INDEX

A

Abrasion, allowance for UG-25, UG-26
Accessibility, pressure vessels M-2
Access openings UG-46
Allowance for corrosion, erosion, or abrasion UG-25, UG-26, UB-13, UCS-25, UCL-25
Applied lining, tightness UCL-51
Approval of new materials ..... UG-4, App. B
Articles in Section V
  Article 1, T-150 ..... 6-1, 8-1, 12-2
  Article 2 ..... UW-51
  Article 5 12-1
  Article 6 8-1
  Article 7 6-1
Attachments
  lugs and fitting UG-82
  lugs for platforms, ladders, etc. UG-55
  nonpressure parts UW-28, UHT-85
  nozzles UW-16
  pipe and nozzle necks to vessel walls UG-43, UHT-18
  stiffening rings to shell UG-30, UHT-28, UHT-30

B

Backing strip ..... Table UW-12, UW-16, UW-35
Bending stress, welded joints UW-9
Bend test UHA-52
Blind flanges UG-34
Bolted flange connections ..... UG-44, Apps. 2 and Y
  bolt loads 2-5
  bolt stresses ..... App. S
  design of ..... Apps. 2, S, and Y
  flange moments 2-6
  flange stresses ..... 2-7, App. S
  materials ..... UG-4 to UG-13, UCD-12, 2-2
  studs 2-2
  tightness of ..... App. S
  types of attachment 2-4
Bolts ..... UG-12, UCS-10, UNF-12, UCI-12, UCD-12, 2-2, App. S
Braced and stayed surfaces UG-47
Brazed connections for nozzles ..... UB-17 to UB-19
Brazed joints, efficiency of UB-14
  maximum service temperature UB-12
  strength of UB-10
Brazing, cleaning of braced surfaces UB-34
  fabrication by ..... UB-1, UB-30 to UB-37
  filler metal UB-6, UB-15
  fluxes UB-7
  heads into shells UB-16
  operating temperature UB-2
Buttstraps, curvature UB-33
  forming ends of UG-79
  thickness and corrosion allowance UB-13
  welding ends of UB-33

C

Carbon in material for welding UF-5, UCS-5
Cast ductile iron vessels, design UCD-16
  pressure–temperature limitations UCD-3
  service restrictions UCD-2
Castings
  carbon steel UCS-8
  defects UG-24
  impact test UG-84, UHT-6
  inspection UG-24
  quality factor UG-24
  specifications UG-7, UCS-8, UNF-8, UCD-5
Cast iron circular dished heads UCI-35
Cast iron standard parts, small UG-11
Cast iron pipe fittings UCI-3
Cast iron vessels, corners and fillets UCI-37
  head design UCI-32, UCI-33
  hydrostatic test UCI-99
  nozzles and fittings UCI-36
  pressure–temperature limitations UCI-3
Certificate of Authorization for Code Symbol Stamp UG-116
Certification of material UG-93
Certification of Nondestructive Personnel
  magnetic particle examination 6-2
  liquid penetrant examination 8-2
  radiographic examination UW-51
  ultrasonic examination 12-2
Chip marks on integrally forged vessels UF-32
Circumferential joints, alignment tolerance UHT-20

COPYRIGHT American Society of Mechanical Engineers
Licensed by Information Handling Services

assembling UW-9, UB-16
brazing UB-16
vessels subjected to external pressure UG-28
Clad material, inserted strips UCL-33
examination UCL-36
Clad plate. UCL-11
Cleaning of brazed surfaces. UB-34
of welded surfaces. UW-32
Clearance between surfaces to be brazed UB-35
Combination, of different materials UB-5
of methods of fabrication. U-2, UG-17
Computed working pressure from hydrostatic tests. UG-101, UCI-101, UCD-101
Conical heads UG-32, UHT-33, 1-5
Conical sections UHT-19
Connections, bolted flange (*see* Bolted flange connections)
brazed . . . . . UB-19 to UB-21
clamp . . . . . App. Z
expanded UG-43
from vessels to safety valves UG-135
studded UG-43
threaded UG-43
welded UW-15, UW-16, UHT-17, UHT-18
Cooling, after postweld heat treating . . . . . UW-40, UHT-56, Table UHT-56
Corrosion allowance. . . . . UG-16(e), UG-25, UB-13, UCS-25, UCL-25, UHT-25, App. E
Corrosion resistant linings UG-26
Corrugated shells UCS-28
Corrugating paper machinery UF-7
Cover plates. UG-34
on manholes and handholes. UG-46
spherically dished. UG-35, 1-6
Cracking, stress corrosion. UHA-103
Cutting plates UG-76, UW-31, UHT-83
Cylindrical shells, supplementary loading UG-22
thickness. UG-27, UHT-27, UCI-29
transition in UG-36

