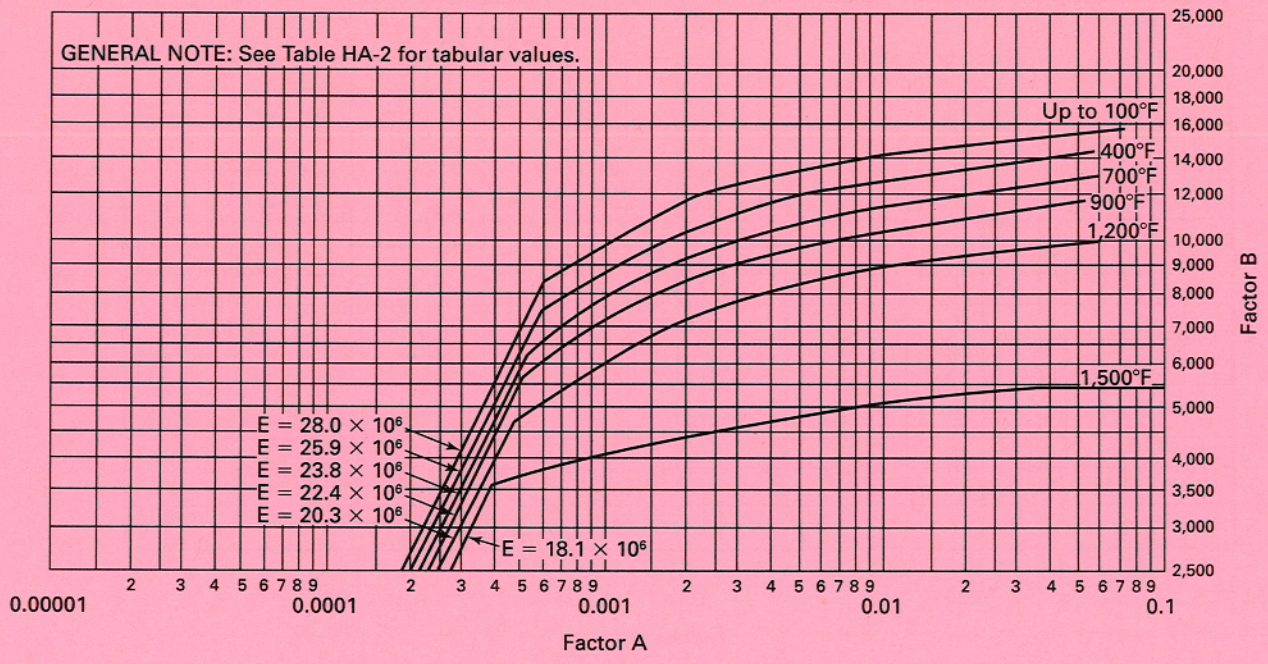


FIG. HA-3 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR AUSTENITIC STEEL 18Cr–8Ni–0.035 MAXIMUM CARBON, TYPE 304L A08

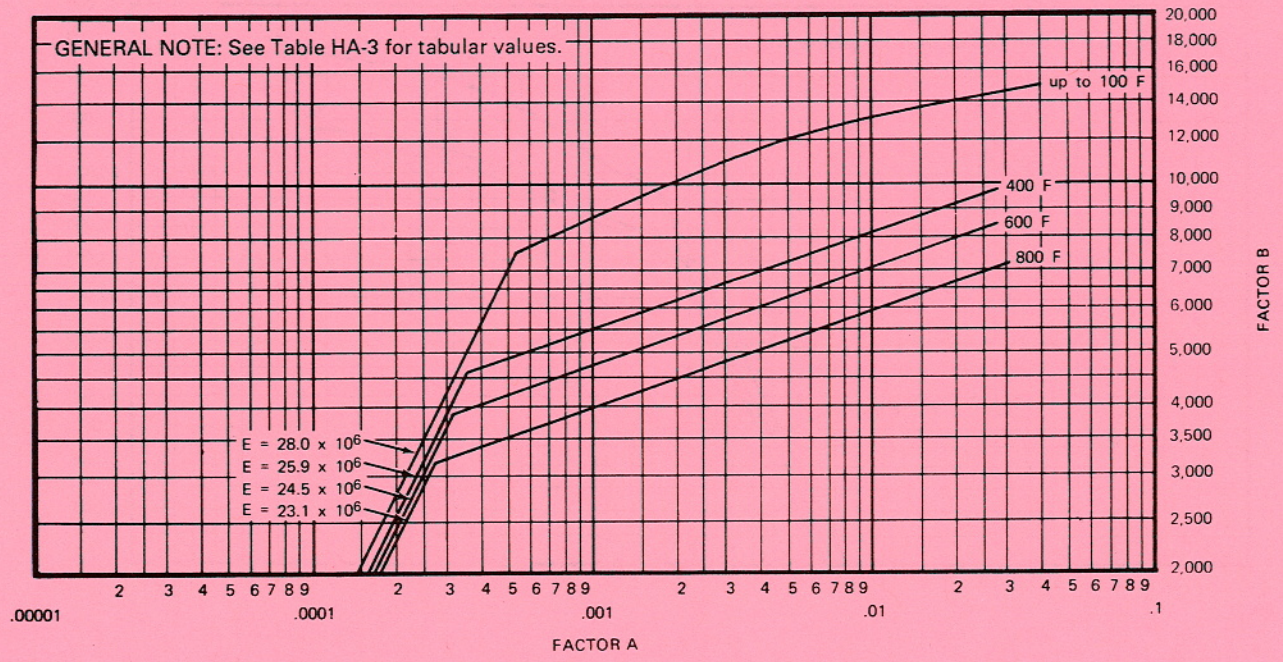
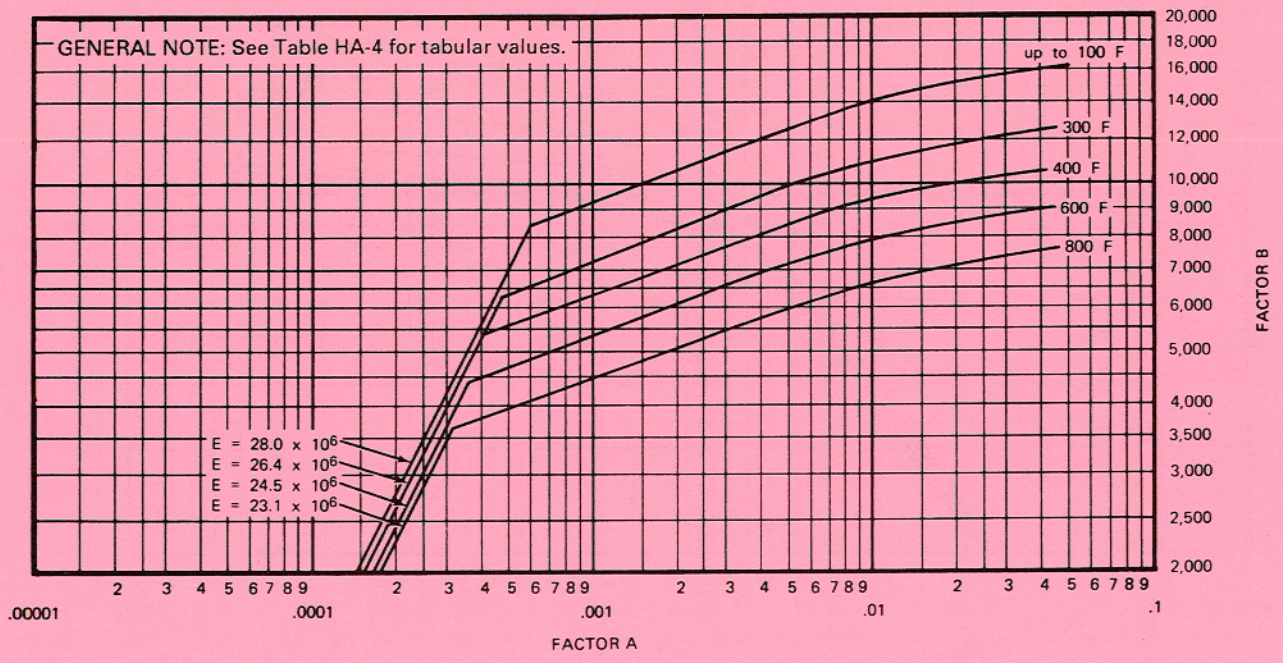
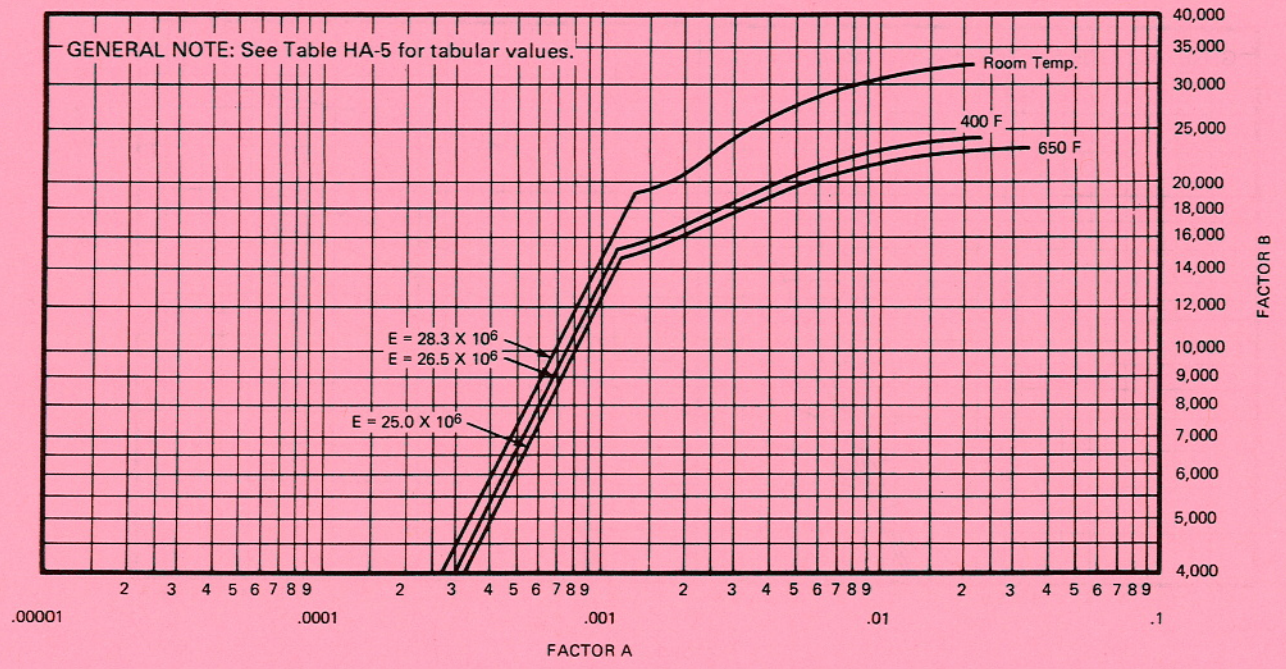


FIG. HA-4 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR AUSTENITIC STEEL 18Cr–8Ni–Mo–0.035 MAXIMUM CARBON, TYPE 316L A08



A08 FIG. HA-5 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR AUSTENITIC–FERRITIC STEEL 18Cr–5Ni–3Mo S31500



A08 FIG. HA-6 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR AUSTENITIC STEEL 21Cr–11Ni–N S30815 [NOTE (4)]

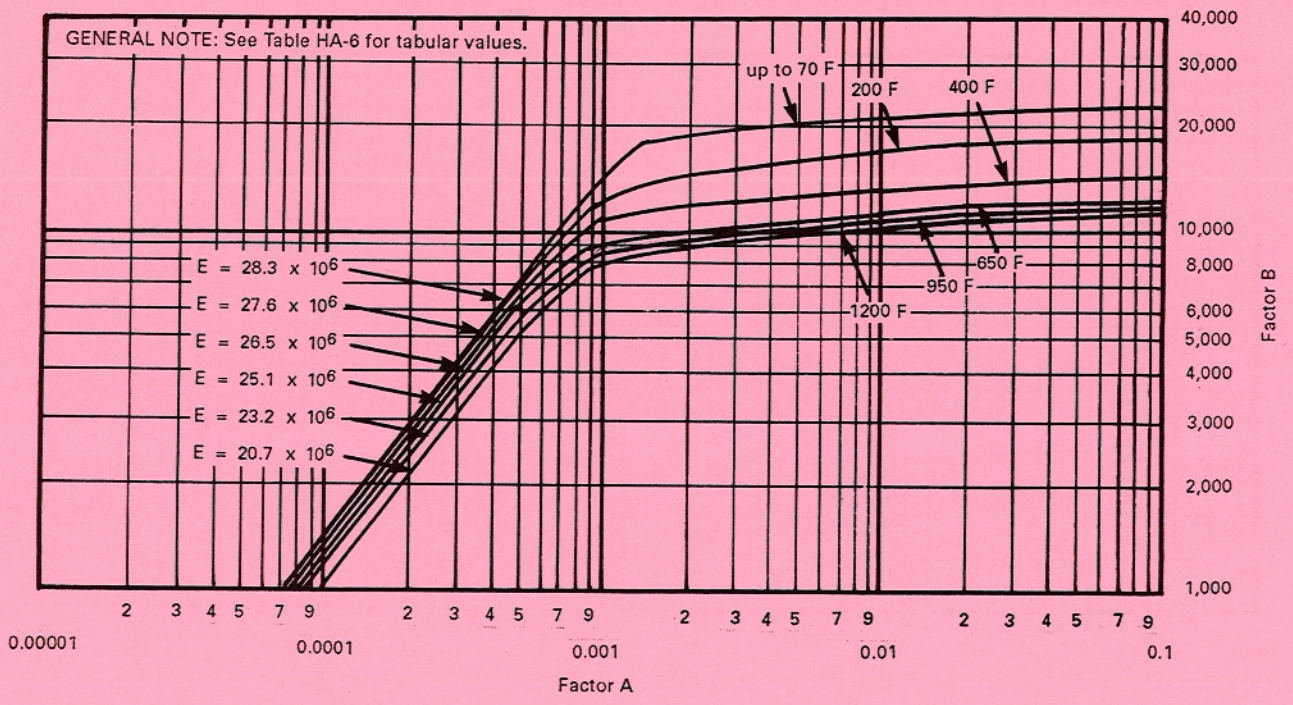
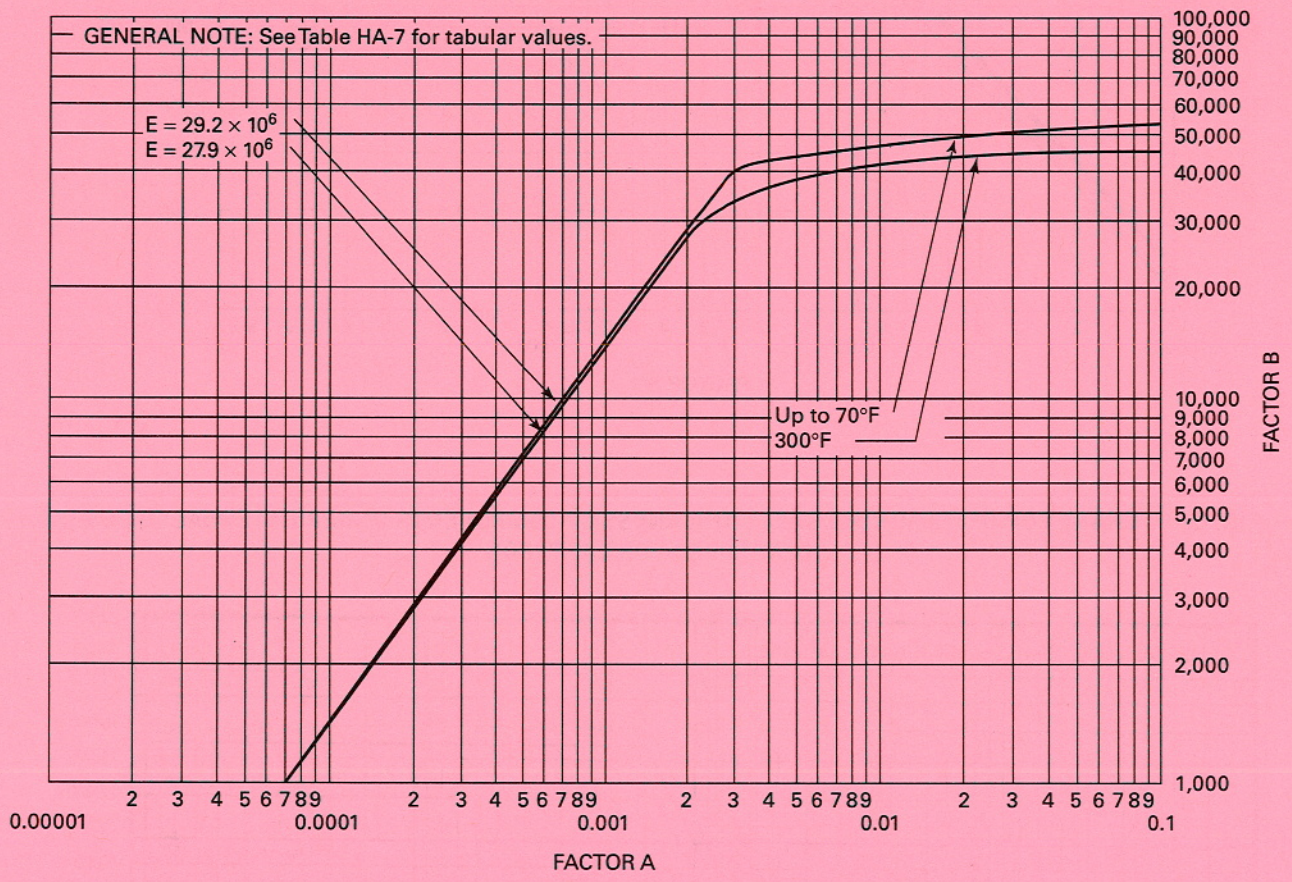
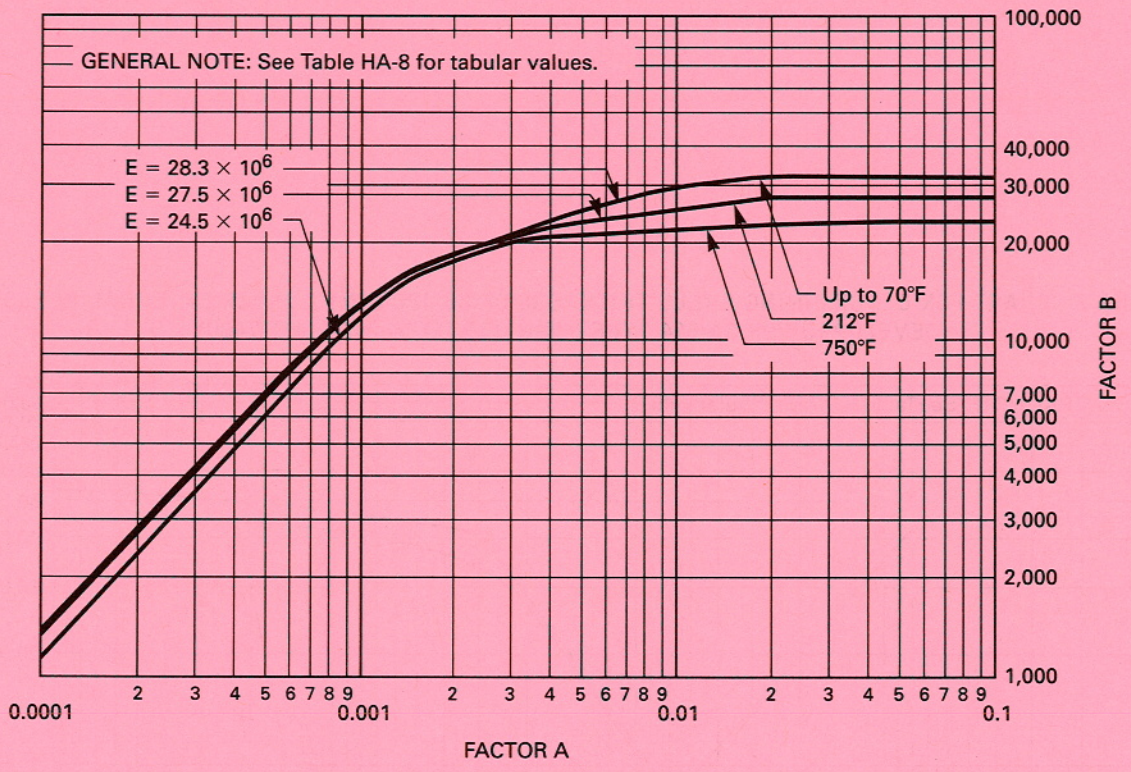


FIG. HA-7 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR SA-564 TYPE 630 H1150 (17Cr–4Ni–4Cu S17400) A08



A08 FIG. HA-8 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR AUSTENITIC–FERRITIC STEEL 25Cr–7Ni–3Mo–2W–0.28N S39274



A08 FIG. CI-1 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR CAST IRON

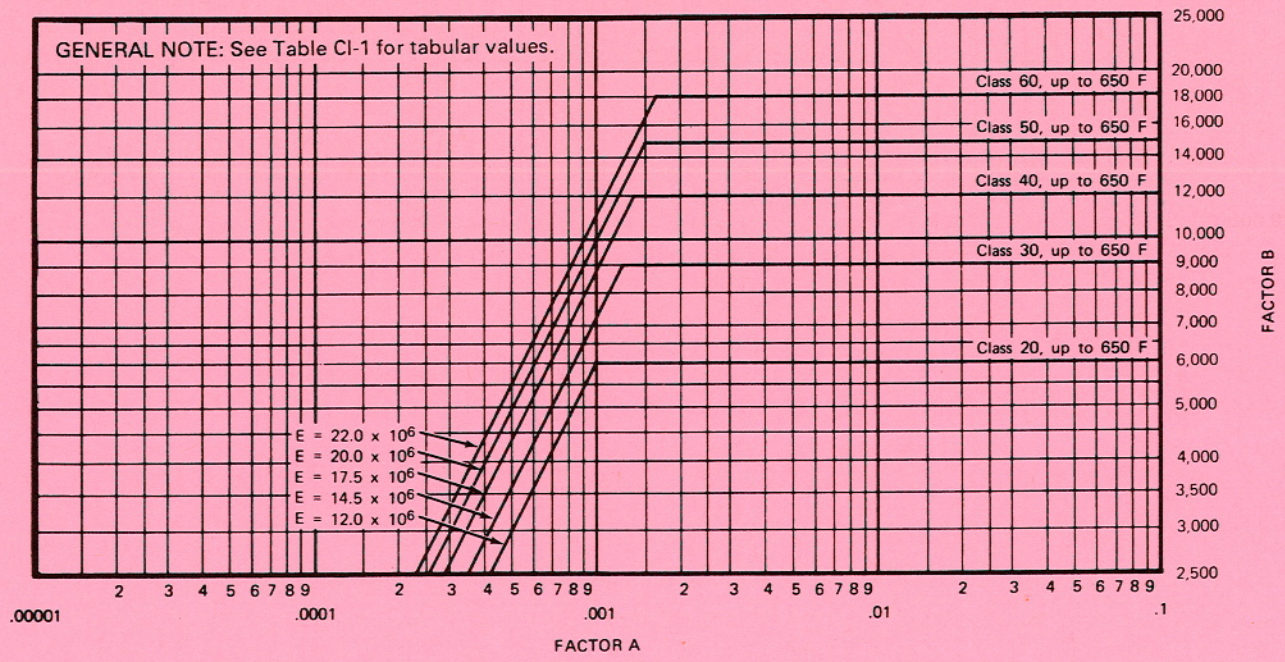


FIG. CD-1 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR CAST DUCTILE IRON WITH A SPECIFIED MINIMUM YIELD STRENGTH OF 40,000 psi A08

