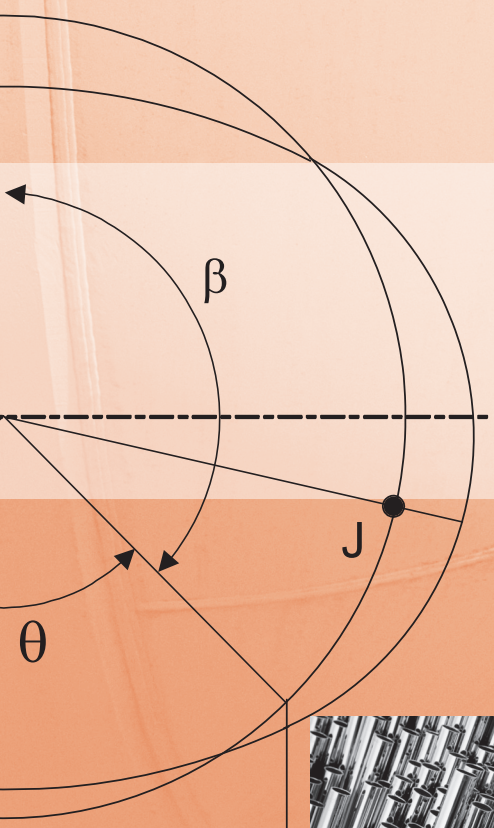
2010 ASME Boiler and Pressure Vessel Code

AN INTERNATIONAL CODE



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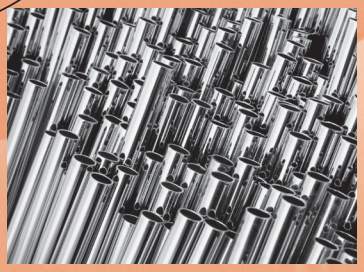

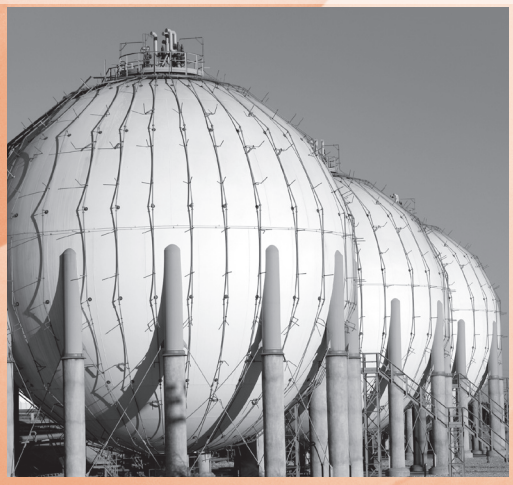

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AN INTERNATIONAL CODE

2010 ASME Boiler & Pressure Vessel Code

2010 Edition July 1, 2010

CODE CASES: BOILERS AND PRESSURE VESSELS

ASME SETTING THE STANDARD

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The Committee's function is to establish rules of safety, relating only to pressure integrity, governing the construction of boilers, pressure vessels, transport tanks and nuclear components, and inservice inspection for pressure integrity of nuclear components and transport tanks, and to interpret these rules when questions arise regarding their intent. This code does not address other safety issues relating to the construction of boilers, pressure vessels, transport tanks and nuclear components, and the inservice inspection of nuclear components and transport tanks. The user of the Code should refer to other pertinent codes, standards, laws, regulations, or other relevant documents.

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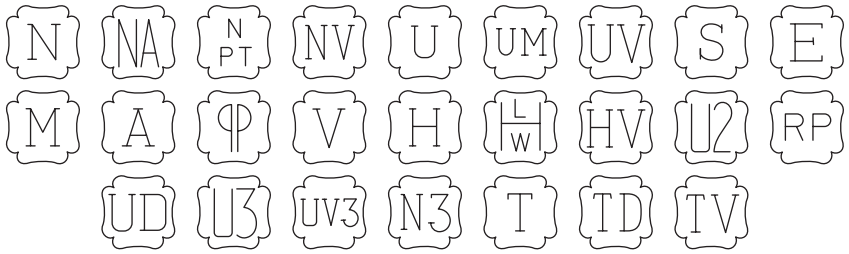

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2010 ASME
BOILER AND PRESSURE VESSEL CODE

(10)

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ADDENDA

Addenda, which include additions and revisions to individual Sections of the Code, will be sent automatically to purchasers of the applicable Sections up to the publication of the 2013 Code. The 2010 Code is available only in the loose-leaf format; accordingly, the Addenda will be issued in the loose-leaf, replacement-page format.

INTERPRETATIONS

ASME issues written replies to inquiries concerning interpretation of technical aspects of the Code. The Interpretations for each individual Section will be published separately and will be included as part of the update service to that Section. Interpretations of Section III, Divisions 1 and 2, will be included with the update service to Subsection NCA.

Interpretations of the Code are posted in January and July at www.cstools.asme.org/interpretations.

CODE CASES

The Boiler and Pressure Vessel Committee meets regularly to consider proposed additions and revisions to the Code and to formulate Cases to clarify the intent of existing requirements or provide, when the need is urgent, rules for materials or constructions not covered by existing Code rules. Those Cases that have been adopted will appear in the appropriate 2010 Code Cases book: "Boilers and Pressure Vessels" and "Nuclear Components." Supplements will be sent automatically to the purchasers of the Code Cases books up to the publication of the 2013 Code.