D

Data Report, Guide for preparation . . . . . App. W
Defects in welded vessels, repair UW-38, UHT-85
Definitions 3-1
Design, brazed vessels UB-9
carbon and low alloy steel vessels UCS-16
cast ductile iron vessels UCD-16
cast iron vessels UCI-16
clad vessels UCL-20
ferritic steel vessels with properties enhanced by heat treatment UHT-16
forged vessels UF-12
high alloy steel vessels. UHA-20
loadings UG-22
multichamber vessels UG-19
nonferrous vessels UNF-16
welded vessels UW-8, UHT-1, UHT-16
Design pressure. UG-21
Diameter exemption U-1
Dimensions, checking of. UG-96
Discharge of safety valve. UG-133, UG-134
Dished heads (*see* Formed heads)
Disks, rupture UG-127
Dissimilar weld metal UG-18, UHA-107, UCL-31
Distortion, of welded vessels. UG-80
supports to prevent UG-27, UG-28
Drainage, discharge from safety and relief valves . . UG-134
of vessels subject to corrosion UG-25, M-2
Drop-weight tests UHT-6

E

Eccentricity of shells UG-80
edges of plates, metal removal from. UHT-83
tapered UW-9
Efficiency, around openings for welded attachments UW-15
welded UW-12
Elasticity, modulus of UF-27
Electric resistance welding UW-12
Ellipsoidal heads. . . UG-32, UG-33, 1-4, UHT-32, UHT-33
Erosion, allowance for UG-25
Etching, of sectioned specimens K-1
solutions for examination of materials K-1
Evaporators U-1
Examination, of sectioned specimens. UW-52
of welded joints UW-51, UW-52, UNF-57, UNF-58, UHT-57, UHT-83
Exemptions, diameter and volume U-1
Expanded connections UG-43
External pressure, tube and pipe. UG-31
External pressure vessels . . . . . UG-28 to UG-30, UG-33, UG-80, UCD-28, UHT-27, UHT-29, UHT-30, UHT-33
allowable working pressure for. UG-28
charts App.5
design of heads for UG-33, UCS-33, UNF-33, UHA-31, UCI-33, UHT-33
joints in shells of. UG-28, UHT-17
reinforcement for openings. UG-37, UHT-17
stiffening rings in shells. . . . . UCS-29, App. L
supports for UG-29, G-1

COPYRIGHT American Society of Mechanical Engineers
Licensed by Information Handling Services

thickness of shell UG-28, UCS-28, UNF-28, UHA-28, UCI-28, UHT-27, UCL-26
reducers UG-36