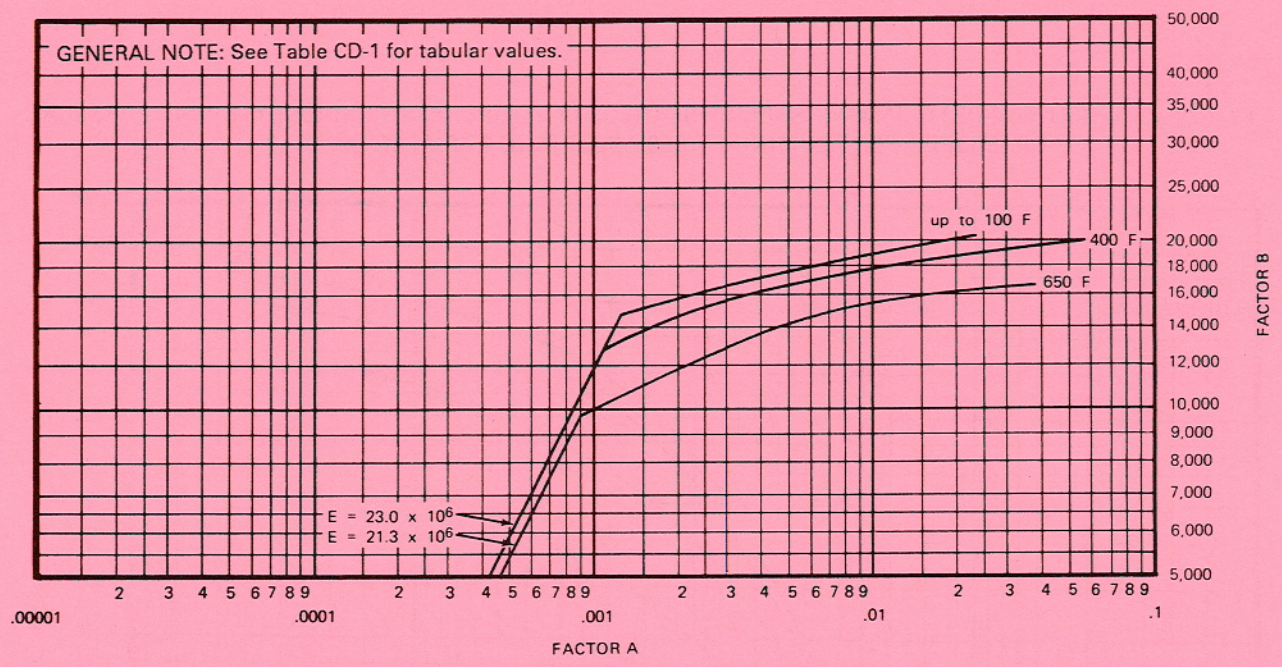
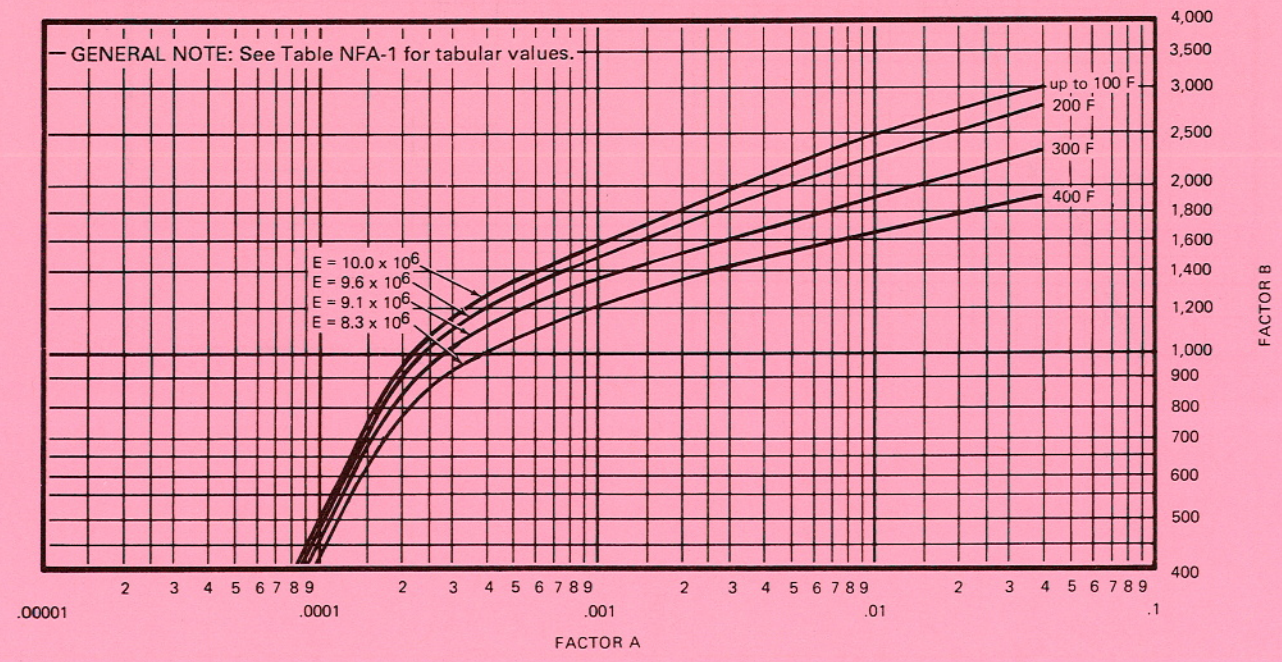


FIG. NFA-1 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ALUMINUM ALLOY 3003 IN O TEMPER [NOTE (8)] A08



A08 FIG. NFA-2 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ALUMINUM ALLOY 3003 IN H14 TEMPER [NOTE (8)]

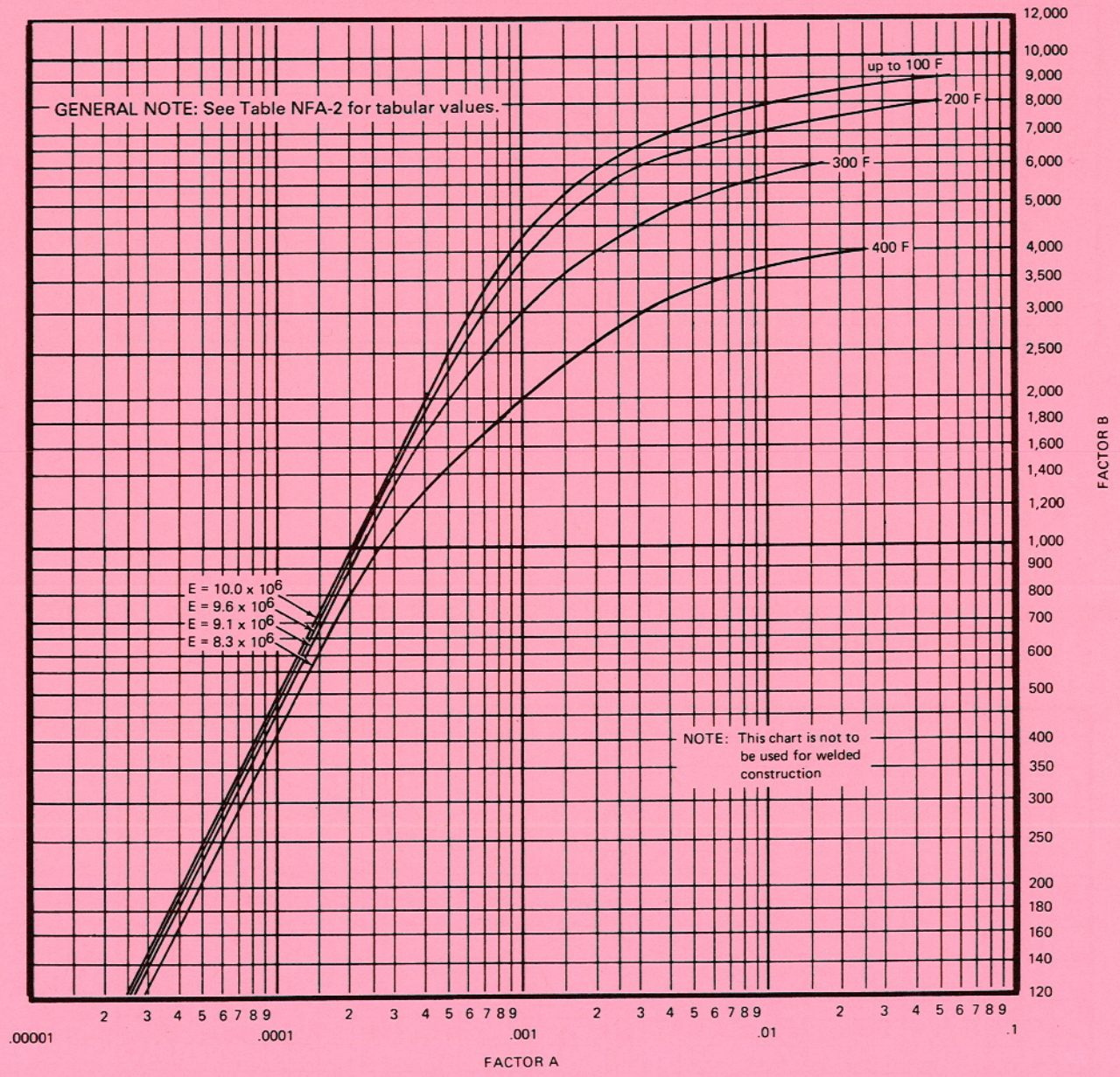
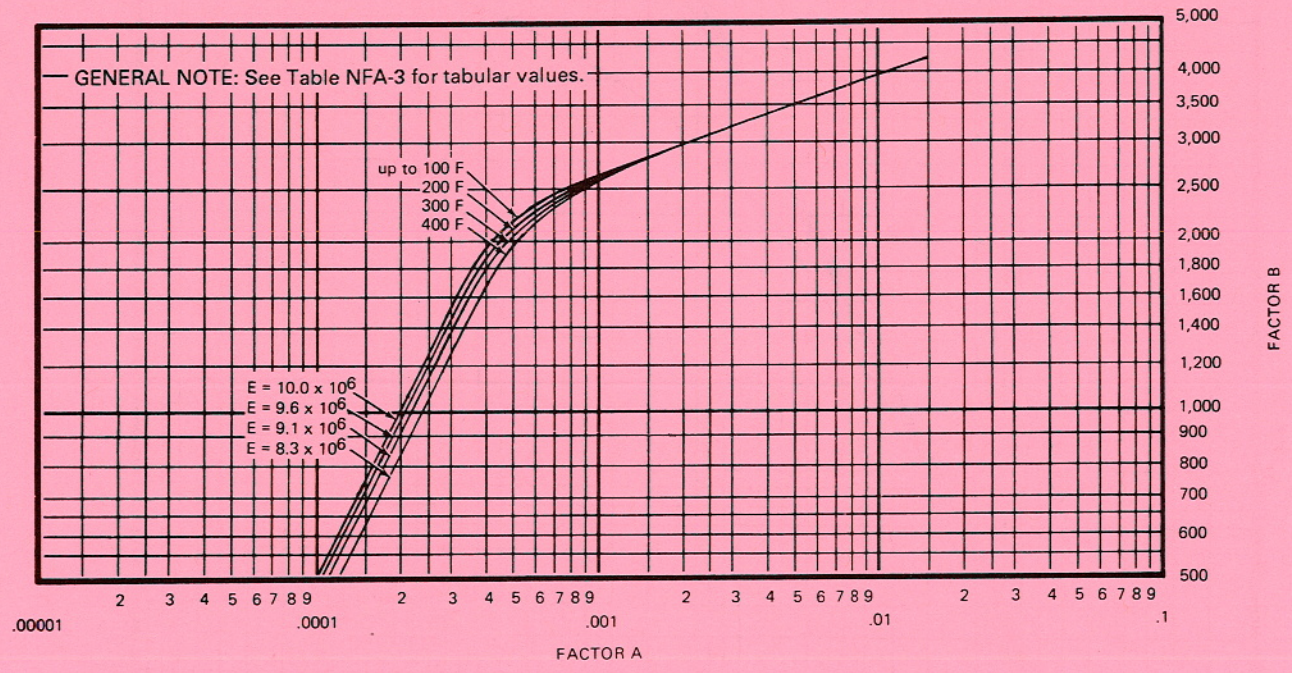


FIG. NFA-3 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ALUMINUM ALLOY 3004 IN 0 TEMPER A08



A08 FIG. NFA-4 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ALUMINUM ALLOY 3004 IN H34 TEMPER [NOTE (8)]

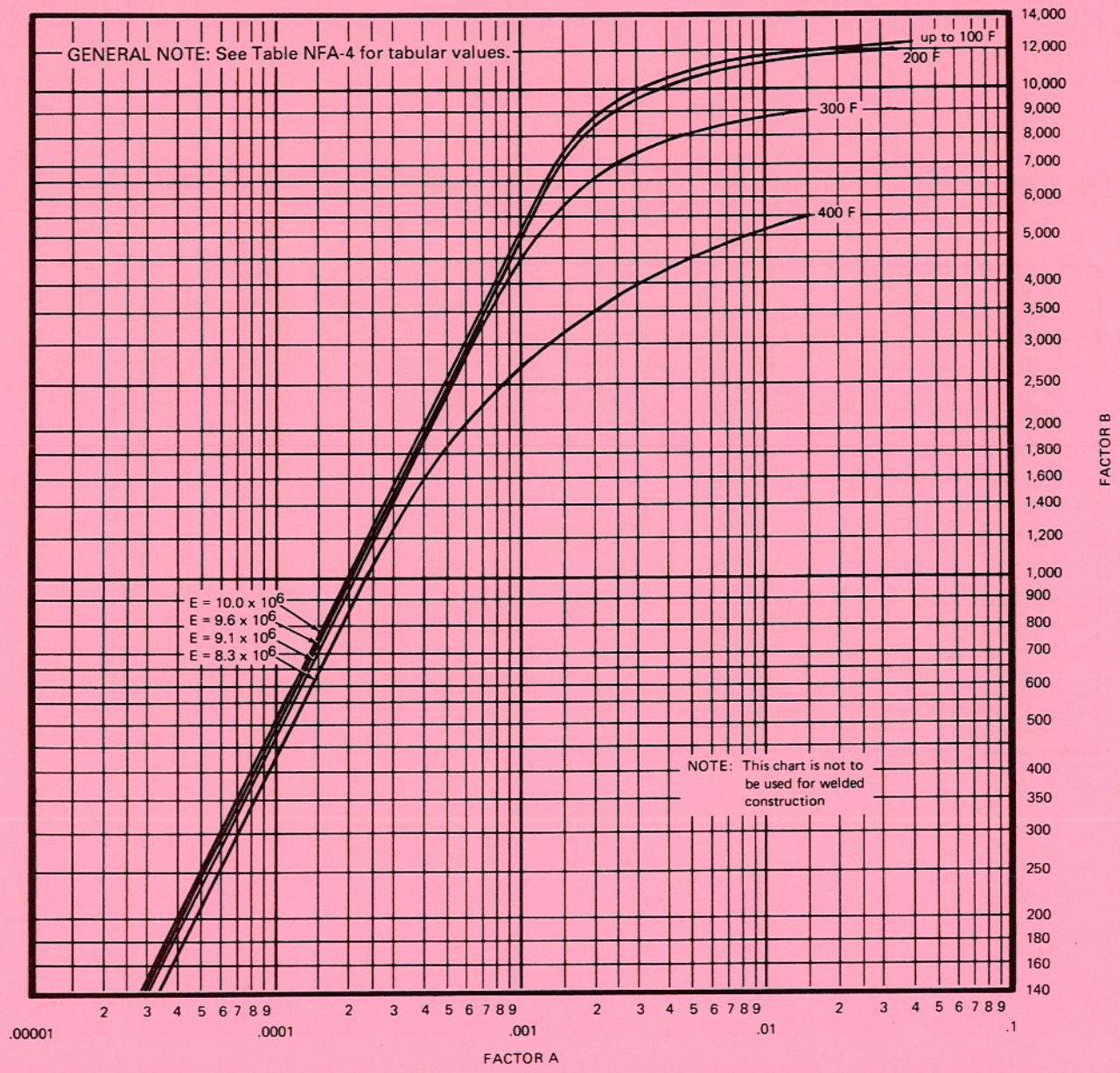


FIG. NFA-5 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ALUMINUM ALLOY 5154 IN O TEMPER A08

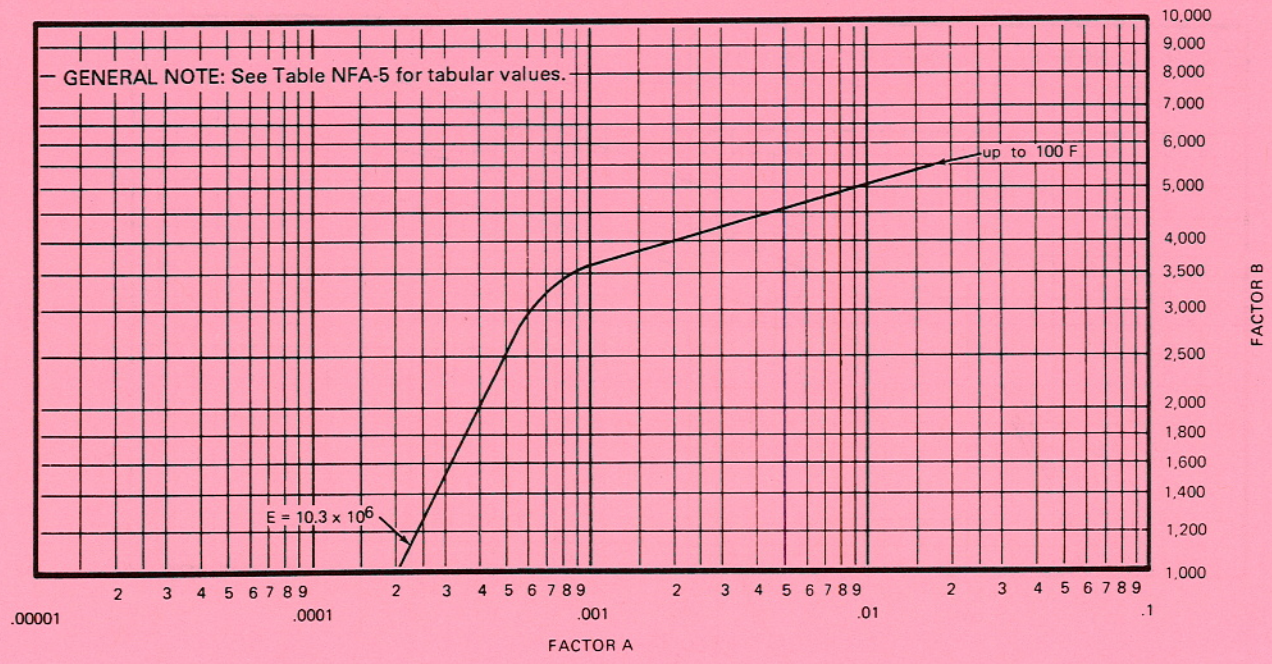
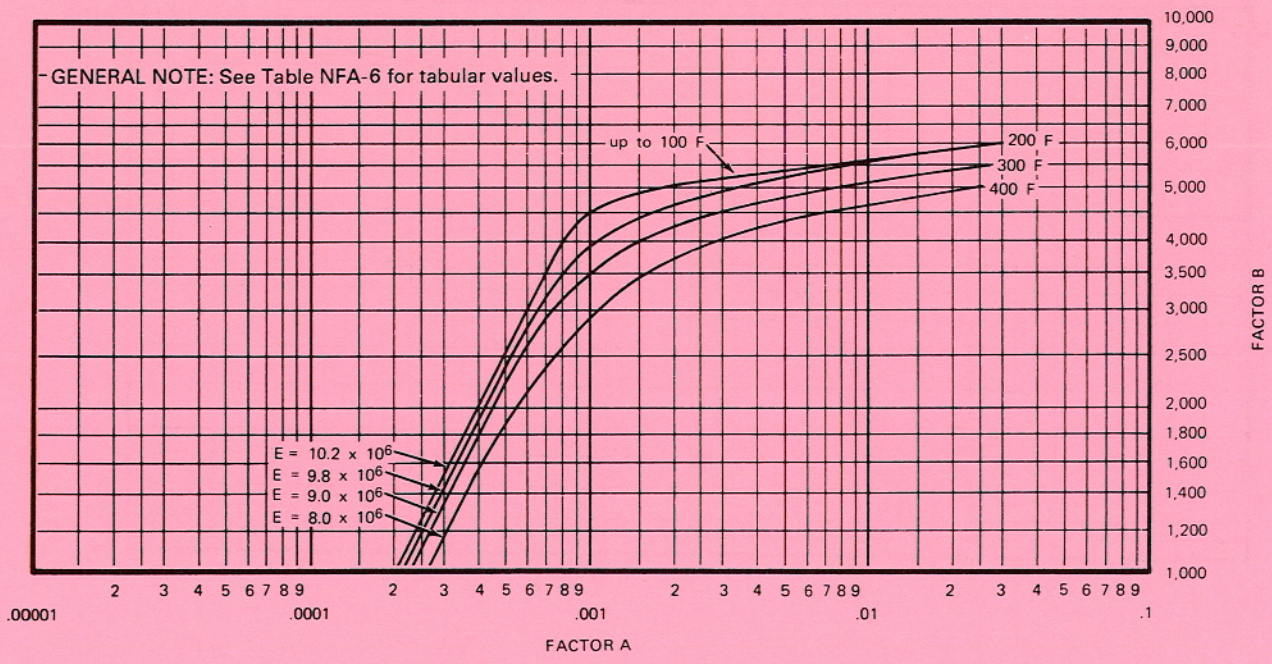
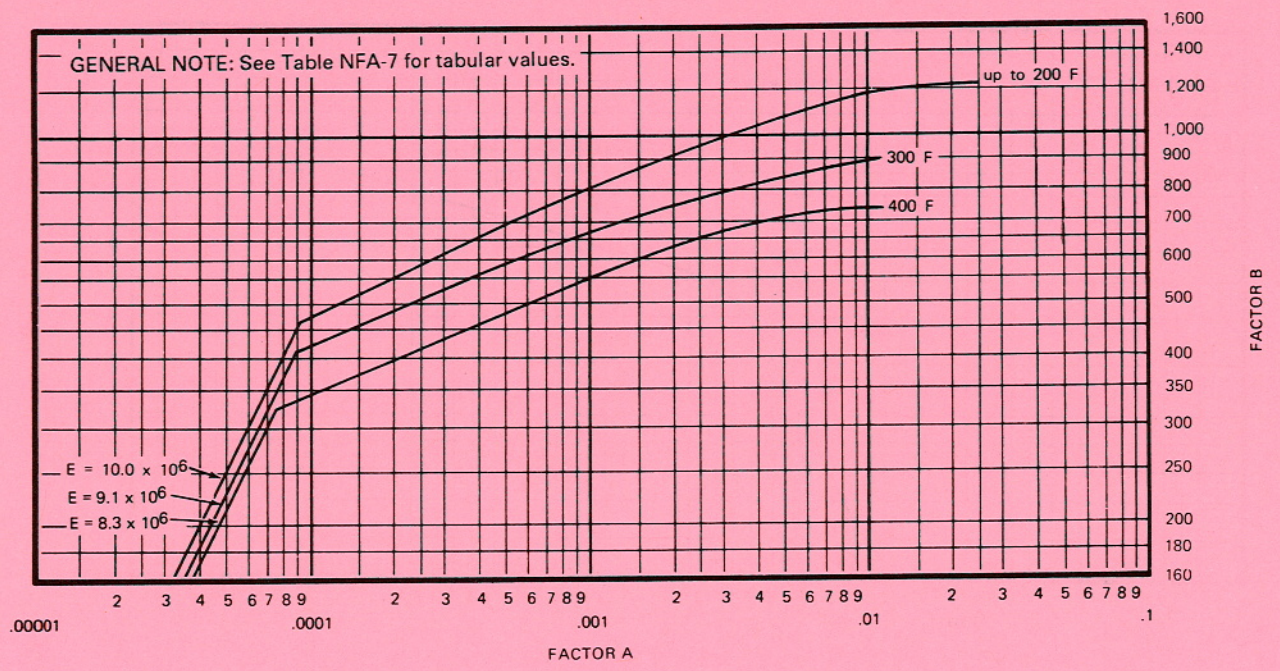


FIG. NFA-6 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ALUMINUM ALLOY 5454 IN O TEMPER A08



A08 FIG. NFA-7 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ALUMINUM ALLOY 1060 IN O TEMPER



A08 FIG. NFA-8 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ALUMINUM ALLOY 5052 IN O TEMPER [NOTE (9)]

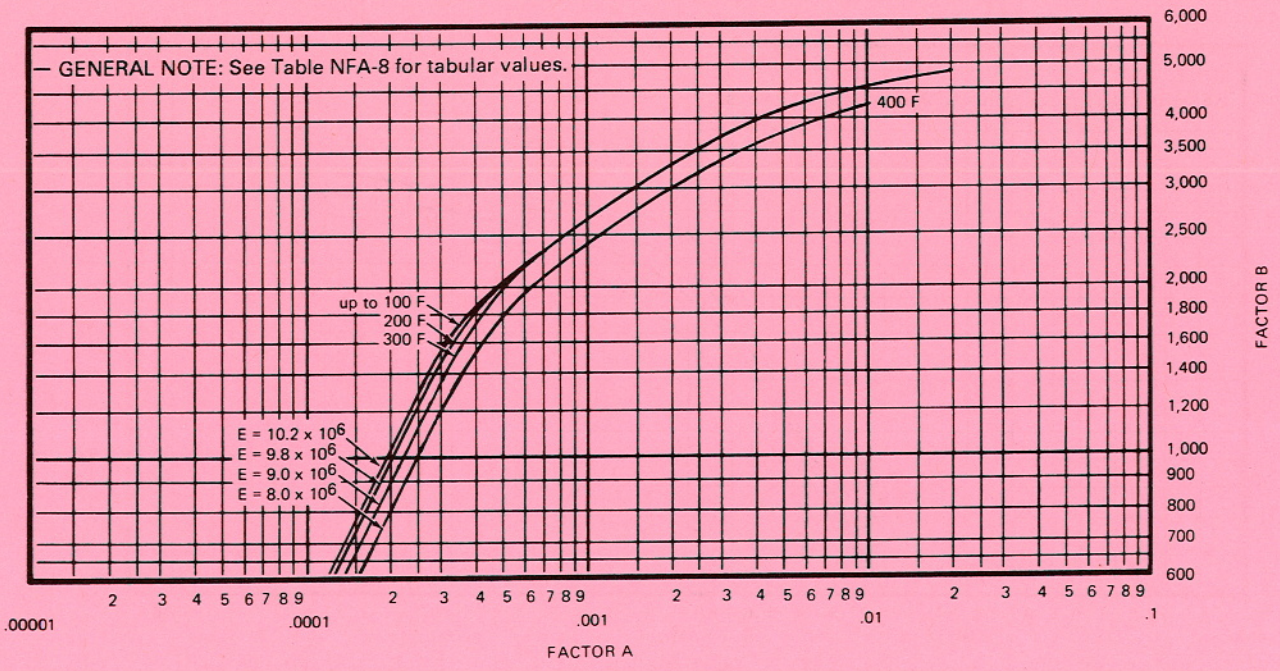


FIG. NFA-9 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ALUMINUM ALLOY 5086 IN O TEMPER A08