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NOTES TO NUMERIC INDEX

- The ASME Boiler and Pressure Vessel Standards Committee took action to eliminate Code Case expiration dates, effective March 11, 2005. This means that all Code Cases listed in Supplement 3 and beyond will remain available for use until annulled by the ASME Boiler and Pressure Vessel Standards Committee. Code Cases will be routinely reviewed for possible incorporation into the body of the ASME Boiler and Pressure Vessel Code.
- There is a change in the way the supplements to the 2004 Edition are distributed. Supplement 11 is the last supplement published in the 2004 Edition, Supplement 12 was incorporated into the 2007 Edition.
- Cases may be used beginning with the date of approval shown on the Case.
- Annulled Cases will remain in the Numeric Index until the next Edition, at which time they will be deleted.
- Newly revised cases supersede previous versions, as indicated by an "S" in the Numeric Index.
- The digit following a Case Number is used to indicate the number of times a Case has been revised.
- The Cases are arranged in numerical order, and each page of a Case is identified at the top with the appropriate Case Number.

Legend of Abbreviations

Supp. = Supplement
R = Reinstated
S = Superseded

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SUMMARY OF CHANGES (10)

Revisions given below are identified on the pages by a margin note, (**10**).

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[*] These Cases will be annulled six months after publication of the Addenda or Edition.

[**] Errata are identified on the above pages by a margin note, **E**, placed next to the affected area.

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SUBJECT INDEX

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PRESSURE VESSELS

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SECTION VIII, DIVISION 3
PRESSURE VESSELS

SECTION IX
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SECTION X
FIBERGLASS-REINFORCED PLASTIC
PRESSURE VESSELS

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CHARTS FOR VESSELS UNDER EXTERNAL PRESSURE

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Approval Date: June 23, 2005

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Case 1325-18
Nickel-Iron-Chromium Alloys 800 and 800H (UNS N08800 and N08810) and Nickel-Iron-Chromium-Molybdenum-Copper Low-Carbon Alloy (UNS N08028)
Section I

Inquiry: May Nickel-Iron-Chromium Alloys 800 and 800H (UNS N08800 and N08810) and nickel-iron-chromium-molybdenum-copper low-carbon alloy UNS N08028 conforming to the specifications listed in Table 1 be used for water wetted service in Section I construction?

TABLE 1
PRODUCT SPECIFICATIONS

Form	Specification
UNS N08800 and N08810	
Seamless condenser and heat exchanger tubes	SB-163
Rod and bars	SB-408
Seamless pipe and tube	SB-407
Plate, sheet, and strip	SB-409
Welded tubes	SB-515
UNS N08028	
Seamless tubes	SB-668
Plate, sheet, and strip	SB-709

Reply: It is the opinion of the Committee that nickel-iron-chromium and nickel-iron-chromium-molybdenum-copper low-carbon alloy forms as shown in Table 1 may be used for water wetted service in Section I construction provided the following requirements are met.

(a) The maximum allowable design stress shall not exceed that shown in Table 1B of Section II, Part D.

(b) Welded fabrication shall conform to the applicable requirements of Section I.

(1) The procedure and performance qualifications shall be conducted as prescribed in Section IX, except that the tensile strength of the reduced section specimen shall not be less than the minimum tensile strength of the materials specified in the Inquiry.

(2) Welding on N08800 and N08810 shall be done by any welding process or combination of processes capable of meeting the requirements. Welding on N08028 shall be by the gas tungsten arc process only.

(3) Welds that are exposed to corrosive action of the contents of the vessel should have a resistance to corrosion equal to that of the base metal. The use of filler metal that will deposit weld metal with practically the same composition as the material joined is recommended. When the manufacturer is of the opinion that a physically better joint can be made by departure from these limits, filler metal of a different composition may be used provided the strength of the weld metal at the operating temperature is not appreciably less than that of the high-alloy material to be welded, and user is satisfied that its resistance to corrosion is satisfactory for the intended service.

(4) Where welding repair of a defect is required, it shall be followed by reexamination as required in PW-11. Where a defect is removed and welding repair is not necessary, care shall be taken to contour the surface so as to eliminate any sharp notches or corners. The contoured surface shall then be reinspected by the same means originally used for locating the defect to be sure it has been completely removed.

(5) When these materials are cold formed, the rules of Section I, para. PG-19 shall apply for alloys N08800 and N08810. Other than these requirements, any other heat treatment after forming or fabrication is neither required nor prohibited, but if heat treatment is applied to alloy N08028, it shall be performed at 1975°F–2085°F (1080°C–1140°C) followed by rapid cooling.

(c) This Case number shall be shown on the Data Report.

CAUTIONARY NOTE: Austenitic alloys are subject to stress corrosion cracking, intergranular attack, pitting and crevice corrosion when used in boiler applications in aqueous environments. Factors that affect the susceptibility of these materials are applied or residual stress, water chemistry and deposition of solids, and material condition. Susceptibility to attack is enhanced when the material is used in a sensitized condition, or with residual cold work. Concentration of corrosive agents (e.g. chlorides, caustic, or reduced sulfur species) can occur under deposits formed on the surface of these materials, and can result in severe underdeposit wastage or cracking. For successful operation in water environments, careful attention must be paid to continuous control of water chemistry.

The Committee's function is to establish rules of safety, relating only to pressure integrity, governing the construction of boilers, pressure vessels, transport tanks and nuclear components, and inservice inspection for pressure integrity of nuclear components and transport tanks, and to interpret these rules when questions arise regarding their intent. This Code does not address other safety issues relating to the construction of boilers, pressure vessels, transport tanks and nuclear components, and the inservice inspection of nuclear components and transport tanks. The user of the Code should refer to other pertinent codes, standards, laws, regulations or other relevant documents.

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