F

Fabrication, brazed vessels UB-30
carbon and low alloy steel vessels UCS-75
cast ductile iron vessels UCD-75
cast iron vessels UCI-75
clad vessels UCL-30
ferritic steel vessels with tensile properties enchanced by heat treatment UHT-75
forged vessels UF-26
high alloy steel vessels UHA-40
nonferrous vessels UNF-75
welded vessels UW-26, UHT-1, UHT-75
Ferritic steel vessels with tensile properties enhanced by heat treatment, design UHT-16
fabrication UHT-75
head design UHT-33
heat treatment UHT-80
heat treatment verification tests UHT-81
marking UHT-86
materials UHT-1, UHT-5, UHT-40
stamping UHT-115
welded joints UHT-17
welding UHT-82
Field assembly of vessels U-1, U-2
Filler plugs for trepanned holes K-2
Fillet welds UW-18, UW-36, UCL-46
Fired process tubular heaters U-1
Fitting attachments UG-82, UHT-18
Flange connections UG-44
Flange contact facings 2-3
Flanges, bolted design . . . . . Apps. 2 and S
of formed heads for welding UW-13
type of attachment 2-4
Flat heads and covers, unstayed UG-34
reinforcement of openings UG-39
Flat spots on formed heads UG-32
Flued openings UG-38
Forged parts, small UG-11
Forged vessels, heat treatment UF-31
localized thin areas UF-30
welding UF-32
Forgings UG-6, UF-6, UCS-7, UNF-7
identification of UF-47
ultrasonic examination UF-55
Form, Manufacturer's Data Report . . . . . App. W
Partial Report . . . . . App. W
Formed heads UG-32, UG-33, UCS-33, UHT-32, UHT-33
flued openings in UG-38
insertion of, welded vessels UW-13
joint efficiency UG-32
knuckle radius UG-32, UHT-19
length of skirt UG-32, UG-33, UW-13, UHT-19
on welded vessels UW-13
reinforcement for openings UG-37
Forming, ends of shell plates and buttstraps UG-79
forged heads UF-28
shell sections and heads UG-79, UCS-79, UNF-77, UHT-79
Furnaces, temperatures for postweld heat treatment UW-40
Furnaces for heat treating UHT-80
temperature control of UHT-80

G

Galvanized vessels UG-99
Gasket materials . . . . . 2-3, Table 2-5.1
Girth joints (*see* Circumferential joints)

H

Handhole and manhole openings UG-46
Head flange (skirt) length UG-32, UG-33, UW-13
Head joints, brazing UB-16
welded UW-13
(*see also* Heads and shells; Joints)
Head openings, entirely in spherical portion UG-37
Heads, concave and convex UG-32, UG-33, UCI-32, UCI-33, UCD-32, UCD-33, UHT-32, UHT-33
flat (*see* Flat heads)
forged . . . . . UF-13 to UF-28
formed (*see* Formed heads)
forming UG-79, UCS-79, UNF-77, UHT-79
thickness, after forming UG-32, UG-33, UHT-79
Heads, design, conical UG-32, UHT-33, 1-5
ellipsoidal UG-32, UG-33, UHT-32, UHT-33, 1-4
hemispherical UG-32, UG-33, UHT-32, UHT-33, 1-4
spherically dished UG-32, UG-33, UCD-35, 1-6
toriconical UG-32, UF-13, 1-5
torispherical UG-32, UG-33, 1.4
torispherical, knuckle radius UG-32
Heads and shells, external pressure, out-of-roundness UG-80, UG-81
openings through or near welded joints UW-14
roundness tolerance UG-80, UG-81
Heat exchangers U-1
Heat treatement, by fabricator UG-85, UCS-85
carbon and low alloy steel vessels UCS-85
ferritic steel vessels with tensile properties enhanced by heat treatment UHT-80

COPYRIGHT American Society of Mechanical Engineers
Licensed by Information Handling Services

forged vessels UF-31
furnaces UHT-80
high alloy vessels. UHA-105
of test specimens UG-85, UCS-85
verification tests of UHT-81
Hemispherical heads UG-32, 1-4
High pressure vessels U-1
Holes, for screw stays. UG-83
for trepanning plug sections, refilling K-2
telltale UG-25, UCL-25
unreinforced, in welded joints. UW-14
Hubs, on flanges. 2-2
Hydrostatic proof tests UG-101, UCI-101, UCD-101
destructive UG-101, UCI-101, UCD-101
prior pressure application UG-101
Hydrostatic test, cast iron vessels. UCI-99
combined with pneumatic. UG-100
enameled vessels UG-99
external pressure vessels. UG-99
galvanized vessels UG-99
standard UG-99, UCL-52, UCD-99
welded vessels UG-99, UW-50