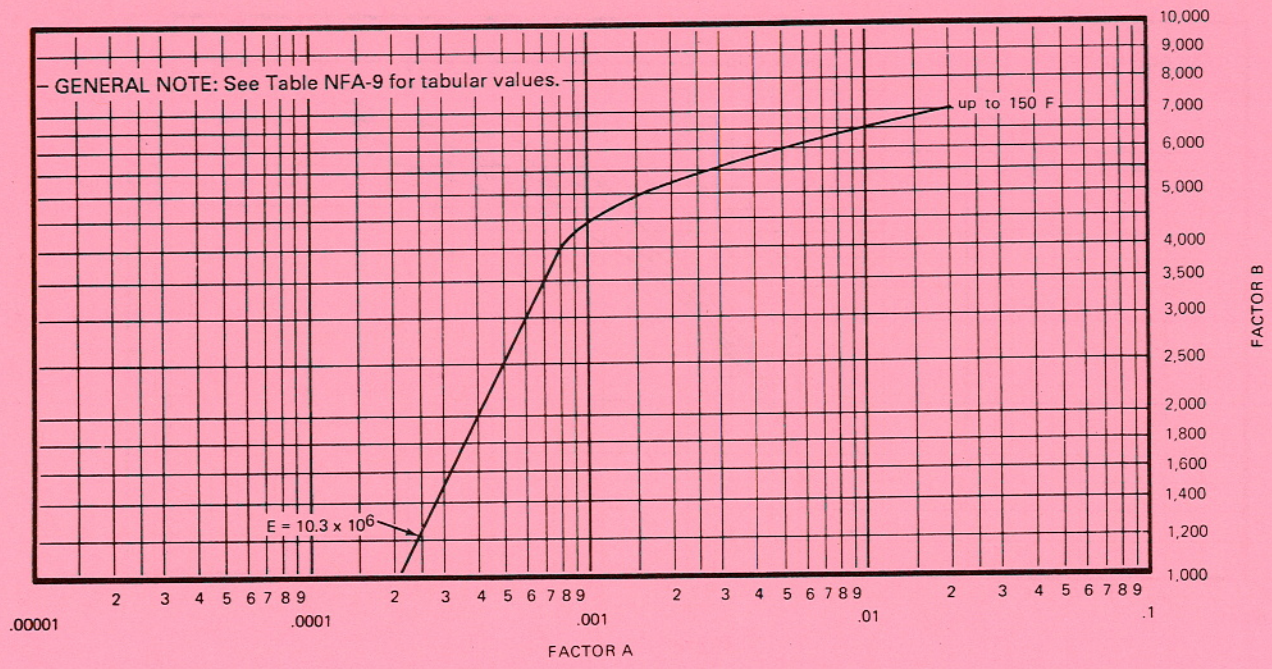
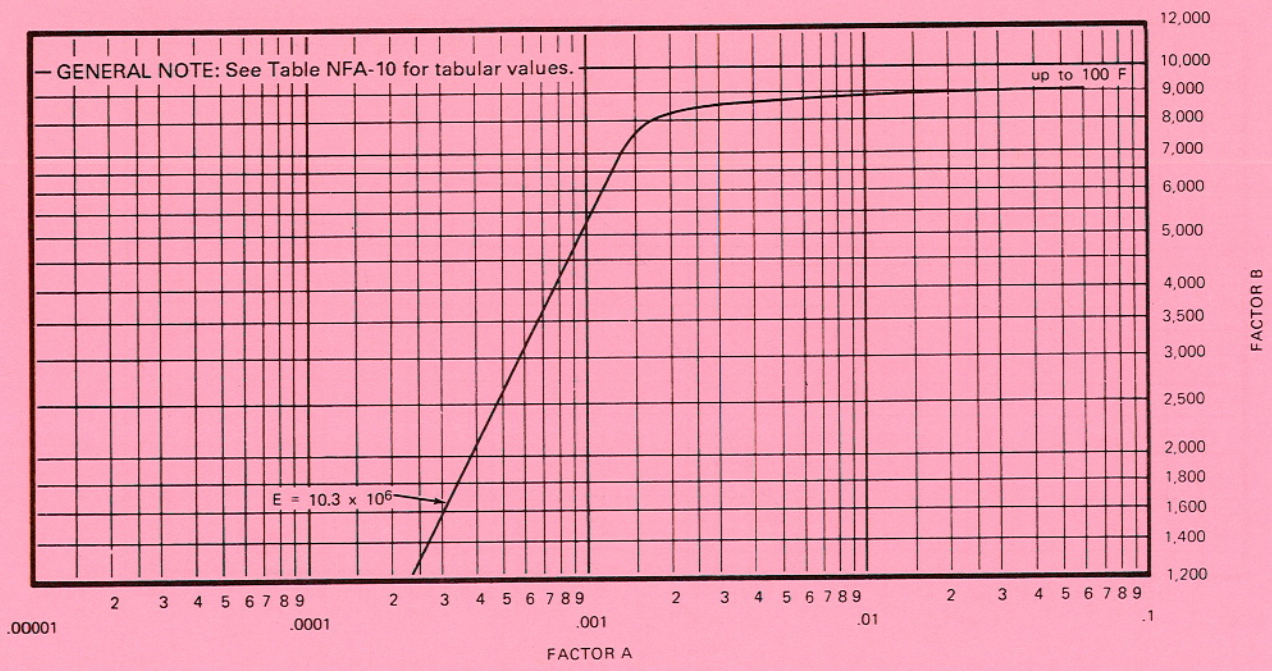
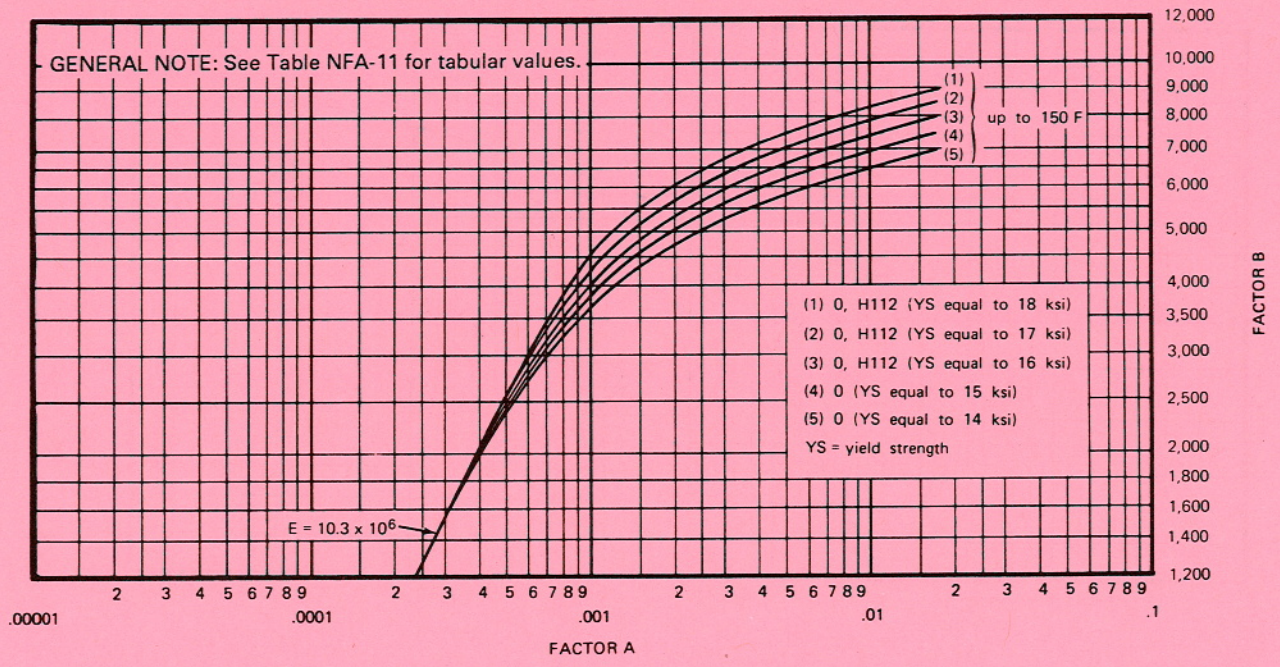


FIG. NFA-10 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ALUMINUM ALLOY 5456 IN O TEMPER A08



A08 FIG. NFA-11 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ALUMINUM ALLOY 5083 IN O TEMPER



A08 FIG. NFA-12 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR WELDED ALUMINUM ALLOY 6061-T6

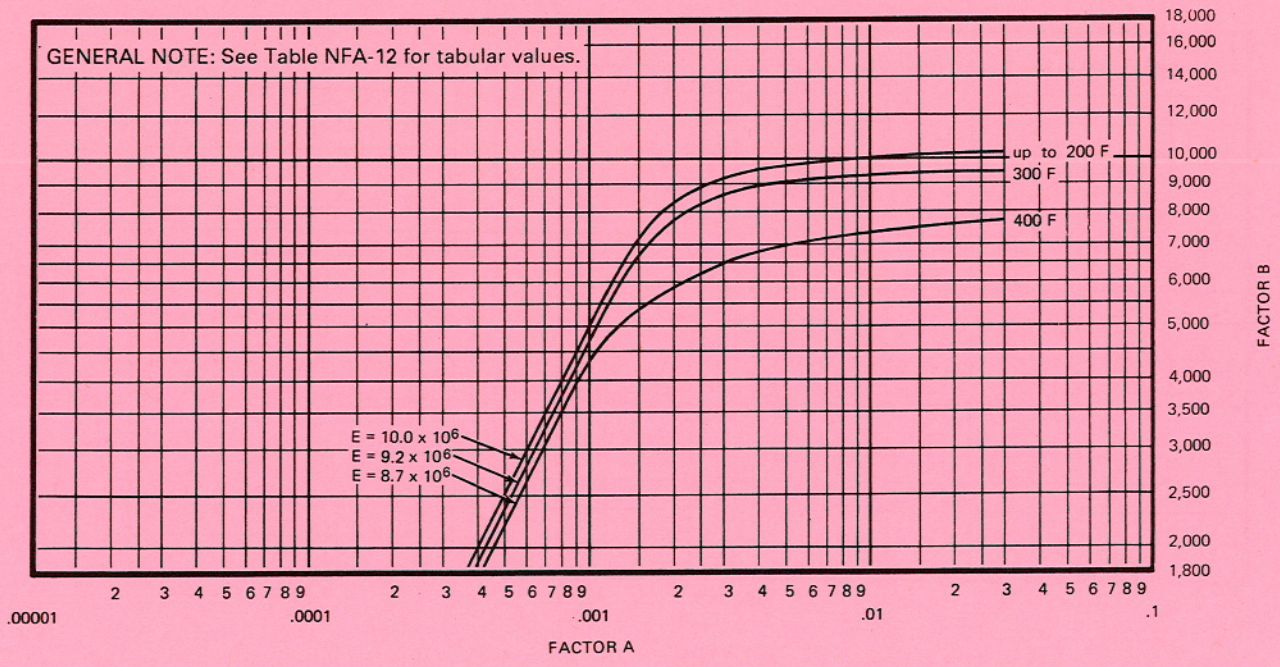


FIG. NFA-13 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR WELDED ALUMINUM ALLOY 6061-T4 A08

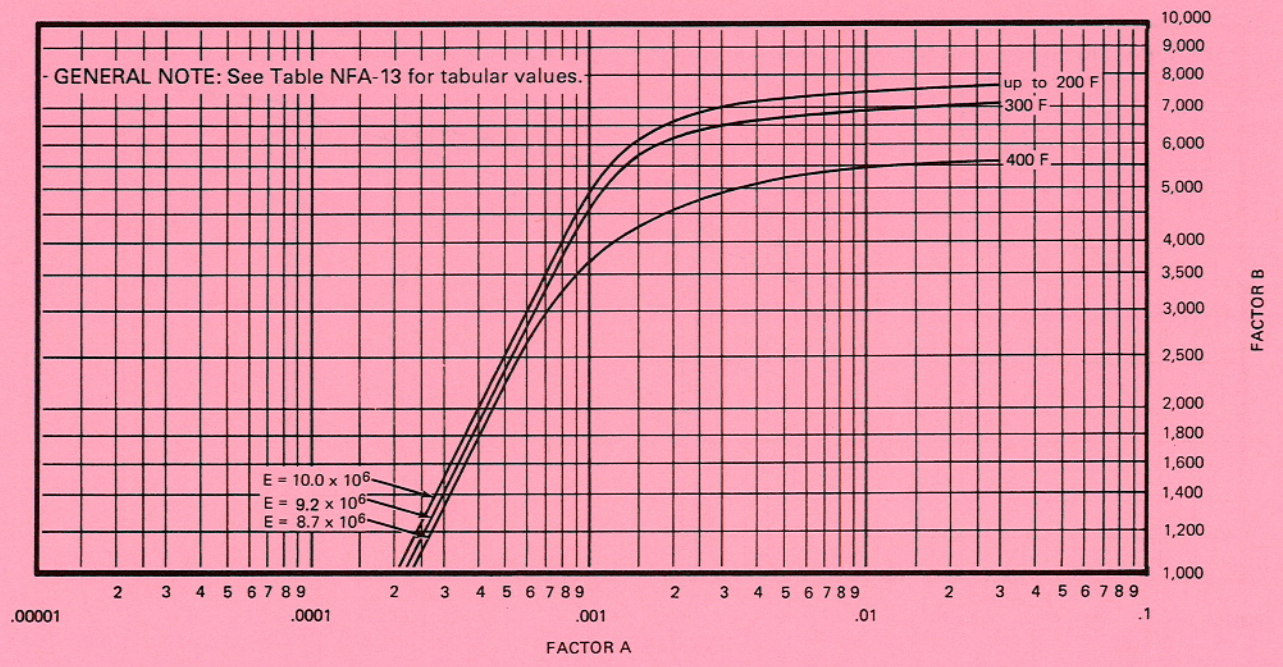
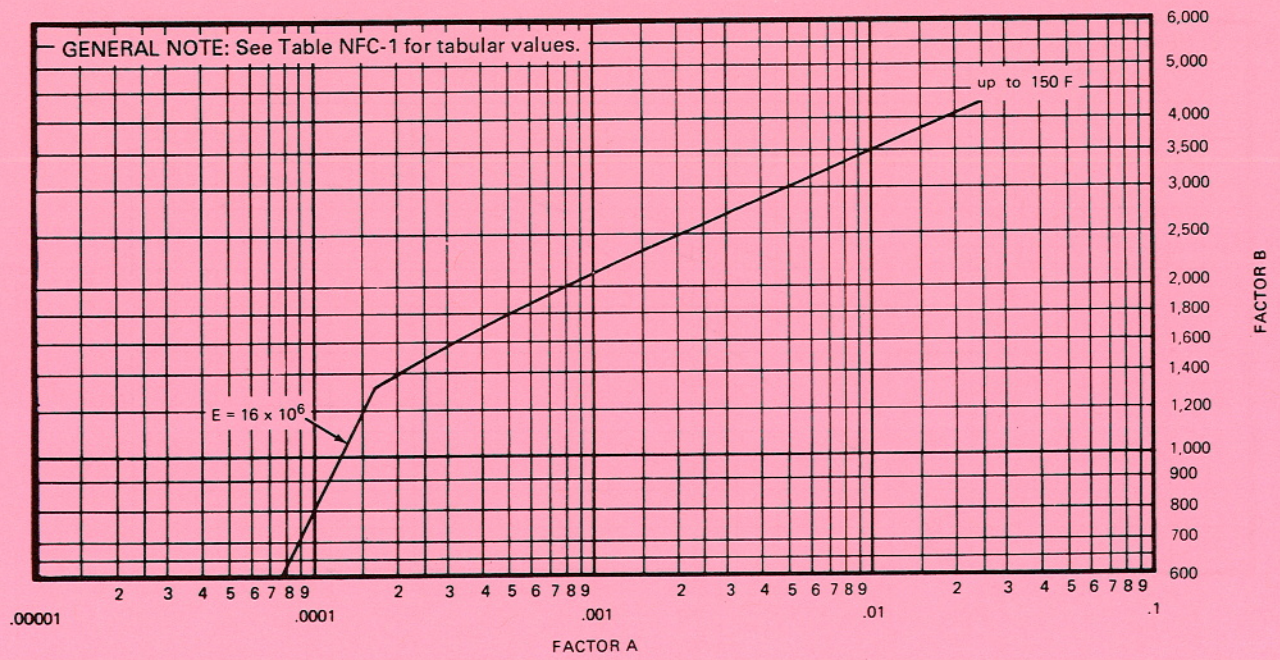
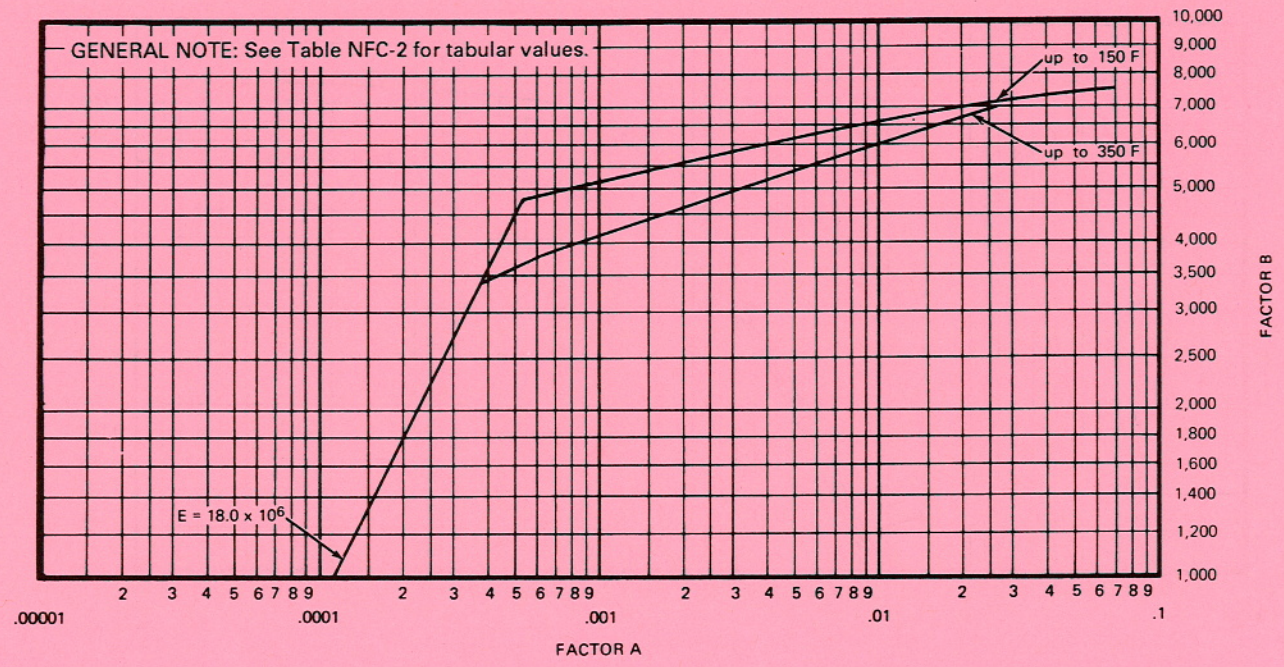


FIG. NFC-1 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ANNEALED COPPER, TYPE DHP A08



A08 FIG. NFC-2 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR COPPER–SILICON ALLOYS A AND C



A08 FIG. NFC-3 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ANNEALED 90–10 COPPER–NICKEL ALLOY

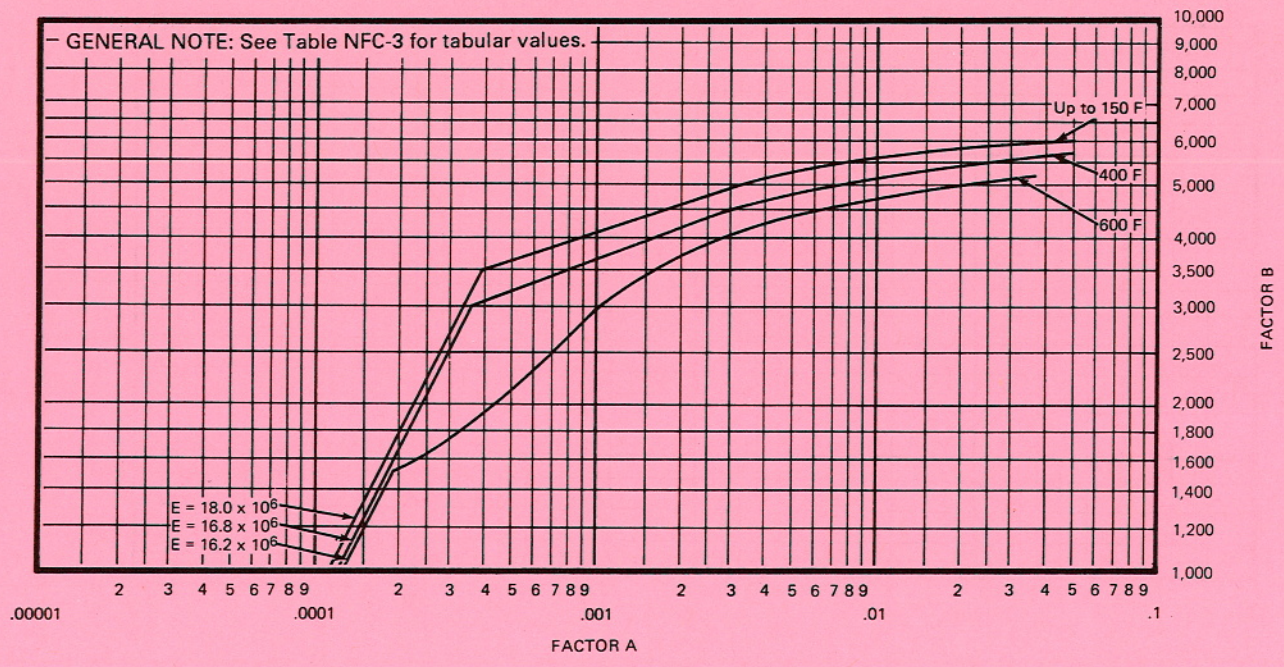


FIG. NFC-4 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ANNEALED 70–30 COPPER–NICKEL ALLOY A08

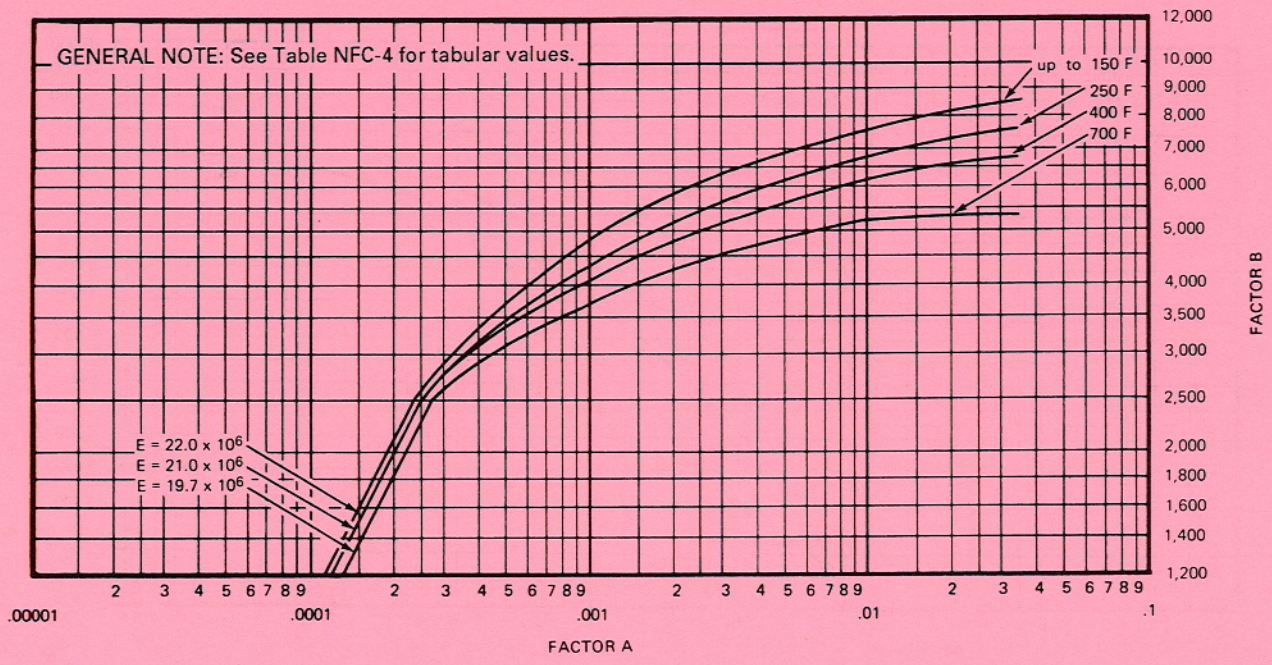
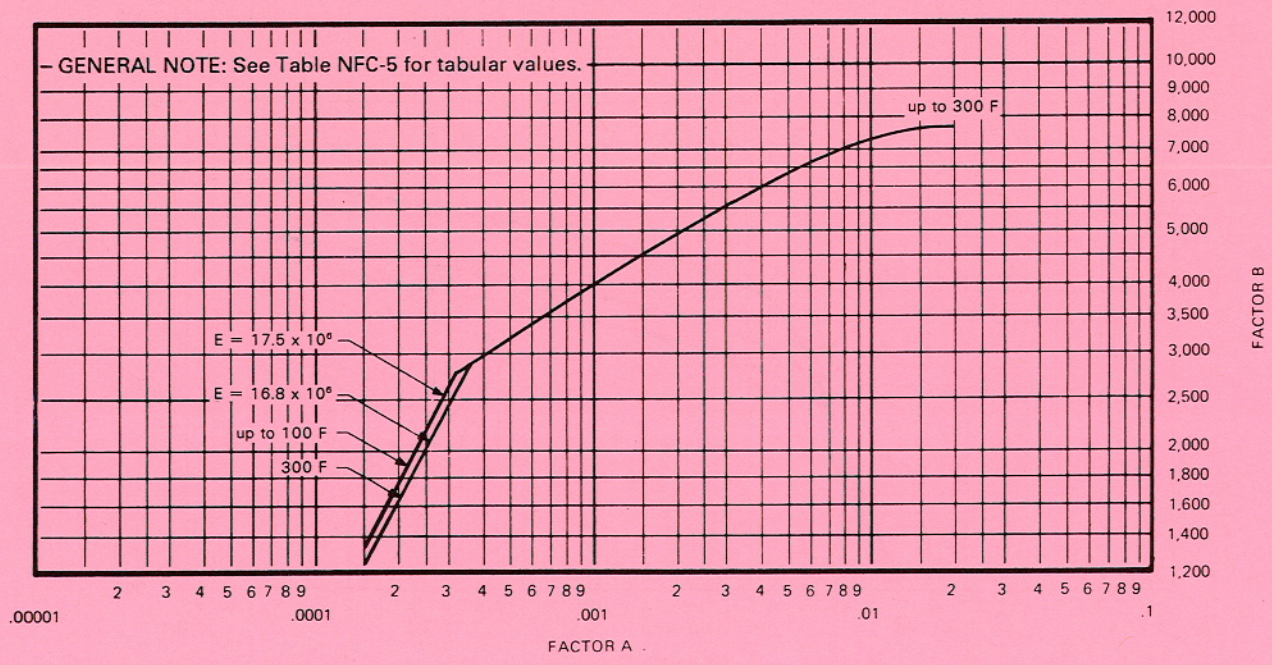
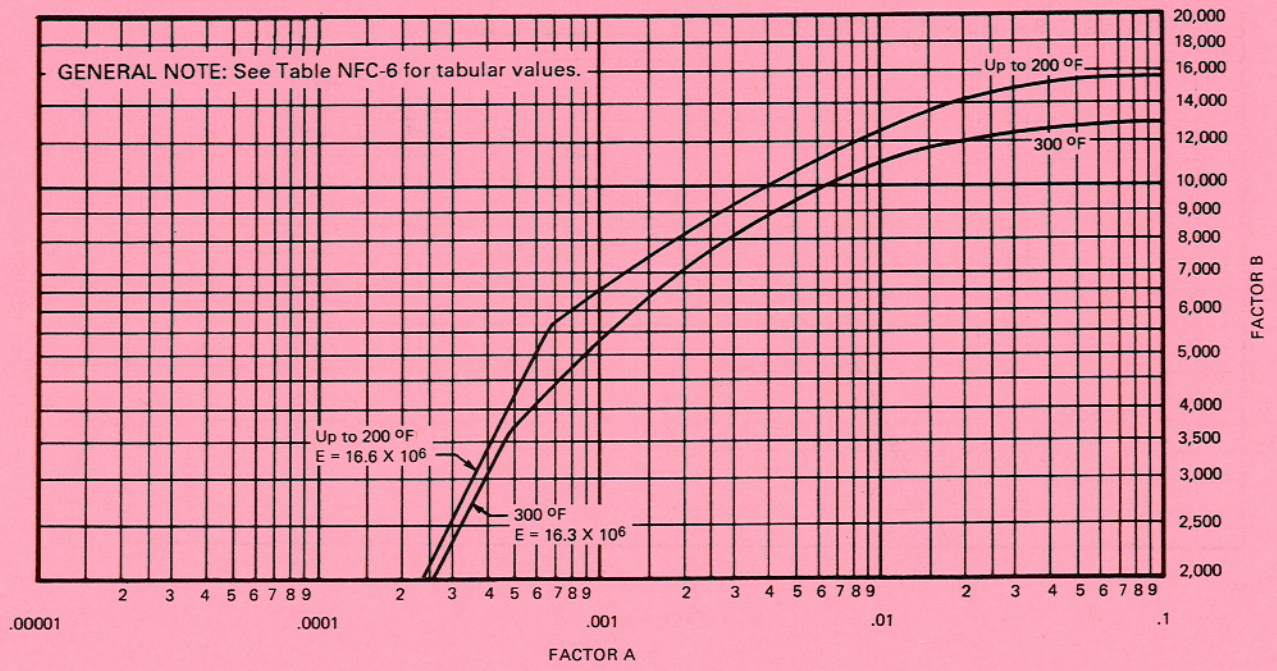


FIG. NFC-5 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR WELDED COPPER–IRON ALLOY TUBE C19400 (SB-543 WELDED) A08



A08 FIG. NFC-6 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR SB-75 AND SB-111 LIGHT DRAWN SEAMLESS COPPER TUBES, ALLOYS C10200, C12000, C12200, AND C14200



A08 FIG. NFC-7 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ANNEALED COPPER, SB-75, UNS C12200, TEMPER 050

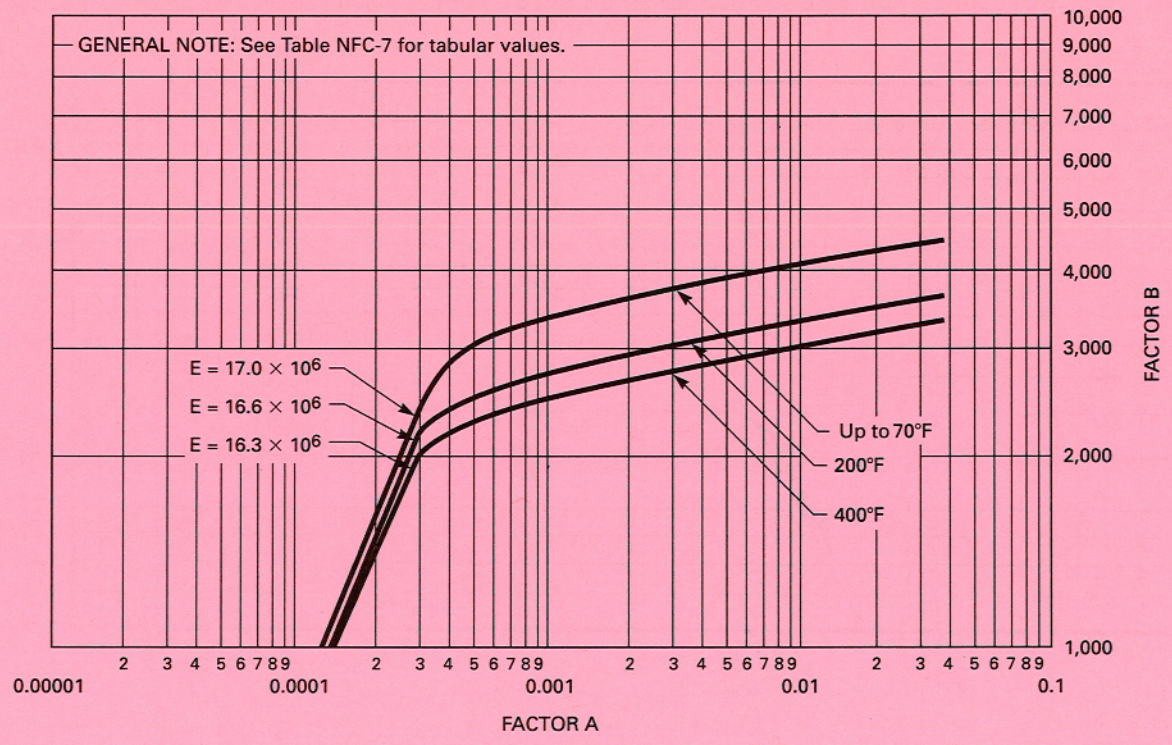


FIG. NFC-8 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ALUMINUM BRONZE ALLOY C61400 A08

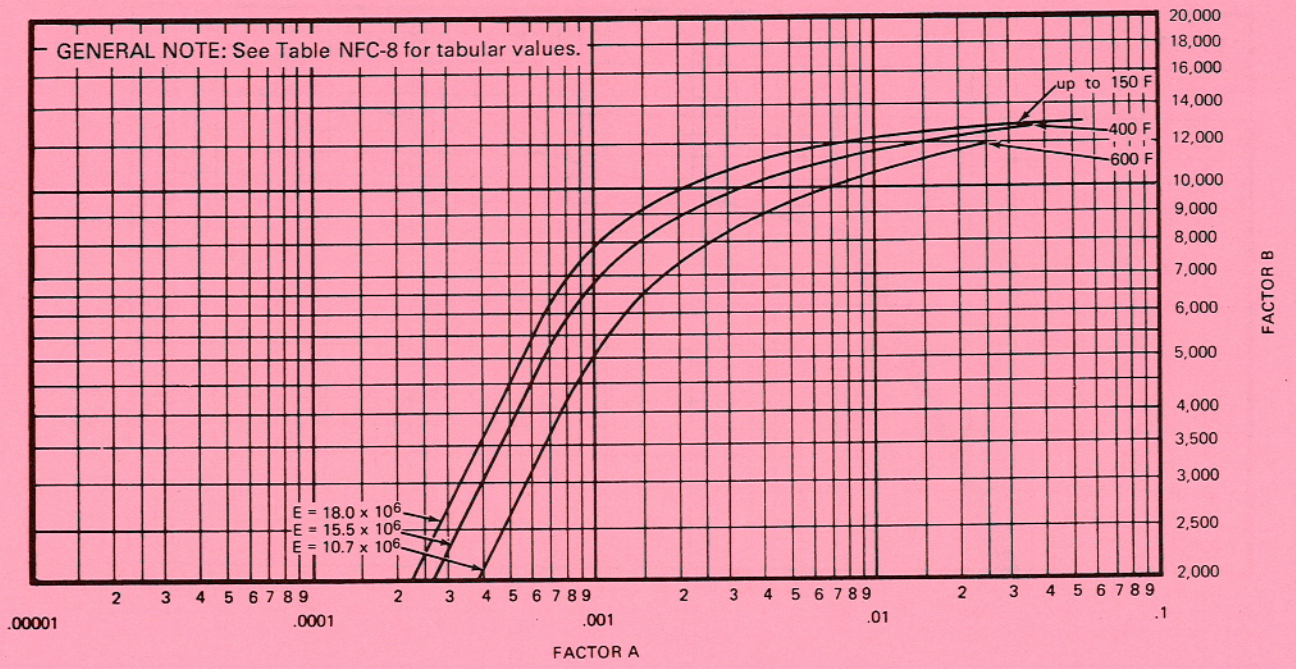
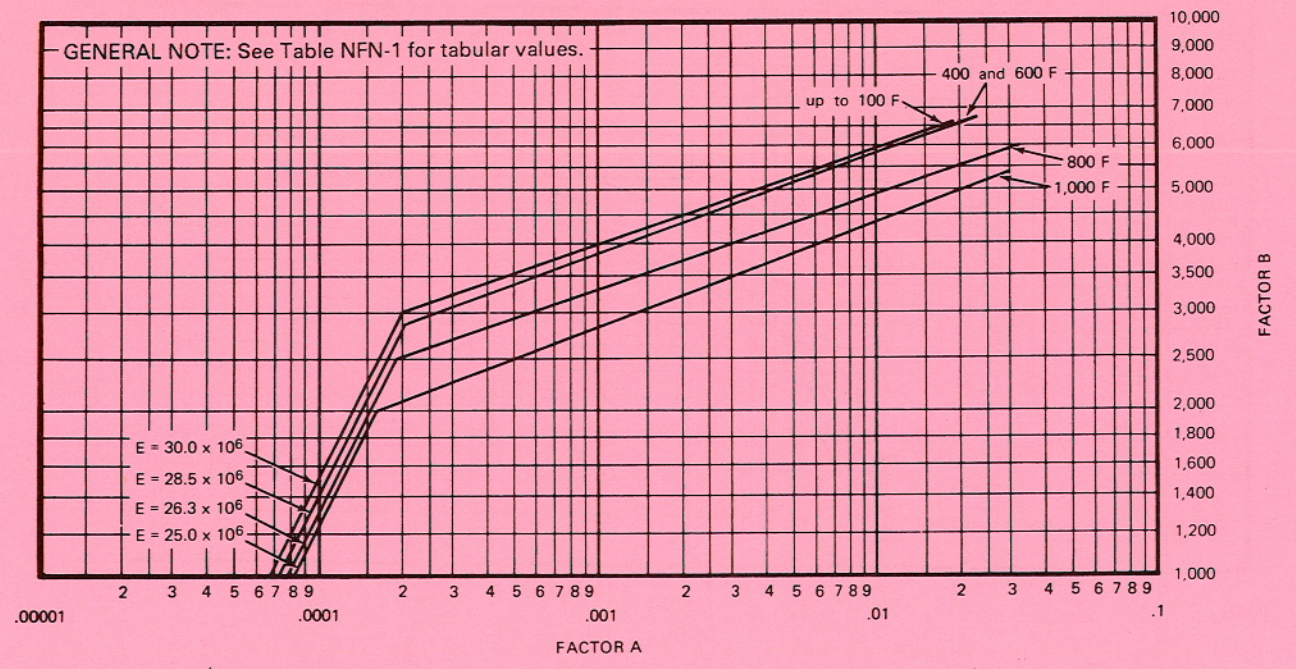
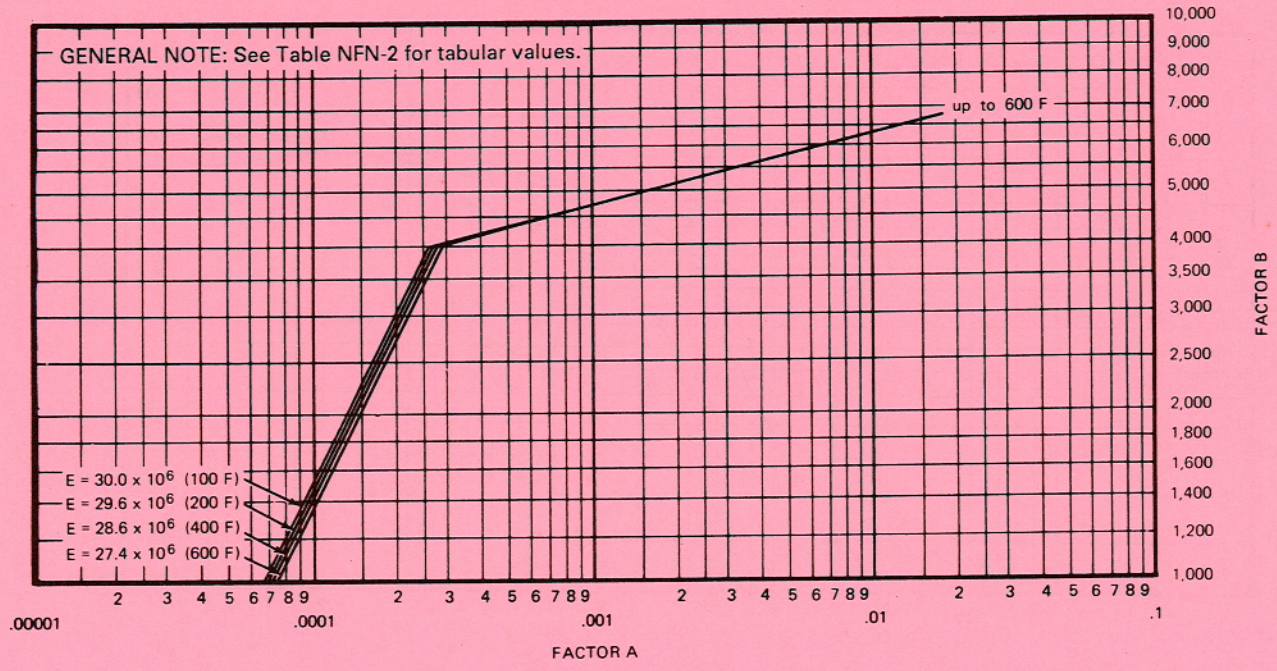


FIG. NFN-1 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ANNEALED LOW CARBON NICKEL N02201 A08



A08 FIG. NFN-2 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ANNEALED NICKEL N02200



A08 FIG. NFN-3 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ANNEALED NICKEL–COPPER ALLOY N04400

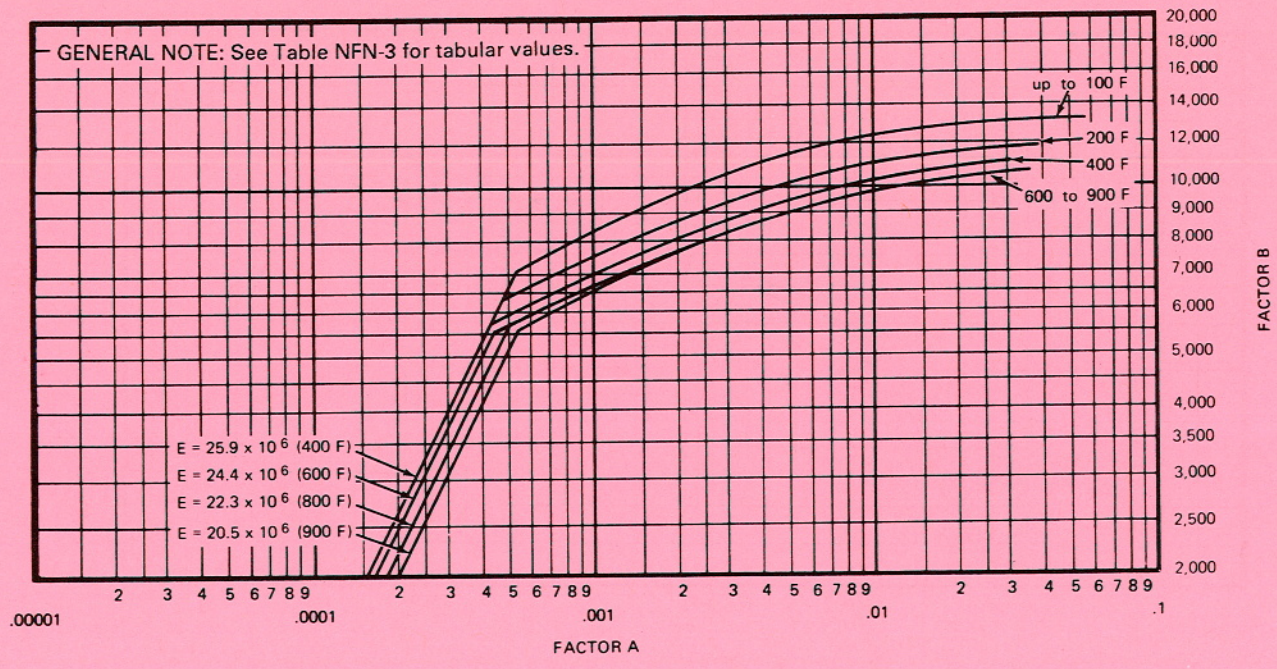


FIG. NFN-4 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ANNEALED NICKEL–CHROMIUM–IRON ALLOY N06600 A08

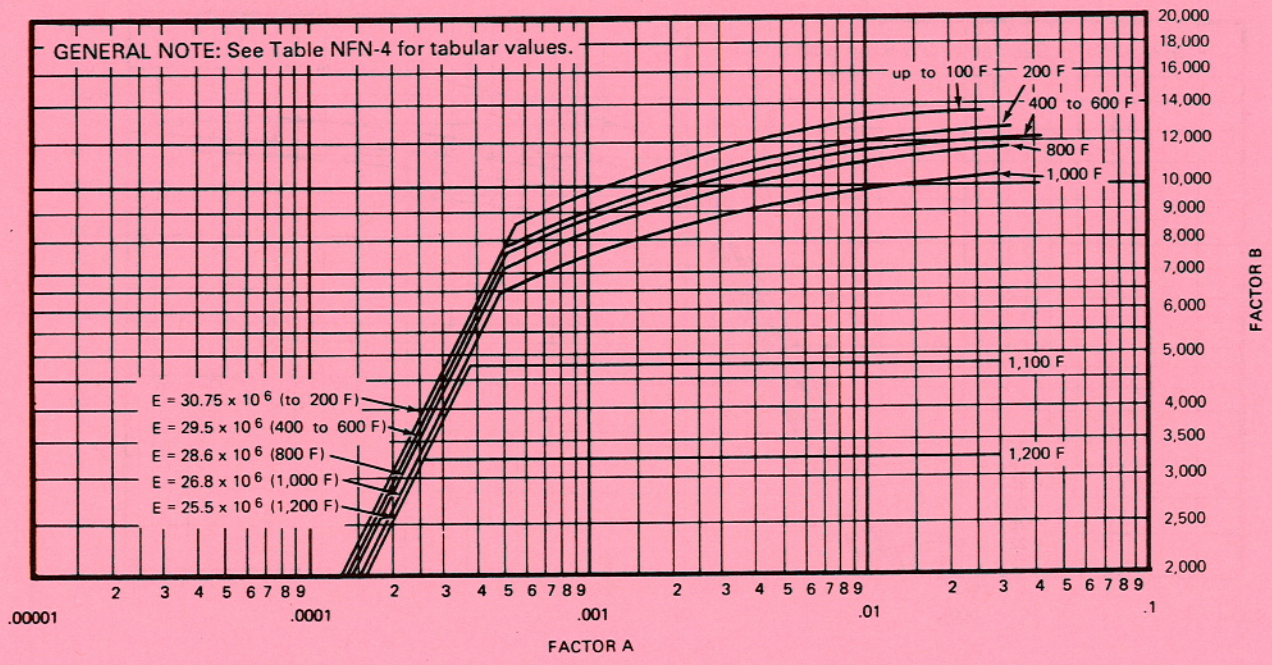
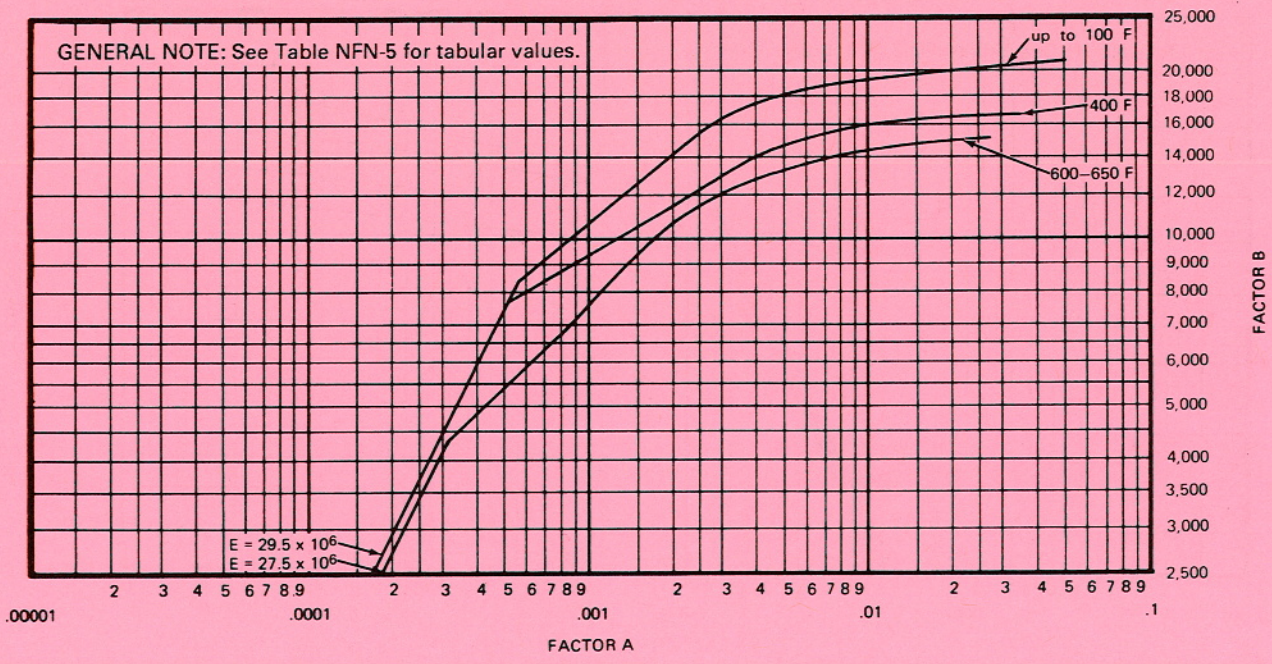
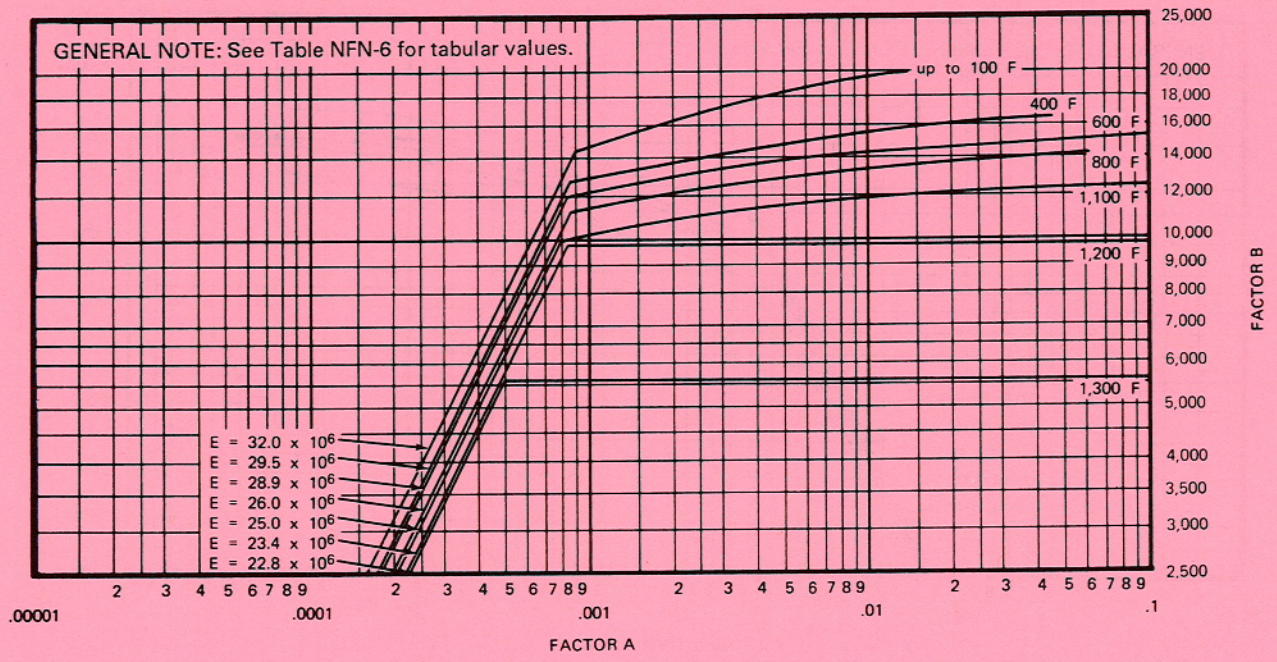