I

Identification, of forgings UF-47
of plates UG-77, UG-85, UG-94, UHT-86
of welds UW-37
Identification markers, radiographs UW-51
Impact test, certification UG-84
properties UG-84, UHT-6
specimens UG-84, UHT-5, UHT-6, UHT-81, UHT-82
temperature UHT-5
Inspection, before assembling . . . . . UG-90 to UG-102
brazed vessels UB-40, UB-44
carbon and low alloy steel UCS-90
cast ductile iron vessels UCD-90
cast iron vessels UCI-90
clad vessels UCL-50
during fabrication UG-95, UG-97
ferritic steel vessels with tensile properties enhanced by heat treatment. UHT-90
fitting up UG-96
forged vessels . . . . . UF-45 to UF-54
heat treatment, forgings UF-52
high alloy steel vessels. UHA-50
magnetic particle UW-50, UHT-57, UHT-83
material. UG-93, UG-94
nonferrous vessels UNF-90
plate . . . . . UG-93 to UG-95
postweld heat treatment UW-49, UF-52
pressure vessels, accessibility M-2
quality control. UG-90
sectioning of welded joints UW-41
spot examination. UW-52
steel castings UG-24, 7-1
surfaces exposed and component parts . . . UG-95, UG-46
test specimens UF-53
vessels. UG-90, UG-97, UW-46, UHT-90
vessels exempted from U-1
welded vessels . . . . . UW-46 to UW-52
Inspection openings UG-46
Inspection, access to plant UG-92
control of stamping UG-116
duties U-2, UG-90
facilities UG-92
qualification UG-91
reports. UG-120
Installation, pressure-relieving devices . . . . . UG-134, UHT-125, M-4 to M-8
pressure vessel M-1
Integral cast iron dished heads UCI-35
Integrally finned tubes. UG-8
Internal structures . . . . . D-1 to D-3

J

Jacketed vessels . . . . . UG-28, 9-1 to 9-10
Joints, brazed. UB-16
circumferential (*see* Circumferential joints)
efficiency, brazed UB-14
welded UW-11, UW-12
electric resistance, butt welding UG-31
in cladding and applied linings. UCL-31
in vessels subjected to external pressure UG-28
lap (*see* Lap joints)
longitudinal (*see* Longitudinal joints)
tube-to-tubesheet . . . . . App. A
Jurisdictional review U-2

K

Knuckles, radius UG-32, UHT-19
transition section. UG-36, UHT-19

L

Lap joints, amount of overlap. UW-9, UB-16
brazed UB-16
longitudinal under external pressure. UG-28
welded UW-9
Laws covering pressure vessels. U-1
Lethal gases or liquids UW-2, UCI-2
Ligaments, efficiency of L-8
Limitation on welded vessels UW-2

COPYRIGHT American Society of Mechanical Engineers
Licensed by Information Handling Services

Limit of out-of-roundness of shells UG-80
Linings UG-26, UCL-12
corrosion resistant ..... F-1 to F-3
Liquid penetrant examination..... UG-93, UHT-57, UHT-83, App.8
Loadings.....UG-22
Local postweld heat treatment..... UW-40
Longitudinal joints, alignment tolerance UHT-20
brazing UB-16
vessels subjected to external pressure UG-28
Low temperature operation.....UCS-65
Low temperature vessels, brazed UB-22
for gases and liquids...UCS-65 to 67, UNF-65, UCL-27
impact test requirements.....UG-84, UHA-51
impact tests, when not required UCS-66
marking UG-116
materials.....UG-84
testing of materials UG-84
Lugs for ladders, platforms, and other attachments.....UG-55

M

Magnetic particle inspection..... UG-93, UHT-57, UHT-83, 6-1 to 6-4
Manholes, and handholes UG-46
cover plates for UG-34
minimum vessel diameter requiring UG-46
Manufacturer, responsibility of UG-90, UW-26
Manufacturer's Data Report (*see* Data Report)
Manufacturer's stamps..... UG-77, UG-94
Marking, castings UG-24
materials.....UG-94, UHT-86
plates.....UG-10, UG-77, UG-85, UG-94, UHT-86
standard pressure parts UG-11
valves and fittings UG-11
with Code Symbol.....UG-116, UHT-115
Markings, transfer after cutting plates..... UG-77, UG-94
Materials, approval of new .....UG-4, App. B
approval of repairs.....UG-78, UCI-78
brazed vessels.....UB-5
carbon and low alloy steel vessels UCS-5
cast ductile iron UCD-5
castings.....UG-7
cast iron vessels..... UCI-5
certification UG-93
clad vessels..... UCL-10
combination of UG-18, UHT-40
ferritic steel vessels with tensile properties enhanced by heat treatment..... UHT-5
forged vessels..... UF-5
forgings UG-6
for nonpressure parts.....UG-5
heat treatment of UG-85, UCS-85, UHT-80
high alloy steel vessels..... UHA-11
inspection of UG-93, UG-95
nonferrous vessels UNF-5
pipe and tubes UG-8
plate UG-5
rods and bars UCS-12
specification for UG-4, UG-23, UCS-23, UNF-23, UHA-23, UCI-23, UCD-5, UHT-5, UHT-23
standard pressure, parts.....UG-11
unidentified UG-10
use of, over thickness listed in Section II.....UG-5
welded vessels UW-5
Measurement, dimensional UG-96
of out-of-roundness of shells.....UG-80
Metal temperature, determination C-1
control of..... App. T
Mill undertolerance UG-16
Minimum thickness of plate UG-16, UCS-16, UNF-16, UHA-20, UCL-20, UHT-16
Miscellaneous pressure parts UG-11
Multichamber vessels, design.....UG-19
Multiple duplicate vessels.....UG-90
Multiple safety valves.....UG-134