FIG. NFN-5 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR NICKEL–MOLYBDENUM ALLOY N10001 A08



A08 FIG. NFN-6 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR NICKEL–MOLYBDENUM–CHROMIUM–IRON ALLOY N10003



A08 FIG. NFN-7 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR NICKEL–IRON–CHROMIUM–MOLYBDENUM–COPPER ALLOY N08825

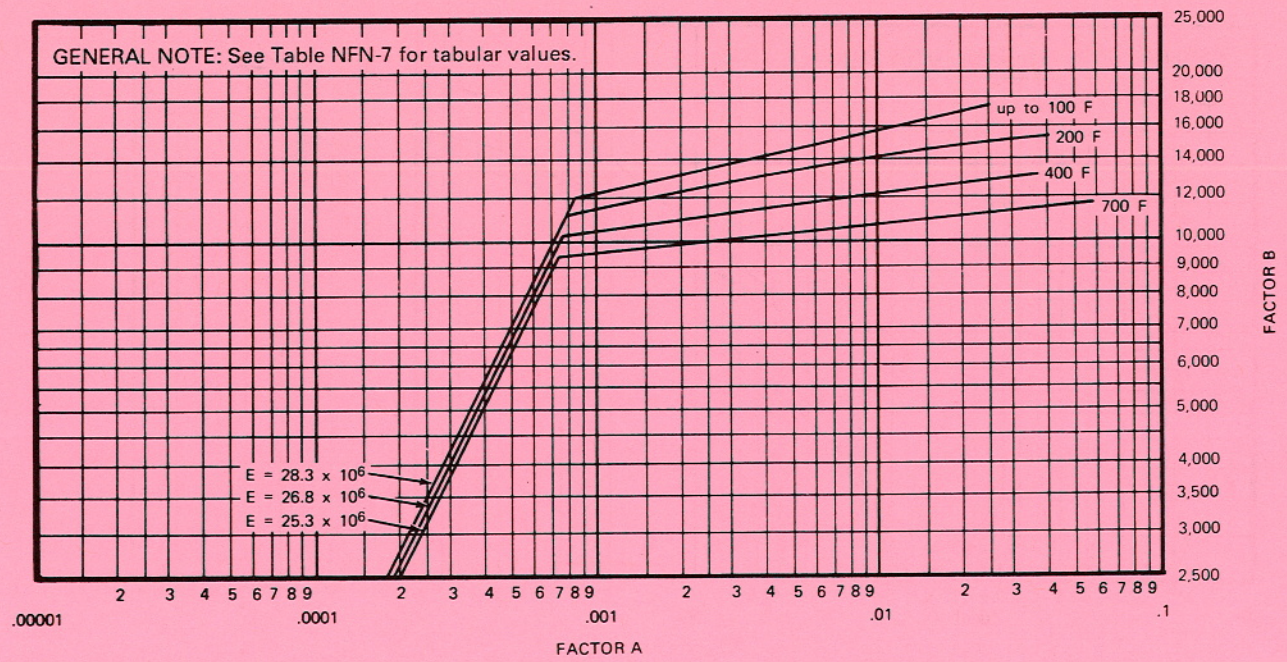


FIG. NFN-8 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ANNEALED NICKEL–IRON–CHROMIUM ALLOY N08800 A08

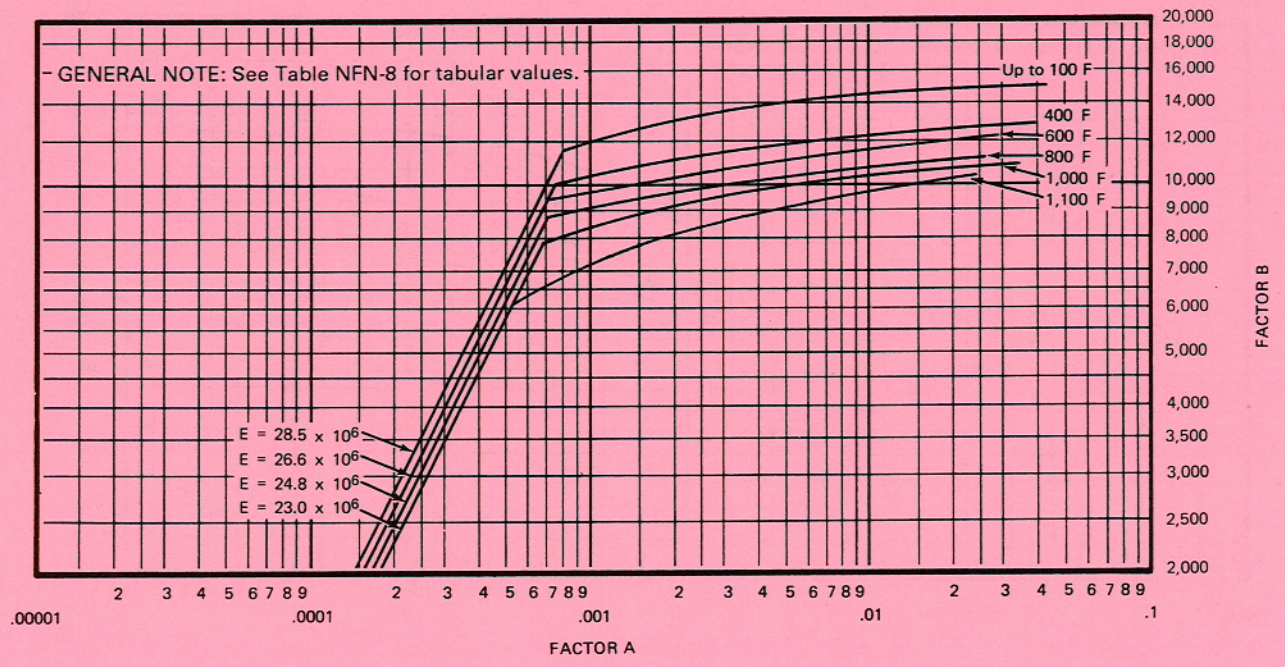
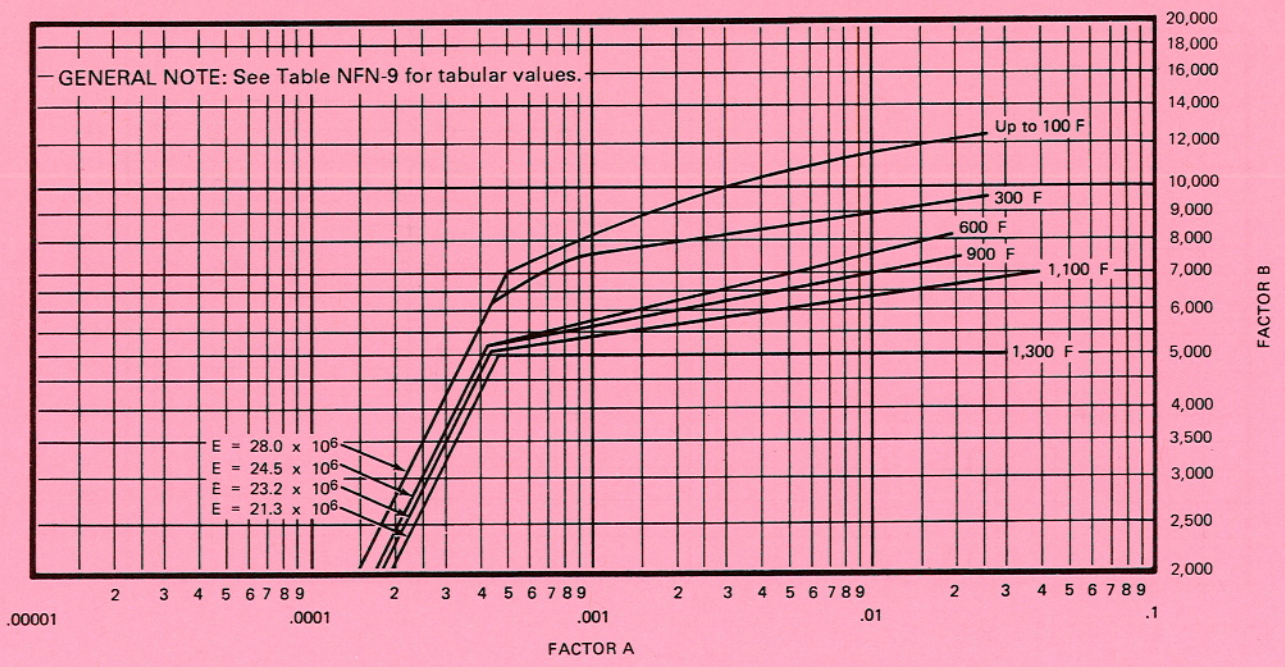
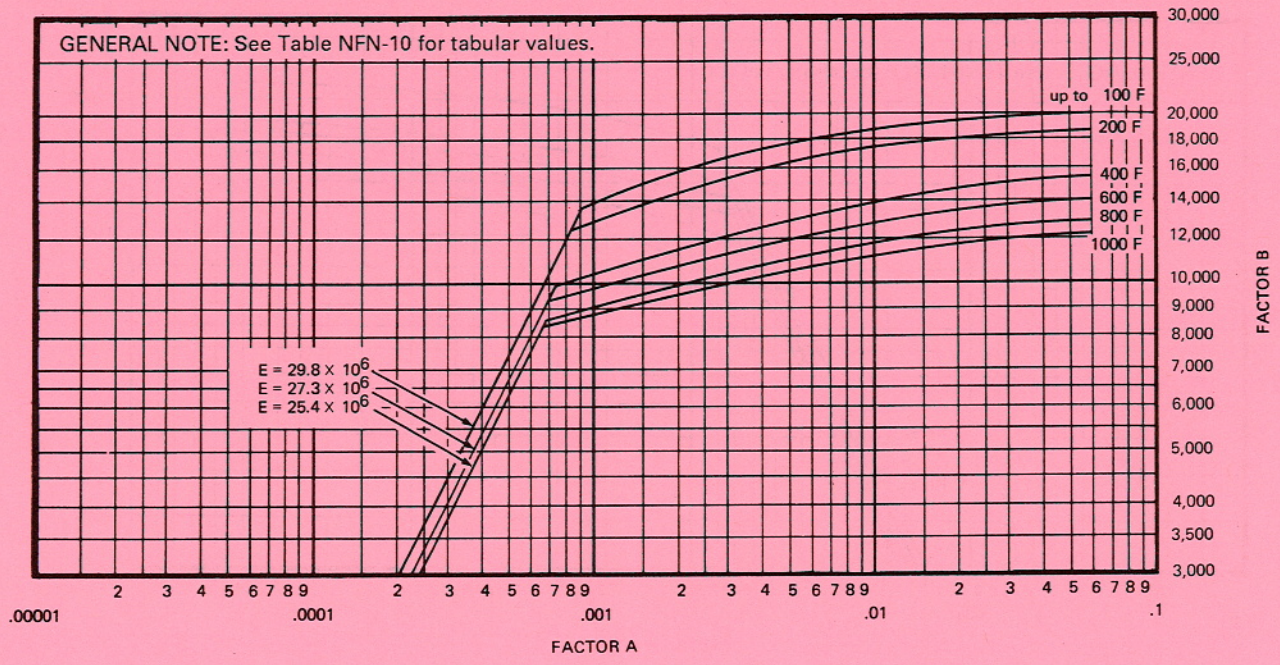


FIG. NFN-9 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ANNEALED NICKEL–IRON–CHROMIUM ALLOY N08810 A08



A08 FIG. NFN-10 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR LOW CARBON NICKEL–MOLYBDENUM–CHROMIUM ALLOY N10276



A08 FIG. NFN-11 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR SOLUTION TREATED NICKEL–CHROMIUM–IRON–MOLYBDENUM–COPPER ALLOY N06007

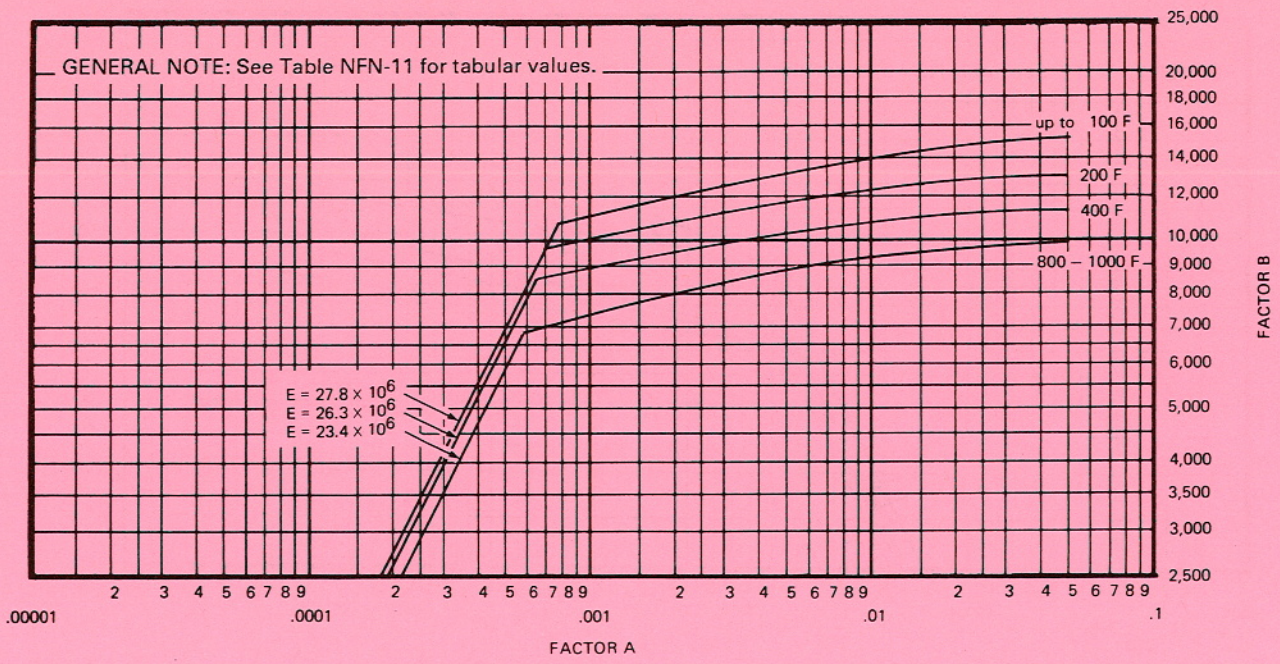


FIG. NFN-12 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR CHROMIUM–NICKEL–IRON–MOLYBDENUM–COPPER–COLUMBIUM ALLOY N08020 A08

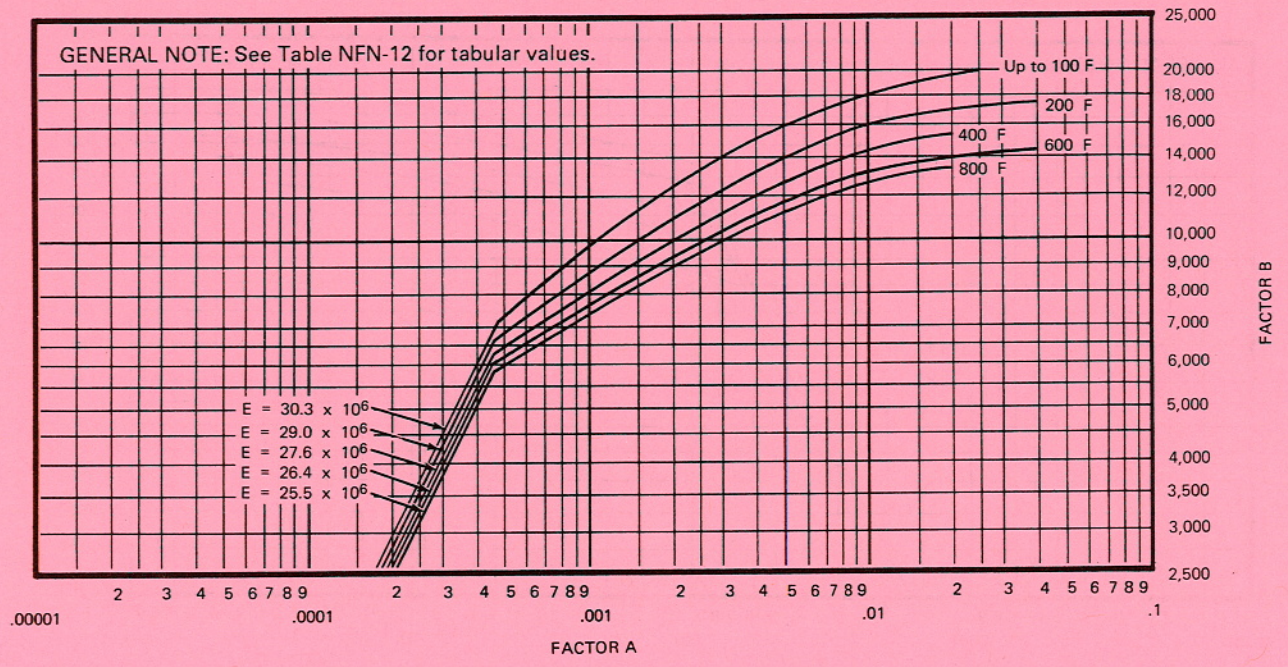
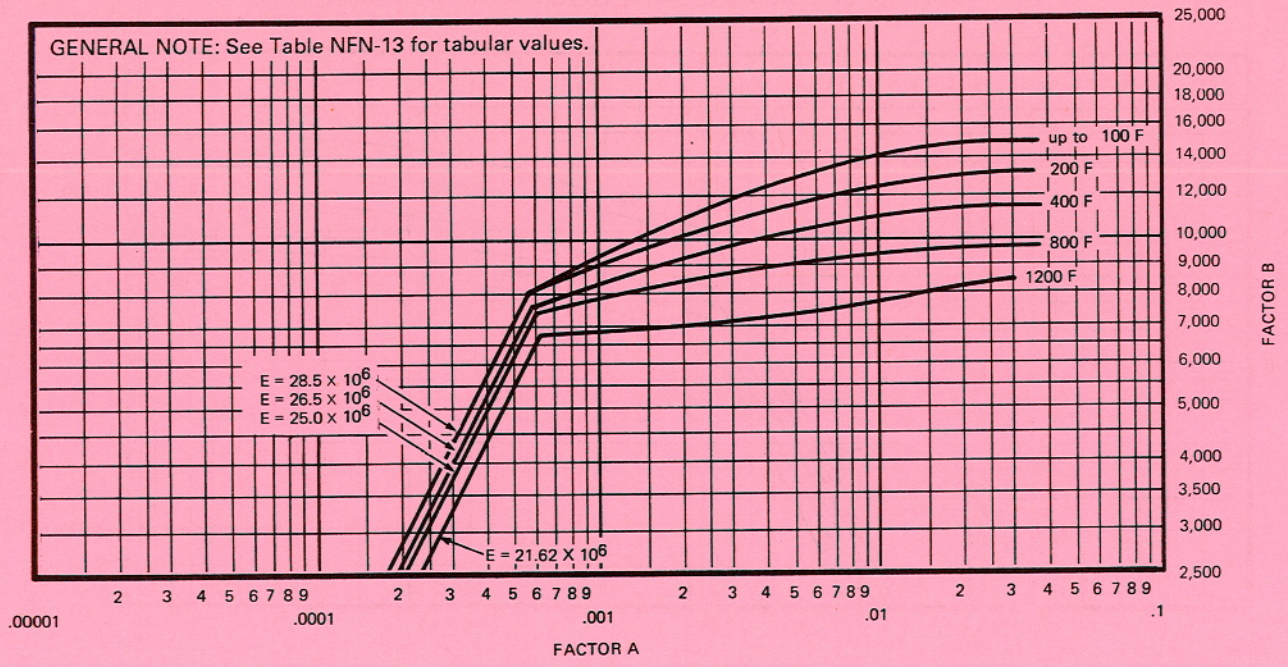
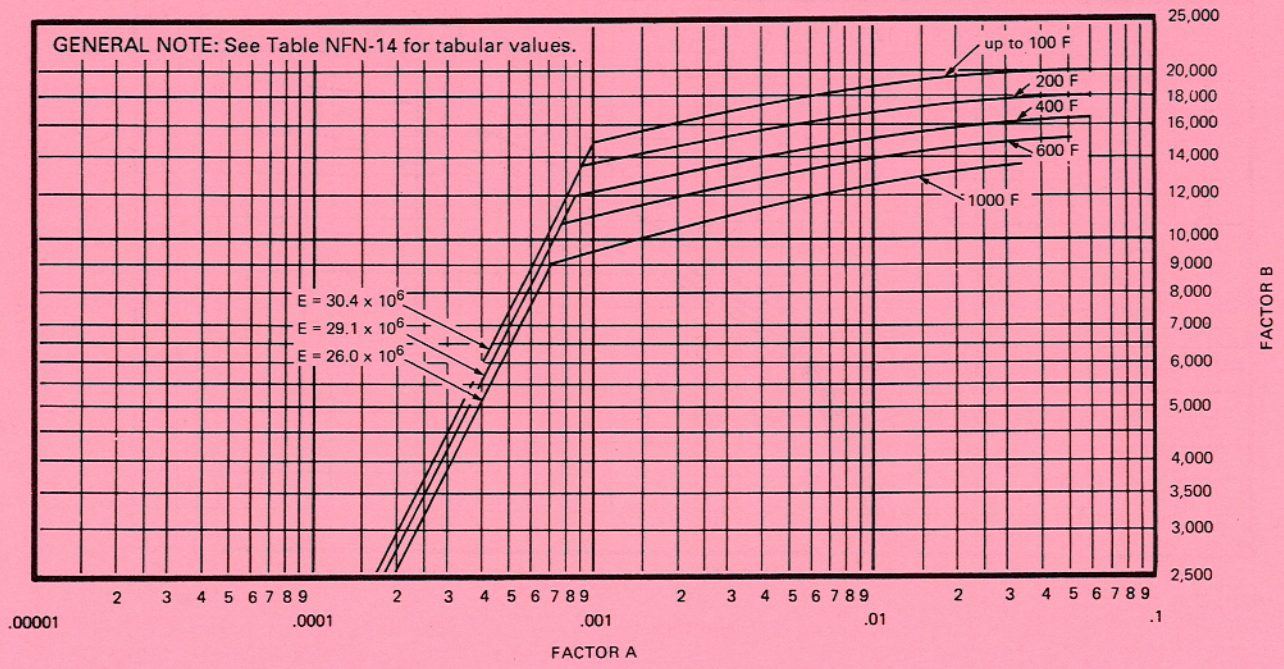


FIG. NFN-13 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR NICKEL–IRON–CHROMIUM–SILICON ALLOY N08330 A08



A08 FIG. NFN-14 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR NICKEL–CHROMIUM–MOLYBDENUM ALLOY N06455



A08 FIG. NFN-15 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR NICKEL–MOLYBDENUM ALLOY N06002