N

Nameplates..... UG-117, UG-118, UHT-115
New materials..... UG-4, B-1
Noncircular vessels..... App. 13
ligament efficiency.....13-6
nomenclature 13-5
obround design 13-10, 13-11, 13-12
rectangular design 13-7, 13-9
reinforcement.....13-8
examples.....13-16
Nonpressure parts, attachment of UG-55, UHT-85
Notch ductility test UHT-5
Nozzle openings, reinforced..... UG-36, UHT-18
unreinforced.....UG-36
vessels subjected to external pressure UG-37
Nozzles, attachment of, to shell UG-43, UHT-18
minimum thickness of neck..... UG-45, UHT-18
(*see also* Connections)
Nuts and washers.....UG-13, UCS-11, UNF-13

O

Offset of edges of plates at joints..... UW-33, UHT-20
Openings, adjacent to welds UW-14
closure of..... K-2
for connections to brazed vessels.....UB-19
for drainage.....UG-25

COPYRIGHT American Society of Mechanical Engineers
Licensed by Information Handling Services

head (*see* Openings, head and shell)
in flat heads UG-39
inspection UG-46
manhole (*see* Manholes)
nozzle (*see* Nozzle openings)
shell (*see* Openings, head and shell)
through welded joints UW-14
Openings, head and shell, computation of L-7
not requiring additional reinforcement UG-36
reinforced, size UG-36, UHT-18
reinforcement for adjacent openings UG-42
reinforcement of UG-37, UHT-18
requiring additional reinforcement UG-36
shapes permissible UG-36
unreinforced, size UG-36
Outlets, discharge, pressure relieving devices UG-134
Out-of-roundness UG-80, UG-81, UF-27
Overpressure limit for vessels UG-125

P

Partial Data Report, Manufacturer's UG-120
Parts, miscellaneous UG-11
Peening UW-39
Pipe connections, openings for UG-43
Pipe fittings, vessels built of UG-44, UCS-9
Pipes and tubes UG-8, UG-31, UCS-9, UNF-9
Pipe used for shells UCS-27
Piping external to vessel U-1
Plate, curvature UB-33
measurement, dimensional check UG-96
Plate edges, cutting UG-76, UG-93, UW-31, UHT-83
exposed left unwelded UG-76
inspection of UG-95
Plates, alignment UW-31, UHT-20
cover UG-34
cutting UG-76, UG-93, UW-31, UHT-83
forming UG-79, UCS-79, UNF-77, UHT-79
heat treatment UG-85
identification UG-77, UG-94, UHT-86
impact test UG-84, UHT-5, UHT-6, UHT-81
inspection ..... UG-93 to UG-95
laying out UG-77
less than 1/4 in. thickness UG-77
markings, transfer after cutting UG-77, UG-94
minimum thickness UG-16, UCS-16, UNF-16, UHA-20, UCI-20, UHT-5, UHT-79
repair of defects UG-78, UCI-78
specifications UG-5, UCS-6, UNF-6, UHT-5
structural carbon steel UCS-6
Plug welds UW-17
Pneumatic test, pressure UG-100
yielding UG-100
Porosity, welded joints ..... UW-51, App. 4
Porosity charts 4-1
Postheat treatment UHT-79, UHT-82
Postweld heat treatment, connections for nozzles and attachments UHT-56
cooling after UW-40, UHT-56
furnace temperature UW-40
inspection UW-49
local UW-40
requirements UCS-56, UHT-56
temperature range UHT-56
welded vessels UW-10, UW-40, UHA-32, UCL-34, UHT-56
Preheating ..... App. R
Preparation of plates for welding UW-31, UW-32
Pressure, design UG-21
limits U-1
(*see* also Working pressure, allowable)
Pressure parts, miscellaneous UG-11
Pressure relieving devices, discharge UG-134
installation and operation ..... UG-134, M-4 to M-9
rupture disks UG-127
setting UG-133
Pressure vessels, exempted from inspection U-1
Product form of specification UG-15
Proof test, hydrostatic (*see* Hydrostatic proof test)

Q

Qualification, of brazers UB-43
of welders UW-29
of welding procedure ..... UCL-40 to UCL-46
Quality Control System ..... U-2, App. 10
Quenching and tempering ..... UHT-80 to UHT-82
Quick-actuating closures UG-35

R

Radiograph factor UW-12
Radiographing, examination by ... UW-11, UW-51, UHT-57
partial UW-11, UW-12
quality factors UW-11, UW-12
requirements UCS-57, UHA-33, UCL-35, UHT-57
spot examination UW-52
retests UW-11, UW-52
thickness, mandatory minimum UW-11, UCS-57
Radiographs, acceptance by inspector UW-51, UW-52
gamma rays, radium capsule UW-51
interpretation by standard procedure UW-51, UW-52
rounded indications ..... App. 4
Reaming holes for screw stays UG-83
Reducer sections, rules for 1-5
Reinforcement, defined limits UG-40

COPYRIGHT American Society of Mechanical Engineers
Licensed by Information Handling Services

head and shell openings UG-37, UG-39
large openings UG-36, 1-7
multiple openings UG-42
nozzle openings . . . . . UG-37 to UG-42, UHT-18
of openings in shells, computation of L-7
openings subject to rapid pressure fluctuation UG-36
strength UG-41
Relief devices . . . . . UG-125 to UG-134
(*see also* Pressure relieving devices; Safety and relief valves)
Relief valves (*see* Safety and relief valves)
Relieving capacity of safety valves UG-132
Repairs, approval of defects in material UG-78, UF-32, UF-46, UCI-78, UCD-78
defective brazing UB-37
defects in forgings UF-37
defects in welds UW-38, UW-51, UW-52, UF-38, UHT-57
Responsibility of manufacturer UG-90, UW-26
Retention of Records
radiographs UW-51
Manufacturer's Data Reports UG-120
Retests, forgings UF-54
impact specimens UG-84, UHT-6
joints, welded UW-52
Rods, bars, and shapes UG-14, UCS-12, UNF-14
Rolled parts, small UG-11, UHT-6
Rupture disks UG-125, UG-127, UG-129, UG-133, UG-134