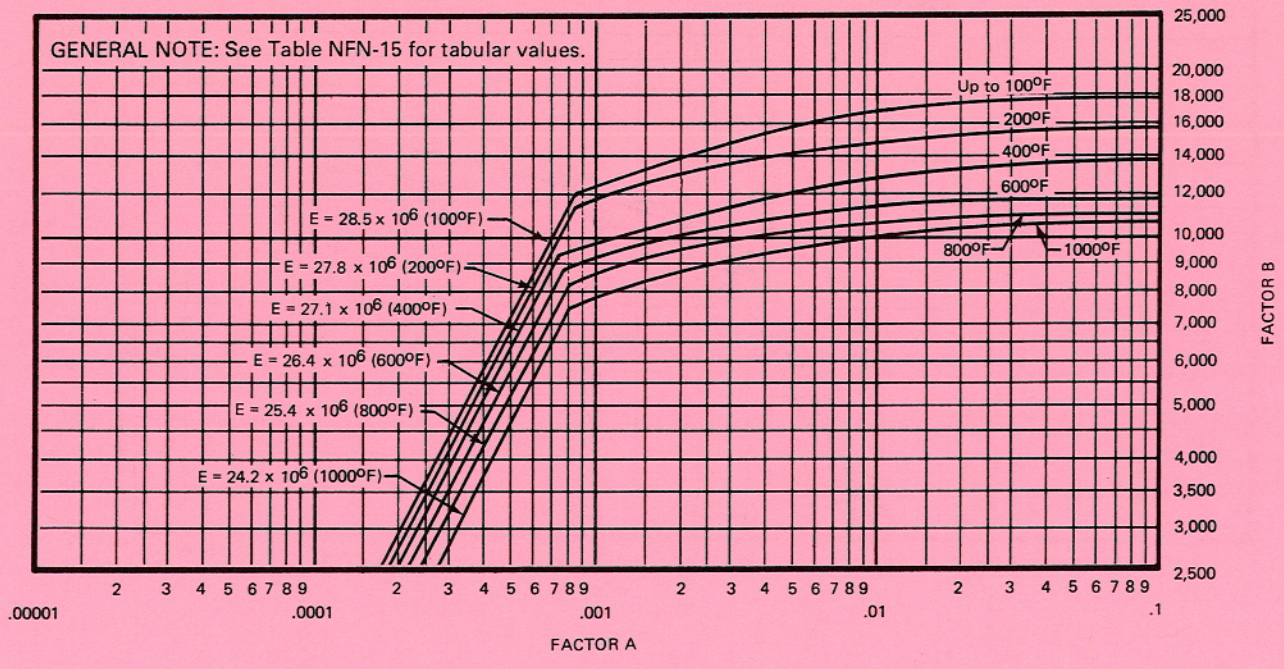


FIG. NFN-16 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR NICKEL–MOLYBDENUM ALLOY N10665 A08

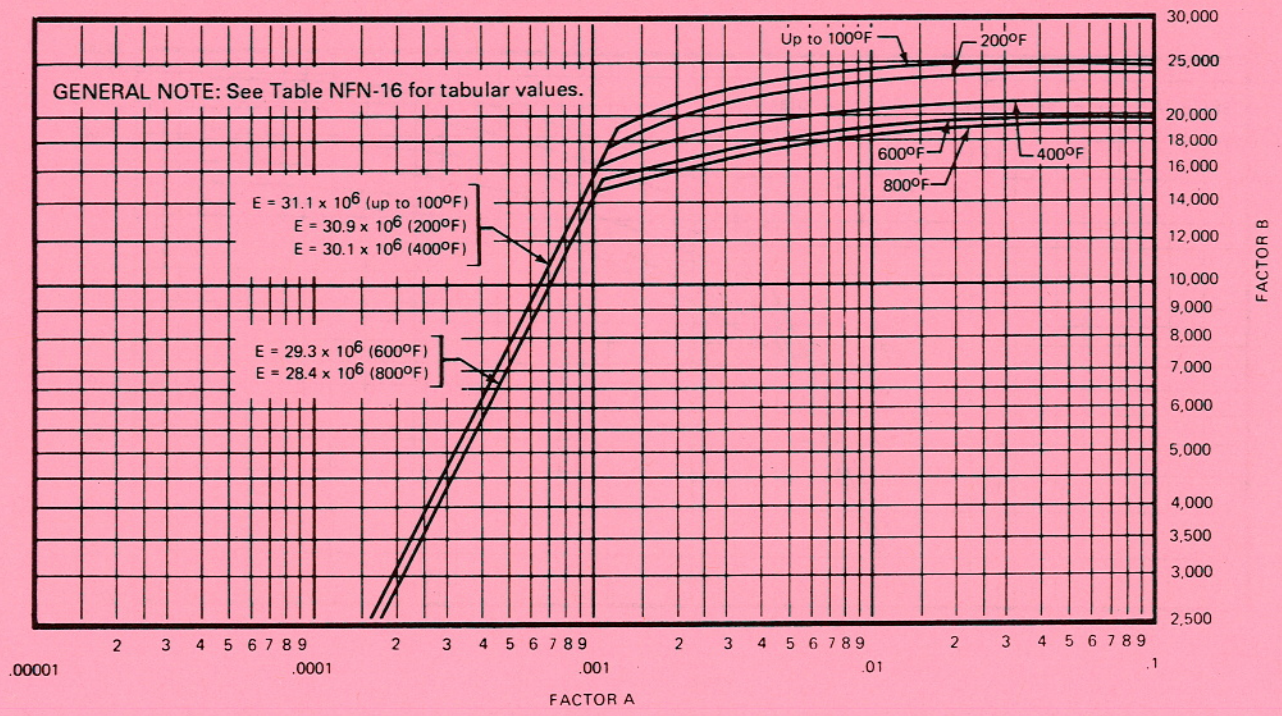
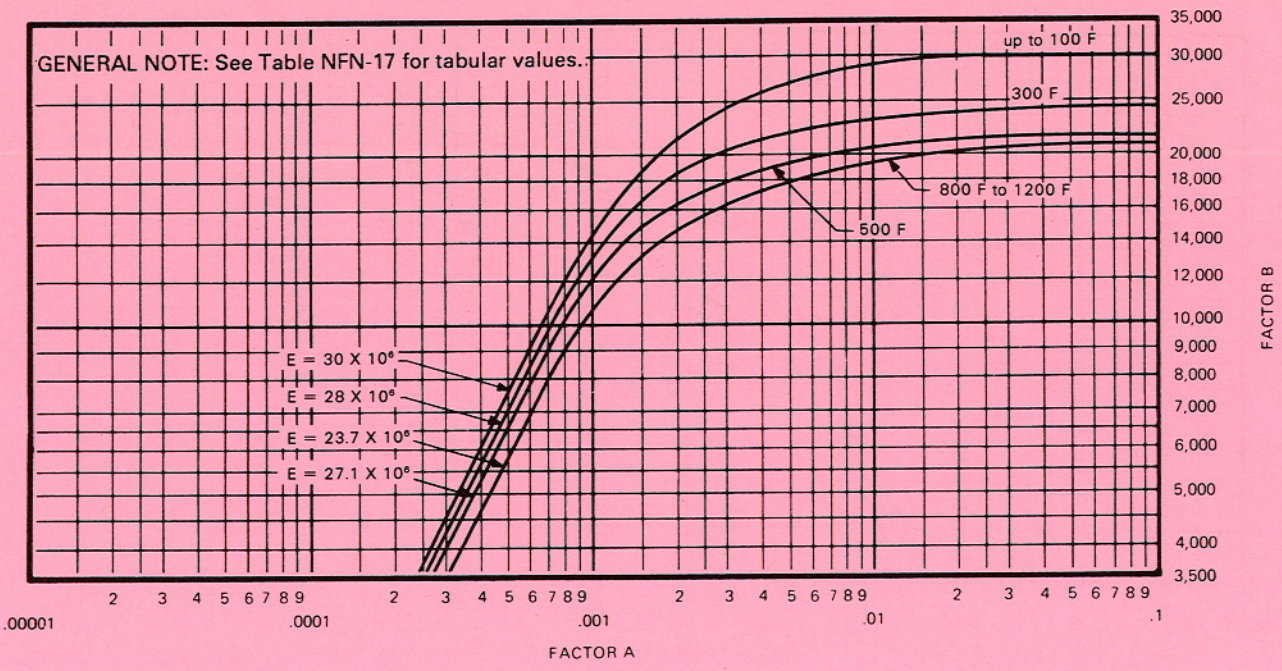
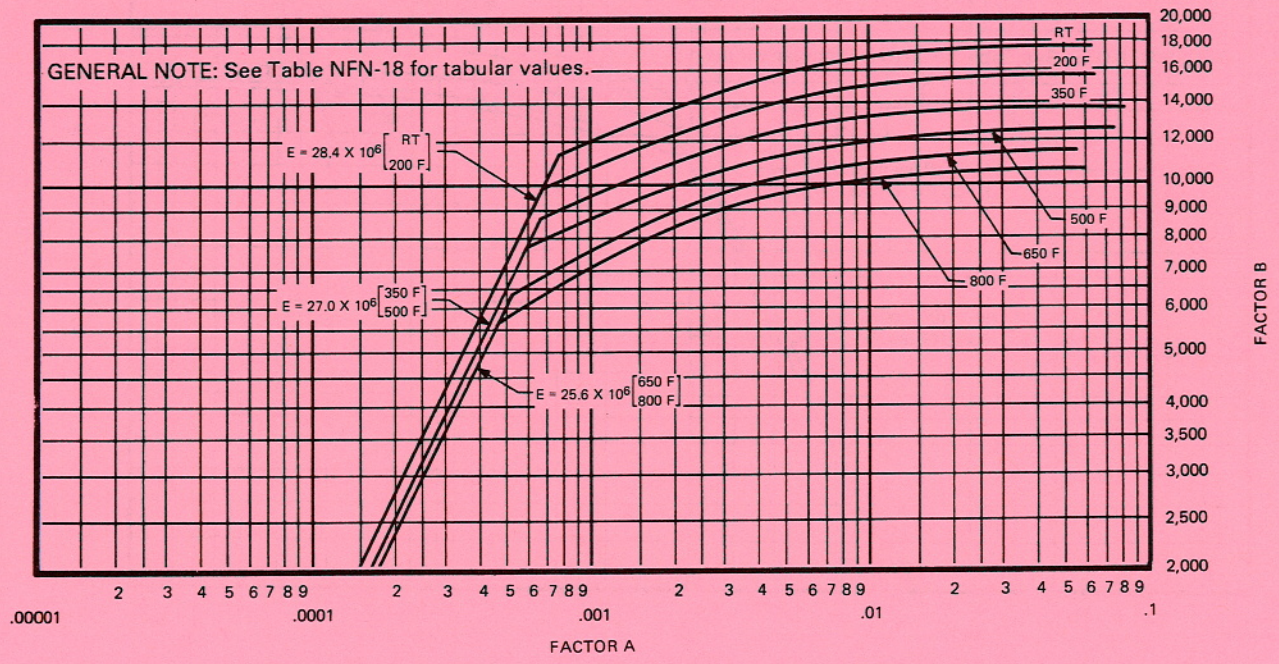


FIG. NFN-17 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ANNEALED NICKEL–CHROMIUM–MOLYBDENUM–COLUMBIUM ALLOY N06625 (SB-443, SB-444, AND SB-446) A08



A08 FIG. NFN-18 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR NICKEL–MOLYBDENUM–CHROMIUM–IRON–COPPER ALLOY N06985 HAVING A MINIMUM YIELD STRENGTH OF 35 ksi



A08 FIG. NFN-19 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR NICKEL–MOLYBDENUM–CHROMIUM–IRON–COPPER ALLOY N06985 HAVING A MINIMUM YIELD STRENGTH OF 30 ksi

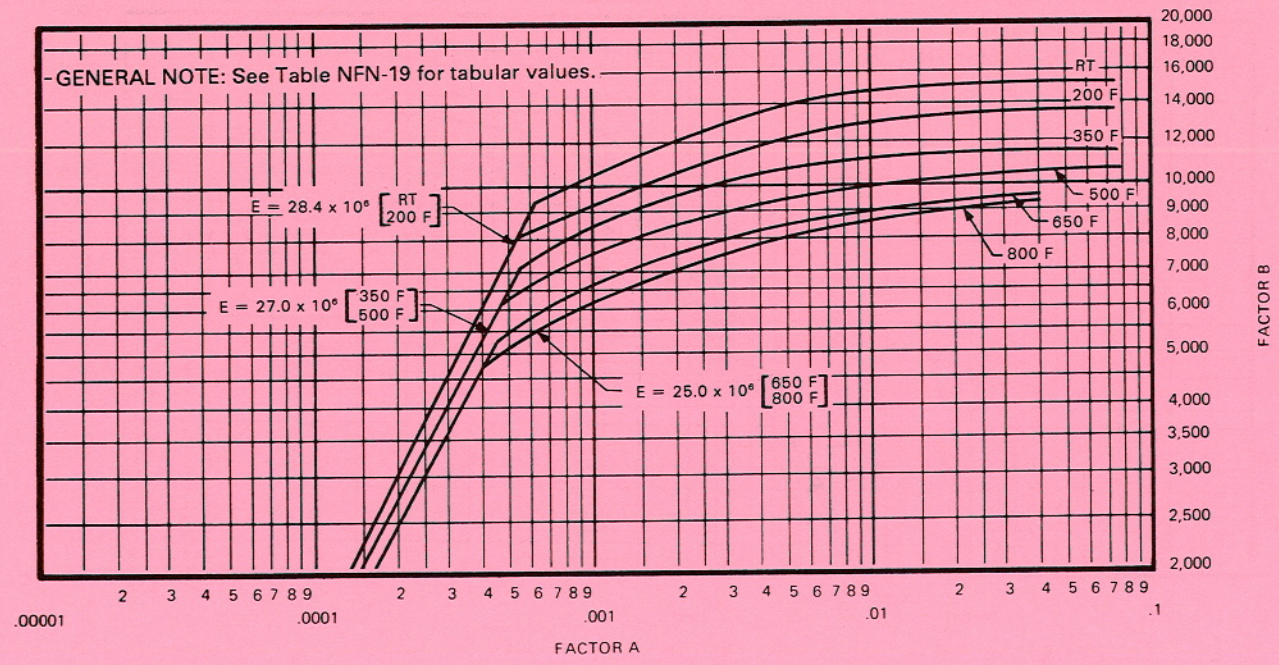


FIG. NFN-20 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR WORK-HARDENED NICKEL [NOTE (10)] A08

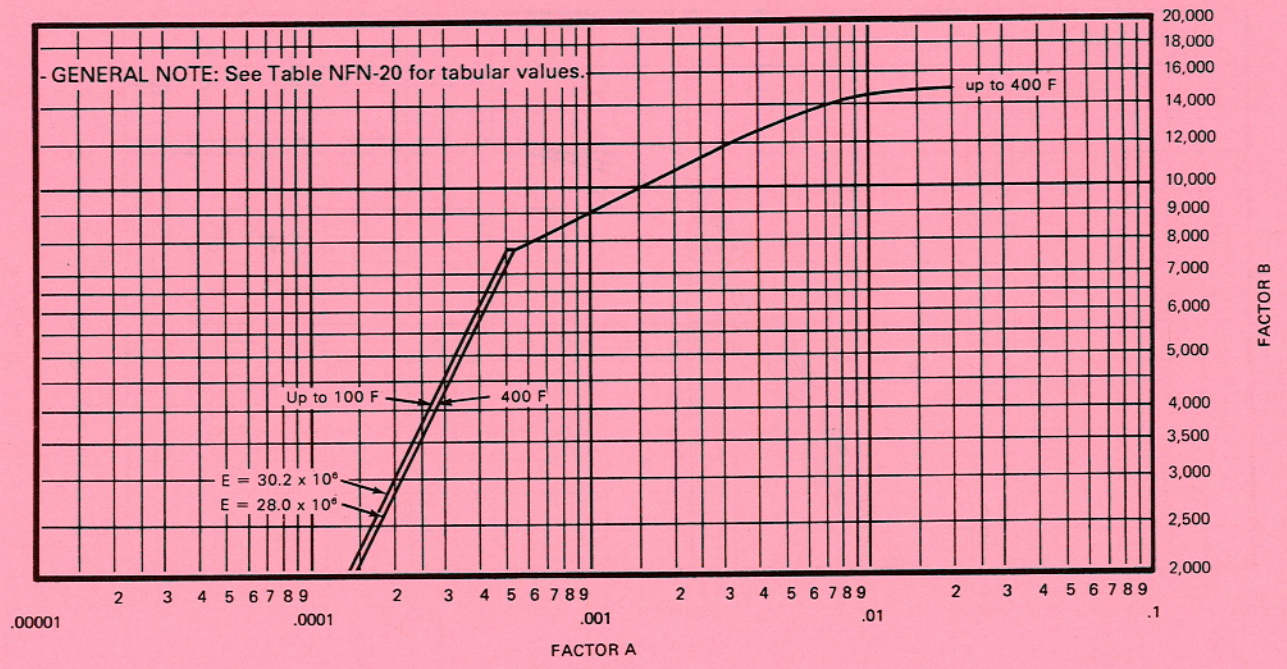
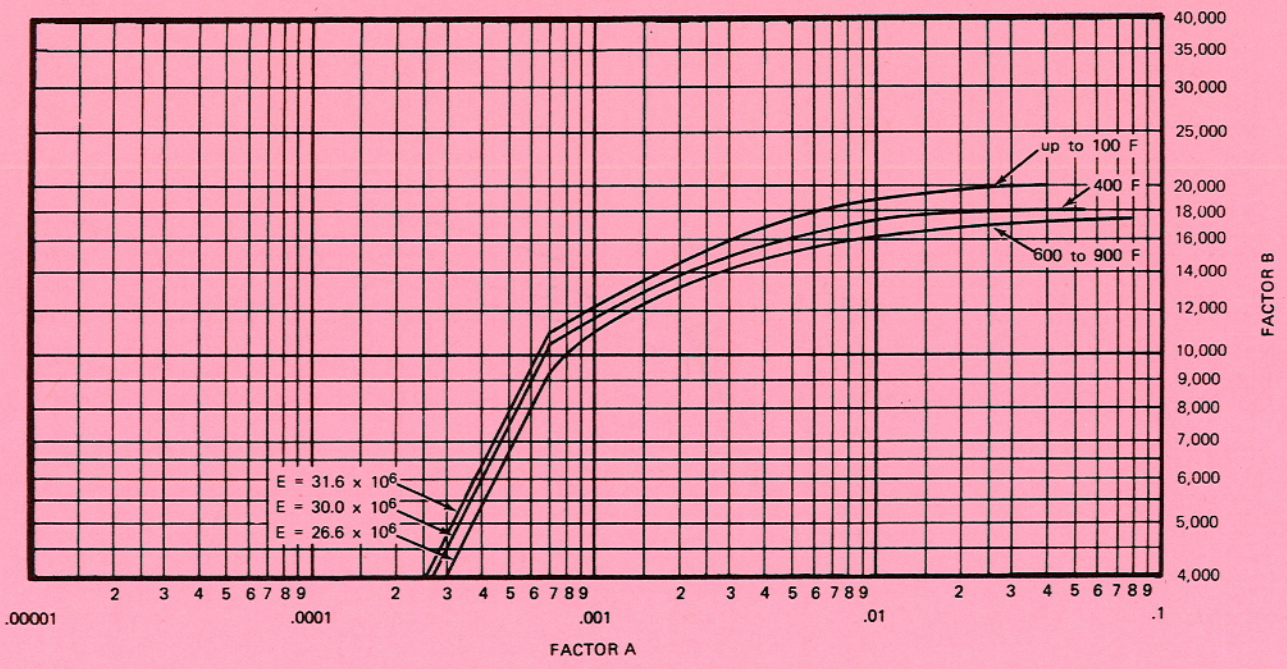
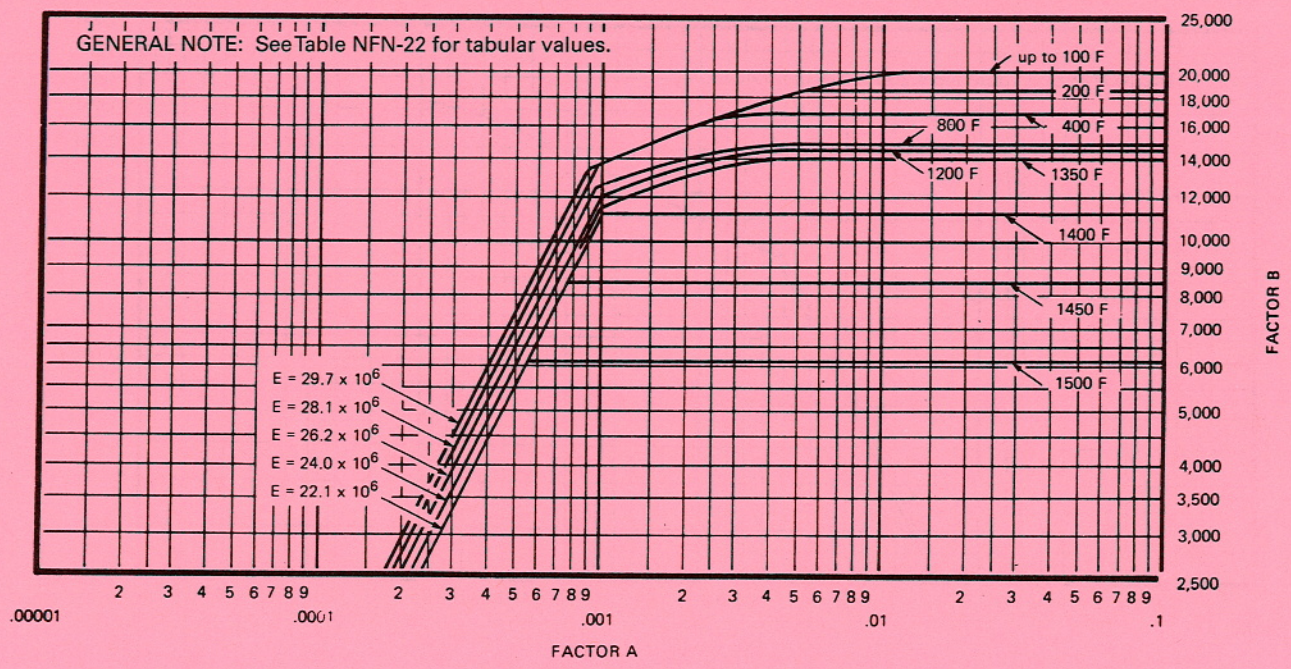


FIG. NFN-21 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR NICKEL–CHROMIUM–IRON ALLOY N06600 (SPECIFIED MINIMUM YIELD STRENGTH 40,000 psi) A08



A08 FIG. NFN-22 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR SOLUTION ANNEALED Ni–Cr–Mo–Cb ALLOY, GRADE 2 N06625 [NOTE (12)]



A08 FIG. NFN-23 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR COLD WORKED NICKEL–IRON–CHROMIUM ALLOY N08800

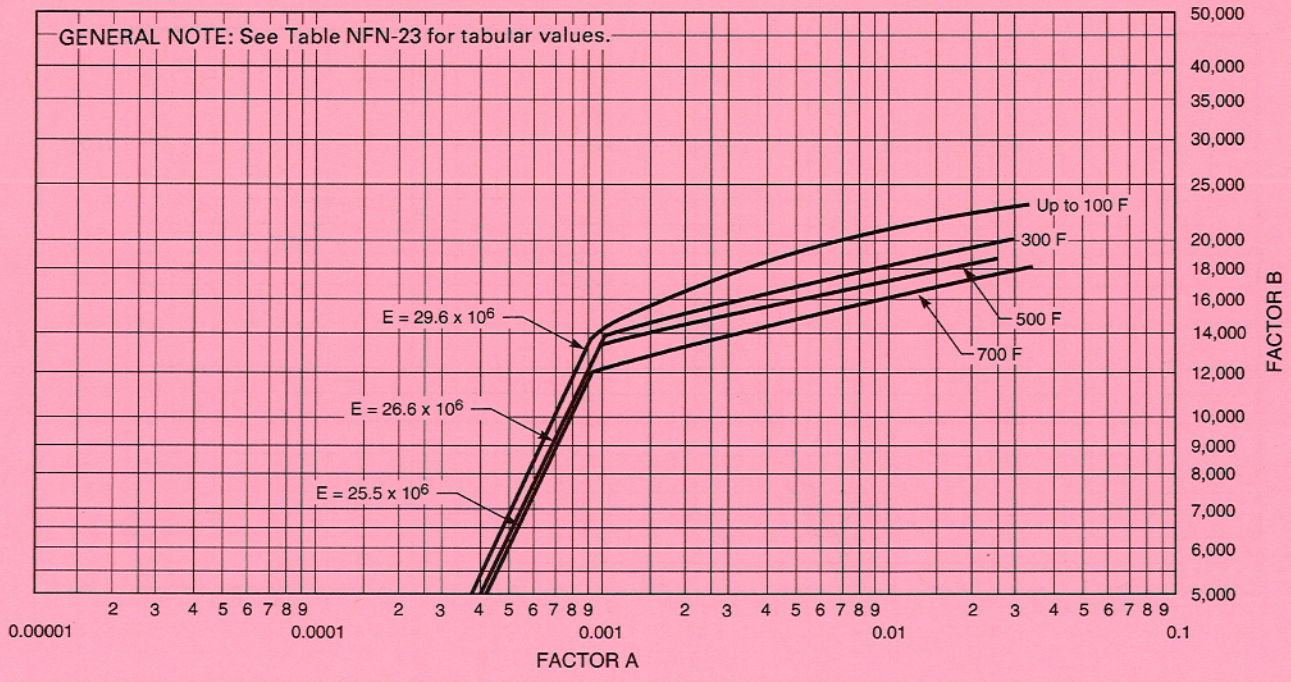


FIG. NFN-24 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR NICKEL ALLOY N06230 A08

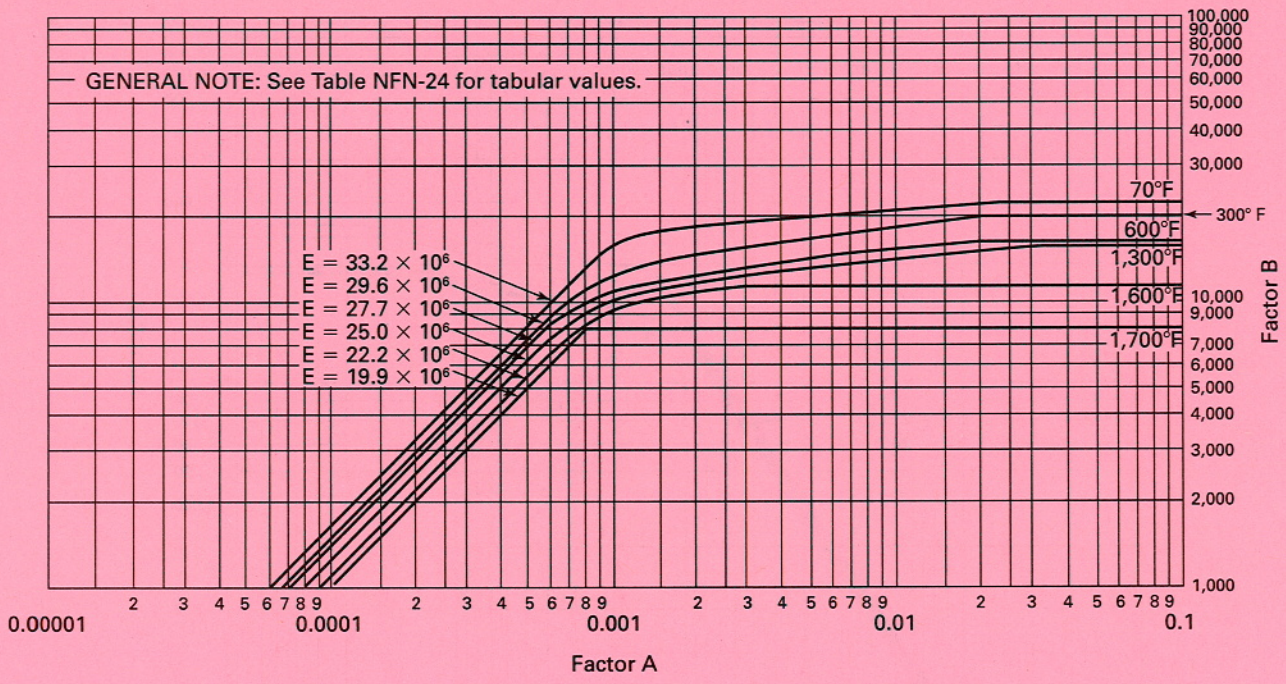
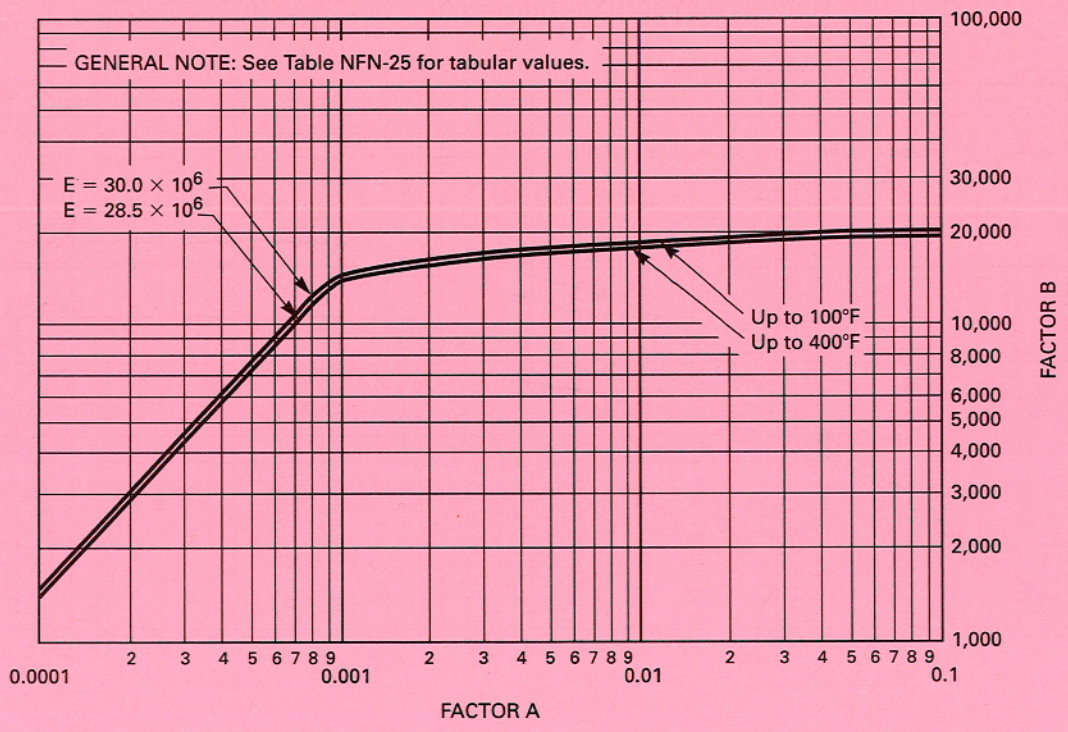
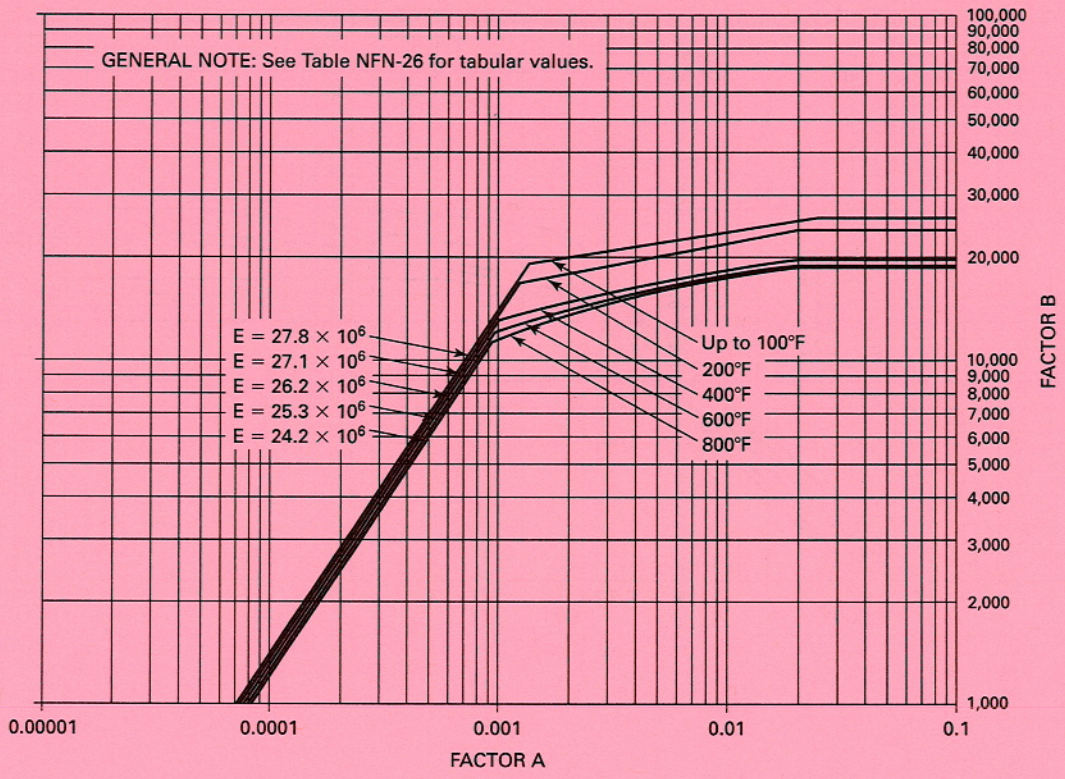


FIG. NFN-25 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR STRESS RELIEVED NICKEL ALLOY N02200 A08



A08 FIG. NFN-26 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ALLOY S31277



07 A08 FIG. NFT-1 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR UNALLOYED TITANIUM GRADE 3 (UNS R50550) [NOTE (13)]

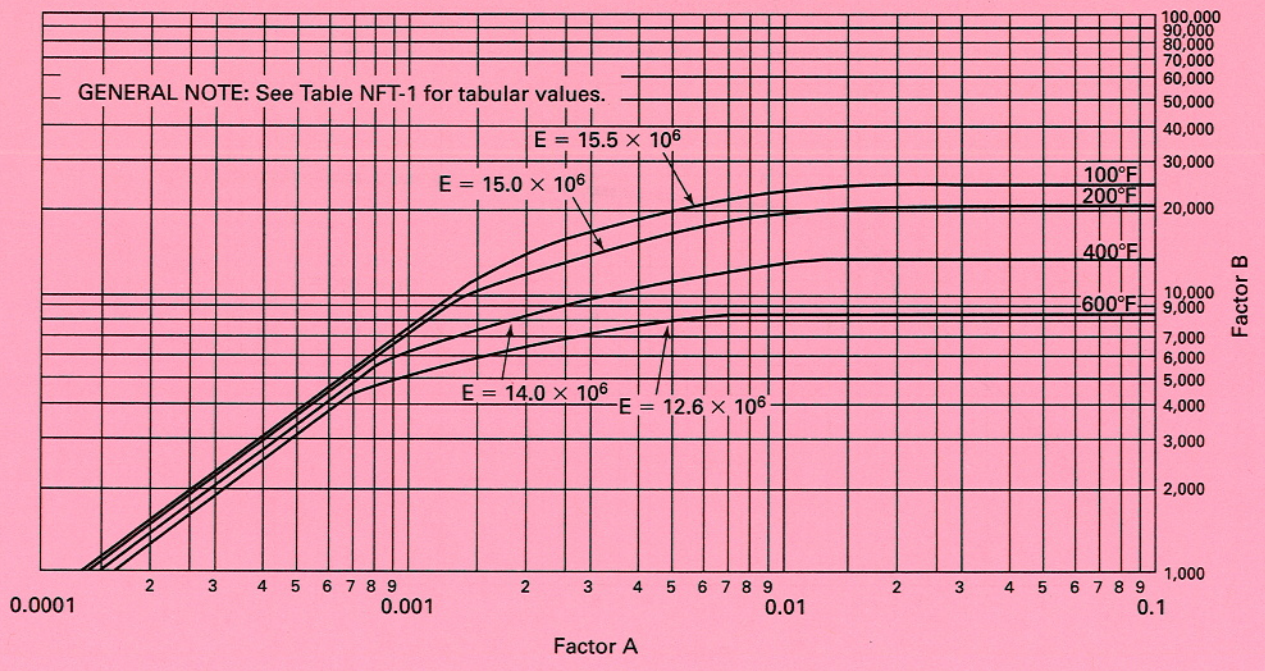


FIG. NFT-2 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR UNALLOYED TITANIUM GRADE 2 (UNS R50400) [NOTE (13)] 07 A08

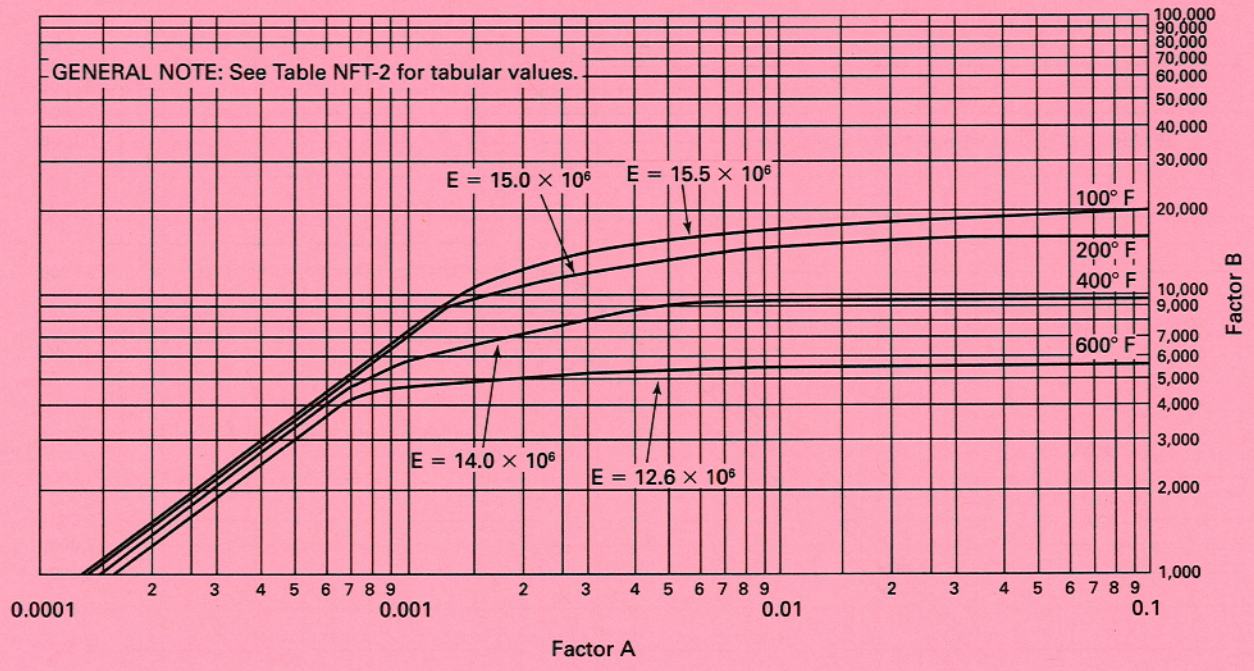


FIG. NFT-3 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR TITANIUM GRADE 1 (UNS R50250) [NOTE (13)] 07 A08

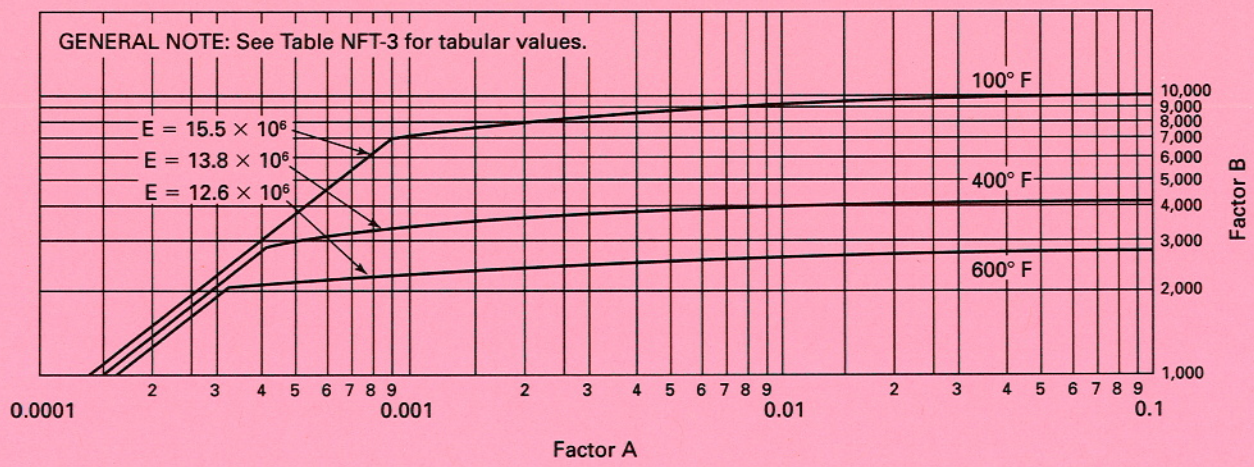


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FIG. NFT-4 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR TITANIUM GRADE 9 ALLOY (UNS R56320) [NOTE (13)]

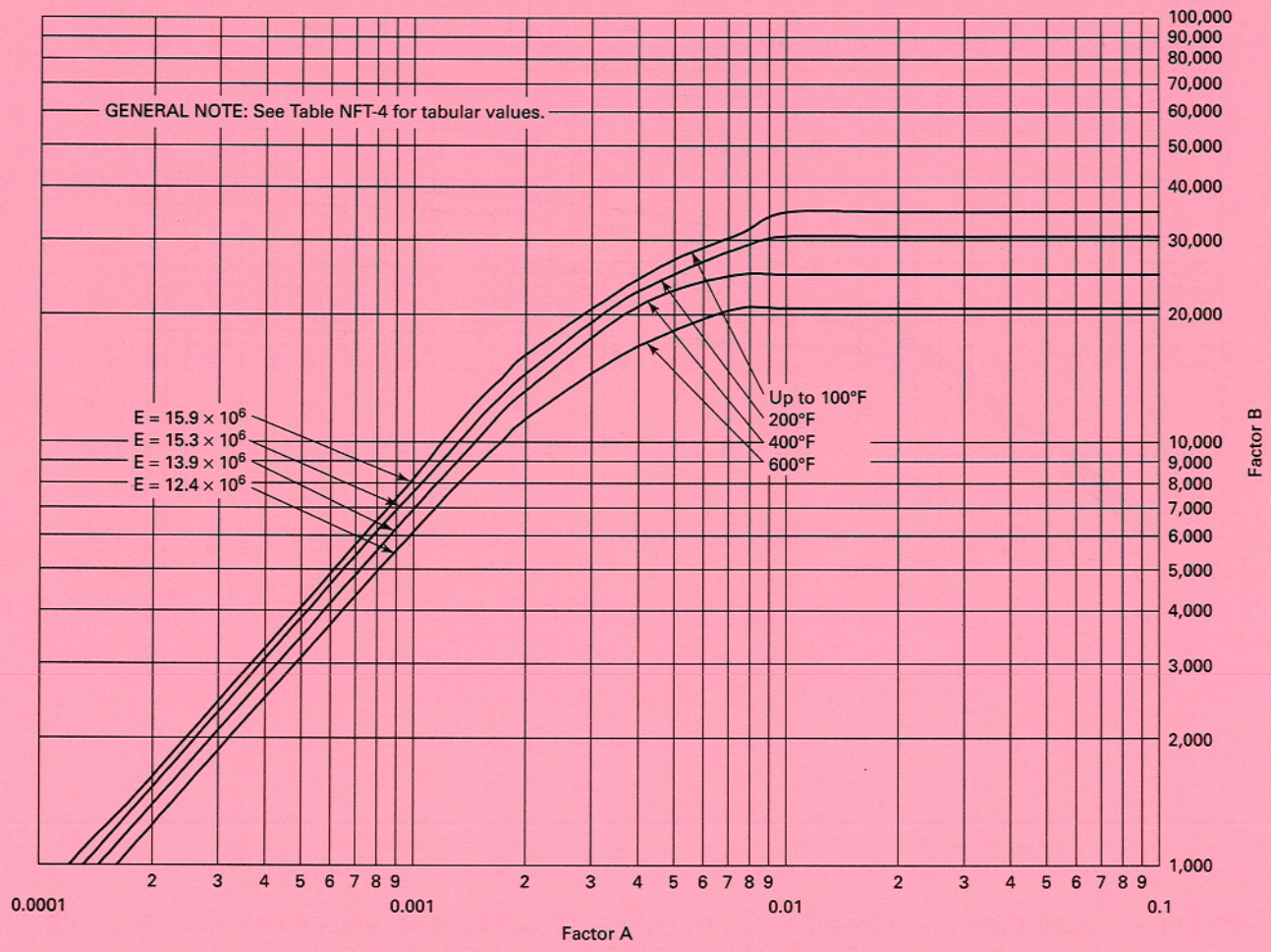

FIG. NFT-5 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR TITANIUM GRADE 12 ALLOY (UNS R53400) [NOTE (13)] 07 A08

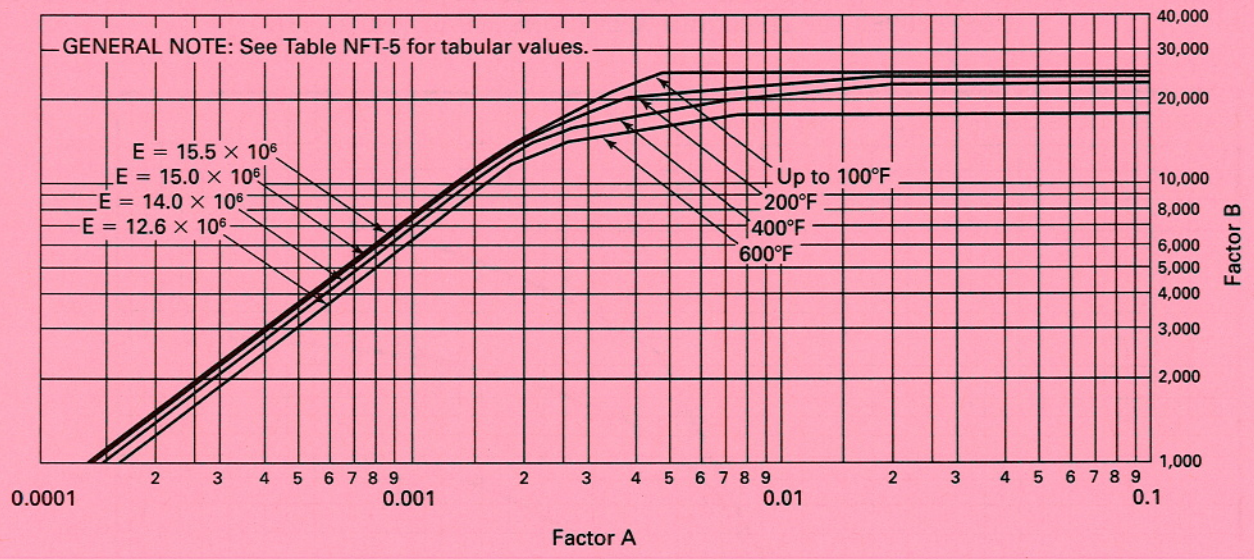

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FIG. NFZ-1 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ZIRCONIUM ALLOY (UNS R60702) [NOTE (13)]

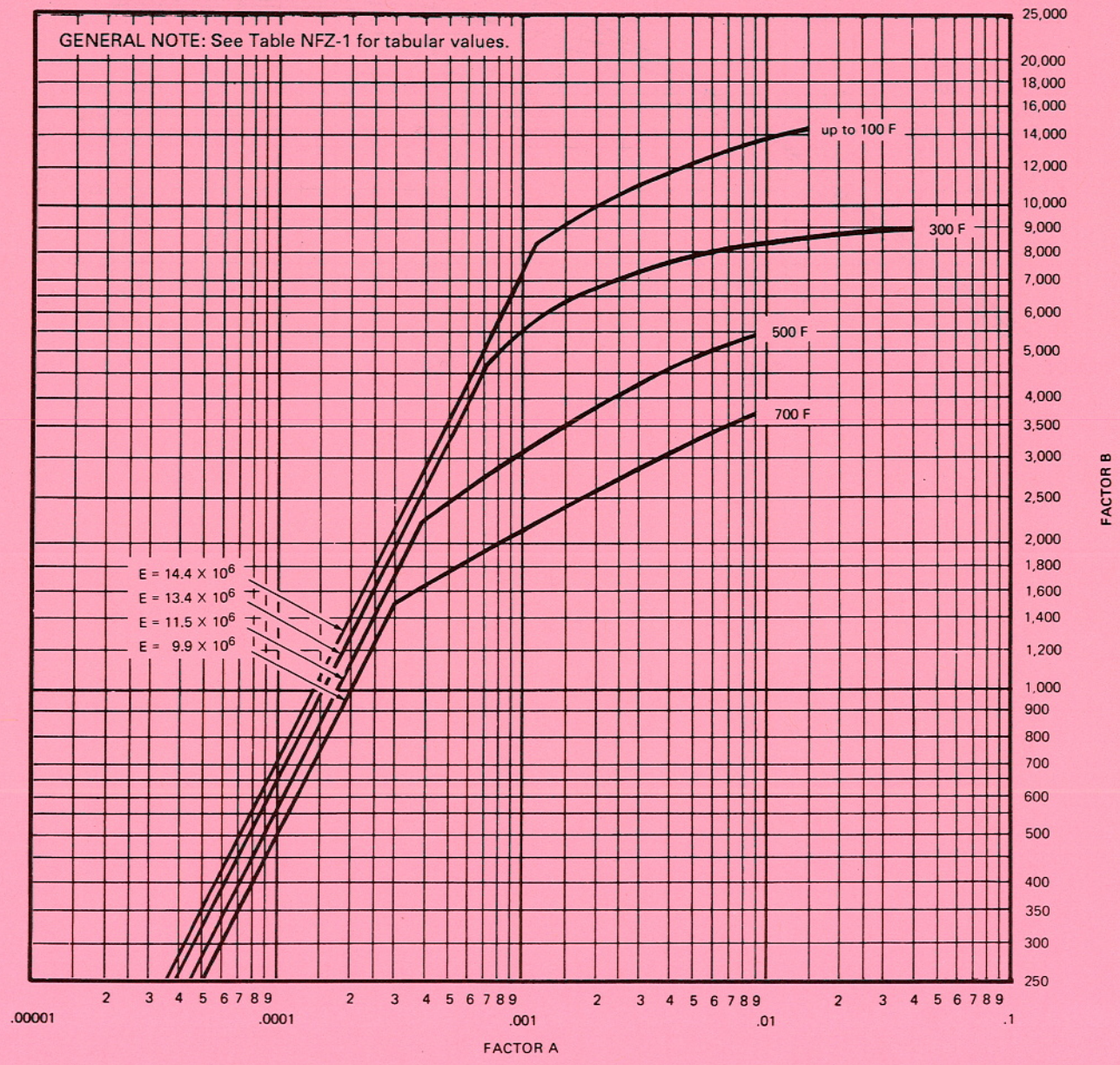
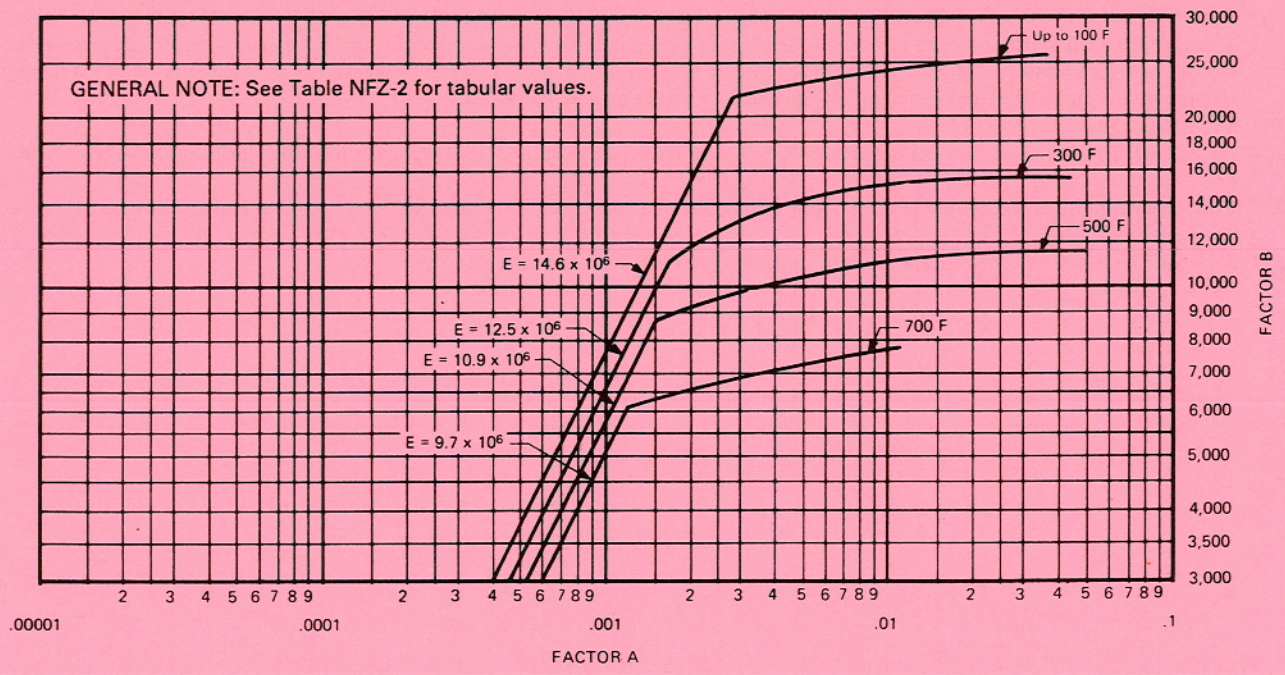