S

Safety, safety relief, and pressure relief valves, adjustable blowdown, capacity, certification UG-131, UG-132
capacity, conversion 11-1
connection to vessels UG-135
construction UG-126
discharge pipe UG-135
indirect operation UG-126
installation M-10
installation on vessels in service UG-135
liquid relief UG-128, UG-130
marking UG-129
minimum requirements UG-136
pressure setting UG-134
spring loaded UG-126
springs, adjustment UG-134
stop valves adjacent to UG-135
test UG-131
Protective devices . . . . . UG-125 to UG-134
for unfired steam boiler UG-125
Scope U-1
Sectioning, closing holes left by K-2
etching plugs taken K-1
examination by UW-41
Service restrictions UW-2, UB-3
Shapes, special UG-19
Shell plates, forming ends of UG-79
Shells, allowable working pressure UG-27
computation of openings in L-7
forming UG-79, UCS-79, UNF-77, UHT-79
made from pipe UCS-27
stiffening rings . . . . . UG-29, UG-30, UCS-29, UHT-29 to UHT-30
thickness UG-27, UG-28, UCS-28, UCD-28, UHT-27, UHT-79
transition section UG-36, UHT-19
SI Units, conversion factors . . . . . App. H
Sigma-phase formation UHA-104
Skirts, length on heads UG-32, UG-33, UW-13, UHT-19
support of vessels G-5
Slag inclusions in welds UW-51, UW-52
Special constructions UG-19, UG-116, UG-120
Specifications for materials UG-5, UG-23, UCS-23, UNF-23, UHA-23, UCI-23, UCD-5, UHT-5, UHT-23
Spherical sections of vessels UG-32, UG-33
Spherical shells, thickness UG-27, UHT-27
Spot examination of welded joints UW-52
Springs for safety valves UG-126, UG-133
Stamping, location of UG-116
multipressure vessels UG-19, UG-116
omission of UHT-86
safety valve UG-131
with Code Symbol UG-116, UHT-115
Stamps, Certificate of Authorization UG-116
low stress UGT-86
not to be covered M-3
to be visible on plates UG-77, UHT-86
Static head, in setting safety valves, effect of, on limiting stresses UG-98
Stayed surface UG-47
Staying formed heads UG-32
Stays and staybolts, adjacent to edges of staybolted surface UG-49
allowable stress UG-50
area supported UG-47, UG-50
dimensions UG-50
ends UG-48, UW-19
location UG-49
pitch UG-47
screw, holes for UG-83
upset for threading UG-48
welded UW-19
Steam generating vessels, unfired U-1

COPYRIGHT American Society of Mechanical Engineers
Licensed by Information Handling Services

Steel, carbon content UCS-5
Stenciling plates for identification UG-77
Stiffening rings, attachment to shell UG-30, UF-5, UHT-30
for vessels under external pressure UG-29, UG-30, UCS-29, UHT-28, UHT-29
Stiffness, support of large vessels for UG-27, UG-28
Stop valves, adjacent to safety and relief valves UG-134, M-5, M-6
Strength, of brazed joints UB-10
Stress corrosion cracking UHA-103
Stress values, attachment welds UW-15
basis for establishing P-1
carbon and low alloy steel . . . . . Table UCS-23
cast ductile iron . . . . . Table UCD-23
cast iron . . . . . Table UCI-23
ferritic steels with tensile properties enhanced by heat treatment . . . . . Table UHT-23
high alloy steel . . . . . Table UHA-23
nonferrous metals . . . . . Table UNF-23
Stud bolt threads UG-12
Studded connections UG-43, UG-44
Supplementary design formulas . . . . . 1-1 to 1-7
Supports, design UG-54, G-1, G-9
pressure vessels UG-54, UG-82
temperature, free movement under G-2
types of steel permissible for UG-5
vessels subjected to external pressure UG-29, UHT-29, G-1
Surface weld metal buildup UW-42

T

Tables, effective gasket width *b* . . . . . Table 2-5.2
gasket materials and contact facings . . . . . Table 2-5.1
maximum allowable efficiencies for arc and gas welded joints . . . . . Table UW-12
minimum number of pipe threads for connections . . . . . Table UG-43
molecular weights of gases and vapors . . . . . Table 11-1
of stress values, carbon and low alloy steel . . . . . Table UCS-23
cast iron . . . . . Table UCI-23
cast ductile iron . . . . . Table UCD-23
ferritic steels with tensile properties enhanced by heat treatment . . . . . Table UHT-23
high alloy steel . . . . . Table UHA-23
nonferrous metals . . . . . Table UNF-23.1
welded carbon low alloy pipe and tubes . . . . . Table UCS-27
of values, factor *K* . . . . . Table 1-4.1
factor *M* . . . . . Table 1-4.2
factor *Δ* . . . . . Tables 1-5.1, 1-5.2
postweld heat treatment requirements . . . . . Table UCS-56, UHA-32, Table UHT-56
recommended temperature ranges for heat treatment . . . . . Table UHA-105
spherical radius factor K_1 . . . . . Table UG-37
Telltale holes UG-25, UCL-25
in opening reinforcement UW-15
Temperature, definitions 3-1
design UG-20
determination C-1
free movement of vessel on supports G-2
heat treatment . . . . . Tables UCS-56, UHT-56
limitations, of brazed vessels UB-2
of cast ductile iron UCD-3
of postweld heat treating UW-40, UCS-56, UHA-32, UHT-56
metal, control of . . . . . App. T
operating or working, definitions 3-1
zones of different UG-20
Termination point of a vessel U-1
Test coupons UHT-81
Test gages, requirements UG-102
Test plates, heat treatment UG-84
impact tests UG-84, UHA-51
production UNF-95
Tests, hydrostatic proof UG-101, UCI-101, UCD-101
pneumatic (see Pneumatic test)
vessels whose strength cannot be calculated U-2, UG-101, UCI-101
Thermal buffers UHT-81
Thermocouples, attachment C-1
Thickness gages, details UW-51
Thick shells, cylindrical 1-2
spherical 1-3
Thin plates, marking UG-77, UHT-86
Threaded connection UG-43
Threaded inspection openings UG-46
Threads, stud bolts UG-12
Tolerances, forged shells and heads UF-27, UF-29
heads and shells UG-80, UG-81
Toriconical heads UG-32, UG-33
Torispherical heads UG-32, UG-33, 1-4
Transferring markings on plates UG-77
Transition in cylindrical shell UG-36
Trays and baffles, acting as partial shell stiffeners UG-29
Tubes and pipe UG-8, UG-31, UCS-9
Tube-to-tubesheet joints . . . . . App. A

COPYRIGHT American Society of Mechanical Engineers
Licensed by Information Handling Services

U

Ultrasonic examination of welds . . . . . UW-53, App. 12
UM vessels U-1
Unfired steam boiler U-1
Unidentified materials UG-10

V

Valves, connections UG-44
safety and relief (*see* Safety and relief valves)
Valves and fittings, marking UG-11
Verification tests, heat treatment UHT-81
Volume exemption U-1

W

Weld deposits cleaning UW-32
peening UW-39
Welded joints, category UW-3, UHT-17
description of types 3-1
efficiency UW-12
impact test, across UCS-66, UHT-81
postweld heat treating UW-10, UW-40, UCS-56, UNF-56, UHA-32, UCL-34, UHT-56
radiographic examination, complete UW-51, UHT-57
radiographing requirements UW-11, UCS-57, UHA-33, UCL-35, UHT-57
rounded indications UW-51
sectioning, etch tests K-1
spot examination UW-52
staggered, longitudinal UW-9
taper, plates of unequal thicknesses UW-9
types, around openings UW-15, UW-16, UHT-18
ultrasonic examination of . . . . . App. 12
Welded reinforcement of nozzle opening . . UW-15, UW-16
Welded stayed construction UW-19
Welded vessels, holes in joint of UW-14
inspection . . . . . UW-46 to UW-52
limitations on UW-2
tests of UG-99, UW-50
Welders and welding operators, identifying stamps UW-29
records of, by manufacturers UW-29
test of, qualification UW-28, UW-29, UHT-82
Welding, cleaning of welded surfaces UW-32
details, limitations . . . . . Fig. UW-13
forged vessels UF-32
materials UG-9
materials having different coefficients of expansion UHT-40
of attachment around openings UW-15, UW-16
plate, fitting up joint UW-31
plate edges, matching UW-31
preparation of plates UW-31, UW-32
procedure qualification . . . . . UW-28, UCL-40 to UCL-46, UHT-82
processes UW-27, 3-1
test requirements . . . . . UW-46 to UW-52, UHT-82
Weld metal composition UHA-42, UCL-32, UHT-82
Welds, acceptability, when radiographed UW-51, UW-52
when sectioned UW-51
fillet UW-18, UW-36, UCL-46
finish UHT-84
identification of UW-37
plug UW-17
reinforcement, butt welds UW-35, UHT-84
repairs of defects in . . . UW-38, UF-38, UF-46, UHT-85
sharp angles, avoid, at weld edges UW-35
structural UHT-85
tack UW-31
temporary UHT-85
types, description 3-1
ultrasonic examination of . . . . . UW-11, UW-53, App. 12
Working pressure, allowable, braced and stayed surfaces UG-47
by proof test U-2, UG-101, UCI-101
definition of UG-98, 3-1

COPYRIGHT American Society of Mechanical Engineers
Licensed by Information Handling Services