FIG. NFZ-2 CHART FOR DETERMINING SHELL THICKNESS OF COMPONENTS UNDER EXTERNAL PRESSURE DEVELOPED FOR ZIRCONIUM ALLOY (UNS R60705) [NOTE (13)] 07 A08



A08 NOTES TO FIGURES OF SUBPART 3

GENERAL NOTES:

(a) The external pressure charts do not account for reduction of buckling strength due to creep under long-term loads. The effect of creep on buckling shall be considered at temperatures for which allowable stresses are shown italicized in Tables 1A, 1B, 2A, 2B, 5A, and 5B.

(b) The external pressure chart assigned for a particular material is obtained from stress tables 1A, 1B, 2A, 2B, 5A, and 5B under the column for External Pressure Chart No. for that material and is mandatory, with the exception of Tables 5A and 5B.

NOTES:

(1) DELETED.

(2) See Table Y-1 for values of yield strength at design temperature.

(3) When Table Y-1 yield strength values at design temperature are less than 38,000 psi for the material covered by this chart, Fig. CS-2 shall be used.

(4) The external pressure chart does not account for reduction of buckling strength due to creep under long-term loads at temperatures above 1000°F.

(5) DELETED.

(6) DELETED.

(7) DELETED.

(8) For Section III application, maximum use limit is 250°F, except for SB-209/3003/H112/0.250–0.499 and 0.500–3.0 in. use limits are 300°F and 200°F, respectively. Use 300°F curve for interpolation only.

(9) For Section III application, maximum use limit is 250°F, except for SB-210 use limit is 300°F. Use 300°F curve for interpolation only.

(10) Vessels constructed of material covered by this chart must be subjected to an external hydrostatic test pressure of three times the maximum allowable working pressure. Thicknesses determined by this chart are minimum, and greater thickness may be required to withstand the test pressure if the planishing used does not provide an adequate degree of work-hardening.

(11) DELETED.

(12) The external pressure chart does not account for reduction of buckling strength due to creep under long-term loads at temperatures above 1200°F.

07 (13) When unidirectionally produced bar product is utilized for stiffening rings, Factor A, elastic or inelastic, shall be multiplied by 1.1 to account for reduced stiffness.

(14) Extrapolation is not permitted except as explicitly allowed by the Construction Code.

TABLE G
TABULAR VALUES FOR FIG. G

D_o/T	L/D_o	A	D_o/T	L/D_o	A	D_o/T	L/D_o	A	D_o/T	L/D_o	A	D_o/T	L/D_o	A	D_o/T	L/D_o	A
4	2.2	0.959 −01	8	3.0	0.212 −01	20	0.8	0.203 −01	30	3.0	0.246 −02	50	6.0	0.548 −03	80	4.0	0.424 −03
	2.6	0.884		4.0	0.192		1.0	0.156		4.0	0.177		7.0	0.502		6.6	0.241
	3.0	0.839		5.0	0.184		1.2	0.127		4.4	0.161		8.0	0.478		8.0	0.205
	4.0	0.783		7.0	0.179		2.0	0.713 −02		5.0	0.147		10.0	0.458		10.0	0.186
	5.0	0.759		10.0	0.176		3.0	0.446		6.0	0.136		12.0	0.449		14.0	0.176
	7.0	0.739		20.0	0.174		3.4	0.388		7.0	0.130		16.0	0.444		30.0	0.172
	10.0	0.729		50.0	0.174		4.0	0.342		10.0	0.125		40.0	0.440		50.0	0.172
	30.0	0.720					5.0	0.308		30.0	0.122		50.0	0.440			
	50.0	0.720	10	0.56	0.964 −01		7.0	0.287		50.0	0.122				100	0.05	0.741 −01
				0.7	0.720		10.0	0.280				60	0.074	0.954 −01		0.07	0.398
5	1.4	0.929 −01		1.0	0.463		40.0	0.275	40	0.12	0.864 −01		0.10	0.556		0.10	0.220
	1.6	0.802		1.2	0.371		50.0	0.275		0.2	0.385		0.14	0.323		0.14	0.133
	2.0	0.658		2.0	0.201					0.3	0.222		0.2	0.193		0.20	0.831 −02
	2.4	0.586		2.4	0.165	25	0.2	0.877 −01		0.4	0.155		0.4	0.812 −02		0.40	0.364
	3.0	0.532		3.0	0.139		0.3	0.484		0.6	0.958 −02		0.6	0.510		0.5	0.283
	4.0	0.494		4.0	0.124		0.5	0.250		0.8	0.691		0.8	0.371		0.8	0.170
	5.0	0.478		5.0	0.118		0.8	0.143		1.0	0.539		1.0	0.291		1.0	0.134
	7.0	0.465		7.0	0.114		1.0	0.111		1.2	0.441		2.0	0.138		2.0	0.641 −03
	10.0	0.459		10.0	0.112		1.2	0.902 −02		2.0	0.252		3.0	0.886 −03		4.0	0.305
	30.0	0.454		16.0	0.111		2.0	0.508		4.0	0.117		4.0	0.645		6.0	0.195
	50.0	0.453		50.0	0.111		3.0	0.323		5.0	0.912 −03		6.0	0.409		8.0	0.142
							3.4	0.278		6.0	0.804		7.0	0.364		10.0	0.124
6	1.2	0.837 −01	15	0.34	0.968 −01		4.0	0.235		7.0	0.756		8.0	0.341		14.0	0.114
	1.6	0.584		0.4	0.770		4.4	0.219		8.0	0.731		10.0	0.322		25.0	0.110
	2.0	0.469		0.6	0.453		5.0	0.204		10.0	0.708		14.0	0.310		50.0	0.110
	2.4	0.411		1.0	0.244		6.0	0.191		16.0	0.692		40.0	0.306			
	3.0	0.369		1.2	0.197		7.0	0.186		40.0	0.688		50.0	0.306	125	0.05	0.480 −01
	4.0	0.341		2.0	0.109		10.0	0.180		50.0	0.688					0.06	0.344
	5.0	0.329		2.4	0.890 −02		30.0	0.176				80	0.054	0.990 −01		0.08	0.210
	7.0	0.320		3.0	0.691		50.0	0.176	50	0.088	0.930 −01		0.07	0.608		0.10	0.148
	10.0	0.316		4.0	0.573					0.1	0.782		0.09	0.391		0.14	0.917 −02
	30.0	0.312		5.0	0.534	30	0.16	0.904 −01		0.2	0.263		0.10	0.328		0.2	0.578
	50.0	0.312		6.0	0.516		0.2	0.635		0.3	0.154		0.14	0.196		0.4	0.257
				10.0	0.497		0.3	0.357		0.4	0.108		0.20	0.120		0.6	0.165
8	0.74	0.968 −01		40.0	0.490		0.4	0.246		0.6	0.677 −02		0.24	0.950 −02		0.8	0.121
	0.8	0.875		50.0	0.490		0.6	0.150		0.8	0.490		0.4	0.516		1.0	0.955 −03
	1.0	0.660					0.8	0.108		1.0	0.384		0.6	0.328		2.0	0.459
	1.6	0.372	20	0.24	0.982 −01		1.0	0.838 −02		2.0	0.181		0.8	0.239		4.0	0.220
	2.0	0.285		0.4	0.477		1.2	0.683		4.0	0.842 −03		1.0	0.188		6.0	0.141
	2.4	0.242		0.6	0.286		2.0	0.388		5.0	0.652		2.0	0.895 −03		9.0	0.904 −04

TABLE G (CONT'D)
TABULAR VALUES FOR FIG. G

D_o/T	L/D_o	A	D_o/T	L/D_o	A	D_o/T	L/D_o	A	D_o/T	L/D_o	A	D_o/T	L/D_o	A	D_o/T	L/D_o	A
125	10.0	0.837 −04	200	0.08	0.909 −02	250	2.0	0.163 −03	300	40.0	0.123 −04	500	0.6	0.199 −03	800	0.10	0.682 −03
	12.0	0.770		0.10	0.659		4.0	0.789 −04		50.0	0.122		0.8	0.148		0.12	0.551
	14.0	0.740		0.14	0.421		6.0	0.513					1.0	0.118		0.16	0.398
	20.0	0.713		0.2	0.272		8.0	0.377	400	0.05	0.549 −02		2.0	0.579 −04		0.2	0.312
	40.0	0.704		0.3	0.171		10.0	0.293		0.06	0.417		4.0	0.282		0.4	0.149
	50.0	0.704		0.5	0.976 −03		12.0	0.238		0.08	0.278		6.0	0.185		0.6	0.980 −04
				0.8	0.592		14.0	0.210		0.10	0.208		8.0	0.137		0.8	0.728
150	0.05	0.338 −01		1.0	0.469		16.0	0.196		0.12	0.166		10.0	0.107		1.0	0.580
	0.06	0.244		2.0	0.227		20.0	0.184		0.16	0.118		12.0	0.880 −05		2.0	0.286
	0.08	0.151		4.0	0.110		40.0	0.176		0.2	0.914 −03					4.0	0.140
	0.10	0.108		6.0	0.711 −04		50.0	0.176		0.4	0.429	600	0.05	0.270 −02		5.0	0.112
	0.12	0.833 −02		8.0	0.520					0.6	0.280		0.06	0.208		5.6	0.992 −05
	0.16	0.569		10.0	0.403	300	0.05	0.923 −02		0.8	0.207		0.08	0.142			
	0.2	0.431		12.0	0.338		0.06	0.690		1.0	0.165		0.10	0.108			
	0.4	0.194		14.0	0.309		0.08	0.452		2.0	0.808 −04		0.12	0.868 −03			
	0.6	0.125		16.0	0.295		0.10	0.334		4.0	0.393		0.16	0.624			
	1.0	0.726 −03		20.0	0.283		0.12	0.264		6.0	0.257		0.2	0.486			
	2.0	0.349		40.0	0.275		0.2	0.143		8.0	0.189		0.4	0.231	1000	0.05	0.113 −02
	4.0	0.168		50.0	0.275		0.4	0.666 −03		10.0	0.148		0.6	0.151		0.06	0.891 −03
	6.0	0.108					0.6	0.433		14.0	0.102		0.8	0.112		0.07	0.733
	8.0	0.787 −04	250	0.05	0.129 −01		0.8	0.321		16.0	0.882 −05		1.0	0.894 −04		0.09	0.541
	10.0	0.619		0.06	0.955 −02		1.0	0.254					2.0	0.439		0.12	0.388
	12.0	0.553		0.08	0.617		2.0	0.124	500	0.05	0.370 −02		4.0	0.216		0.16	0.282
	16.0	0.510		0.10	0.452		4.0	0.602 −04		0.06	0.284		6.0	0.141		0.2	0.221
	20.0	0.498		0.14	0.293		6.0	0.393		0.08	0.192		8.0	0.104		0.4	0.106
	40.0	0.489		0.2	0.191		8.0	0.287		0.10	0.145		8.4	0.988 −05		0.7	0.596 −04
	50.0	0.489		0.4	0.881 −03		10.0	0.225		0.12	0.116					1.0	0.414
				0.6	0.572		14.0	0.156		0.16	0.830 −03	800	0.05	0.165 −02		2.0	0.204
200	0.05	0.196 −01		0.8	0.422		16.0	0.142		0.2	0.645		0.06	0.129		4.0	0.101
	0.06	0.143		1.0	0.335		20.0	0.130		0.4	0.305		0.08	0.892 −03		4.2	0.957 −05

GENERAL NOTE: Extrapolation is not permitted except as explicitly allowed by the Construction Code.

NONMANDATORY APPENDICES

NONMANDATORY APPENDIX A
METALLURGICAL PHENOMENA

A-100 GENERAL

The properties of steels and nonferrous alloys are influenced by the processing history, heat treatment, melting practice, and level of residual elements.

A08

A-200 CARBON AND CARBON–MOLYBDENUM ALLOY STEELS

A-220 CREEP-RUPTURE PROPERTIES OF CARBON STEELS

Previous studies suggested that carbon steel produced to a coarse austenitic grain size melting practice exhibited superior creep properties compared to those produced to a fine austenitic grain size melting practice (aluminum treated). However, studies by Glen[1] have shown that the 100,000 hr rupture strengths of steel made to either fine or coarse austenitic grain size melting practices are about the same at temperatures above 850°F. More recent studies have shown that the superiority of the "coarse grain" steels is associated with "free" nitrogen. Once the free nitrogen is removed from solid solution by precipitation, the differences in creep properties are negated. Precipitation of nitrogen may occur prior to service by heat treatment (tempering or postweld heat treatment) or by service at elevated temperatures. The amount of precipitation is dependent on both the temperature and the time at temperature.

In addition to deoxidation practice and heat treatment, the creep and creep-rupture properties of carbon steel are influenced by residual elements. For example, a small addition (0.10%) of molybdenum can markedly increase the strength of carbon steel.

[1] Glen, J., Factors Controlling the Rupture Strength of Carbon Steel, Metallurgical Developments — Carbon Steel, Iron and Steel Institute, Special Report No. 81, 1963.

Because of the superior notch toughness of normalized steel made to a fine austenitic grain size melting practice, it is often desirable to forego any possible creep strength advantage of the steels made to "coarse grain" practice. However, when considering fine austenitic grain size materials, it should be recognized that aluminum-treated steels have been shown to be more prone to graphitization than silicon-killed steels not treated with aluminum.

The existing data base for carbon steels does not permit a quantitative assessment of the various factors affecting the strength of these steels. To a large extent, the existing allowable stresses are based on service experiences rather than on individual test data.

A-240 GRAPHITIZATION AND SPHEROIDIZATION OF CARBON AND CARBON–MOLYBDENUM STEELS

In the boiler and pressure vessel industry, prolonged exposure of carbon and low alloy steel components to temperatures exceeding 800°F can result in several kinds of microstructural deterioration; for example, creep cavitation, carbide coarsening, spheroidization, and, less commonly, graphitization.

Graphitization is essentially confined to carbon steel (C–Mn, C–Si, and C–Mn–Si) and to carbon–molybdenum steel (C–$\frac{1}{2}$Mo) exposed to service temperatures above about 800°F to 875°F. Graphitization occurs when iron carbide that is mainly in the pearlite phase decomposes into the true equilibrium structure of ferrite (nearly pure iron) and graphite. The formation of graphite particles or nodules, if dispersed throughout the metal, is not considered a problem, because there is no aligned plane of weakness. However, if they form in a continuous plane, the resulting embrittled material can fail catastrophically due to the unfavorable alignment of the graphite, even at ASME

Code-acceptable stress levels after very long times. The two regions most prone to the unfavorable alignment are weld heat-affected zones (HAZ) and cold-worked areas. During welding, decomposition of the pearlite phase tends to become unstable in the portion of the HAZ heated above the lower transformation temperature of approximately 1340°F, setting the stage for subsequent graphitization in a narrow aligned band [1]. Cold work can occur in bends, in tubes straightened with a rotary straightener at the tube mill (spiral pattern of cold work), or from significant dings to the surface, again creating planes for formation of preferentially aligned graphite.

Carbide spheroidization is also a mechanism of pearlitic decomposition where the iron carbides coarsen from a lamellar shape to a dispersed spheroid shape. Spheroidization occurs more frequently than graphitization and is less deleterious to the material properties. In some cases, a 30% loss in strength can occur due to spheroidization, but failure is not likely to occur except under very high applied stresses [2]. Graphitization and spheroidization are competing processes, with graphitization being preferred at temperatures below about 1030°F and spheroidization favored at higher temperatures [1, 3, 4]. It is important to note that this generalization does not always apply, because of the complexities associated with steel composition, heat treatment, and melting practice, which change the temperature or even the tendency toward spheroidization and graphitization.

It was formerly believed that the deoxidation practice of either silicon or aluminum killing affected the propensity toward graphitization, with aluminum-killed steels being more vulnerable. The role of deoxidation practice is now thought to be of secondary importance.

Researchers have developed ranking methods to metallographically categorize the severity of graphitization [5, 6, 7].

Steels with chromium of 0.5% or higher have been shown to be immune to graphitization. Thus, there is no issue with graphitization of the chromium–molybdenum (Cr–Mo) alloy steels used in boilers and pressure vessels.

The following references, which were previously cited, provide additional information:

[1] *Boiler Tube Failures: Theory and Practice, Volume 3: Steam Touched Tubes,* EPRI TR-105261-V3.

[2] *Damage Mechanisms Affecting Fixed Equipment in the Fossil Electric Power Industry,* WRC Bulletin 490, April, 2004.

[3] *Embrittlement of Components in Fossil Fueled Power Plants,* EPRI 1004515, 2003.

[4] W. L. Hemingway, "The Study of Graphitization, Edwards Valve Co.," 1952.

[5] Thielsch, "Interpreting Graphitization for Power Engineer," Combustion, October 1954.

[6] "Defects and Failures in Pressure Vessels and Piping," H. Thielsch, 1965.

[7] J. R. Foulds and R. Viswanathan, "Graphitization of Steels in Elevated Temperature Service," *Microstructures and Mechanical Properties of Aging Materials,* The Minerals, Metals, and Materials Society, 1993, pp. 61–69.

A-250 TEMPER EMBRITTLEMENT OF LOW ALLOY STEELS

Certain types of low alloy steels (Ni–Cr, Ni–Cr–Mo, and Cr–Mo) and welds are susceptible to temper embrittlement. Temper embrittlement occurs when the material is either cooled slowly through the temperature range of 1100°F to 600°F or is exposed for a prolonged time in that temperature range. The rate of temper embrittlement is a function of temperature, increasing as the temperature increases. Temper embrittlement may occur during fabrication of a pressure component or during prolonged service exposure in that temperature range. Studies indicate that P, As, Sb, Sn, Mn, and Si can produce some degree of temper embrittlement in Ni–Cr, Ni–Cr–Mo, and Cr–Mo steels. Of these, the trace elements P, As, Sb, and Sn appear to be the most damaging. The embrittling mechanism involves segregation of the elements within the grain boundaries. Temper embrittlement is manifested by a large increase of the ductile-to-brittle transition temperature and fracture along prior austenite grain boundaries. The upper shelf energy value generally is not affected.

Temper embrittlement is reversible. Severely embrittled material may be de-embrittled by heating for a short time above the embrittling temperature range, followed by quenching. This is not a permanent solution and re-embrittlement with additional time in the temper embrittling range will occur.

The usual method of reducing or avoiding temper embrittlement is to restrict the amounts of trace elements that may be present in the steel and to reduce the Mn and Si contents. Commonly used parameters for limiting these elements in 2¼Cr–1Mo steels are as follows:

(a) for wrought material product forms

$$J = (\text{Si} + \text{Mn})(\text{P} + \text{Sn})(10^4) \leq 150$$

where Si, Mn, P, and Sn are in wt %;

(b) for weld metal

$$X = (10\text{P} + 5\text{Sb} + 4\text{Sn} + \text{As})/100 \leq 15$$

where P, Sb, Sn, and As are in ppm.

In addition, some users find it beneficial to impose limitations on Cu and Ni for base metals and for welds, e.g., Cu 0.20% maximum and Ni 0.30% maximum.

A-300 HIGH ALLOY AND STAINLESS STEELS

A-310 STRUCTURE

The composition, mechanical working, heat treatment cycle, and the solidification rate in castings and weld metal largely determine the degree to which ferrite, carbide, and sigma phases are formed in austenitic stainless steels. The type of structure and the thermal and mechanical treatment it receives are determining factors in its resistance to intergranular corrosion, stress corrosion cracking, and crack susceptibility, and in its ductility and toughness.

A-320 INTERGRANULAR CORROSION

When austenitic steels are held for a sufficient time between 800°F and 1600°F, chromium carbide tends to precipitate preferentially at austenite grain boundaries. This type of precipitation is referred to as sensitization. Intergranular corrosion takes place when a sensitized material is exposed to a sufficiently strong corrosive medium for a long enough time.

Methods for combating intergranular corrosion include the following:

(a) An anneal at 1850°F to 2050°F followed by rapid cooling through the sensitization range. Subsequent operation of a vessel in the sensitization range may resensitize the material.

(b) Stabilizing with columbium, titanium, or tantalum. These elements have a strong affinity for carbon and, in sufficient quantities, prevent the precipitation of chromium carbides.

(c) Use of types of steel having a low enough carbon content that the chromium depletion at the grain boundaries is kept within safe limits.

A-330 STRESS CORROSION CRACKING

Stress corrosion cracking is a mechanical–environmental failure process in which sustained tensile stress and chemical attack, primarily in aqueous environments, combine to initiate and propagate cracks in susceptible materials. Following an appropriate exposure time, stress corrosion cracking can proceed along the grain boundaries of the material and that is known as *intergranular stress corrosion cracking*. Stress corrosion cracking can also occur through the grains and that is referred to as *transgranular stress corrosion cracking* (TGSCC).

The sustained tensile stress may originate during the manufacturing process or during operation. During manufacturing, residual tensile stresses may result from welding, heat treating (including the quenching process), surface finishing, and cold forming. During plant start-up, steady-state operation, and shutdown, there will be additional stresses introduced. These collective tensile stresses contribute to the stress corrosion cracking mode of failure.

Most ferrous and nonferrous materials are susceptible to some form of stress corrosion cracking. For ferrous materials, susceptibility includes carbon and low alloy steels, austenitic stainless steels, ferritic stainless steels (to a lesser extent), and the higher-strength martensitic and precipitation-hardened stainless steels. Stress corrosion cracking has also been experienced in aluminum alloys, copper alloys, nickel-base alloys, and titanium alloys. The chemical species leading to stress corrosion cracking in these various alloy systems are delineated in various authoritative sources, such as *ASM Metals Handbook, Failure Analysis and Prevention, Volume 10, 8th Edition* (pages 205–227) and the publications listed in A-440. The source of the offending chemical species can be internal or external from the bulk fluid, or from condensate, insulation, atmosphere, and elsewhere, and may be concentrated by crevices or other concentrating mechanisms, such as alternate wetting and drying cycles, etc.

Methods of reducing susceptibility to stress corrosion cracking include the selection of an alloy that is more resistant to cracking. For some materials, the susceptibility is reduced by controlling welding heat input and the heat treating processes; minimizing cold working during forming and component assembly; minimizing surface grinding; using shot-peening, coating, or other surface-conditioning treatments to negate surface residual tensile stresses; and ensuring that harmful chemical species are held to acceptable levels.