

(2) * * *

(i) Material shall conform to ASTM A 612 (IBR, see § 171.7 of this subchapter), Grade B or A 516/A 516M (IBR, see § 171.7 of this subchapter), Grade 65 or 70;

(ii) Material shall meet the Charpy V-notch test requirements of ASTM A 20/A 20M (IBR, see § 171.7 of this subchapter); and

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■ 105. In § 178.337-3, paragraphs (a)(1), (b), the last sentence in paragraph (g)(2), and paragraph (g)(3)(i) are revised to read as follows:

§ 178.337-3 Structural integrity.

(a) * * *

(1) Except as provided in paragraph (d) of this section, the maximum calculated design stress at any point in the cargo tank may not exceed the maximum allowable stress value prescribed in Section VIII of the ASME Code (IBR, see § 171.7 of this subchapter), or 25 percent of the tensile strength of the material used.

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(b) *Static design and construction.* (1) The static design and construction of each cargo tank must be in accordance with Section VIII of the ASME Code. The cargo tank design must include calculation of stresses generated by design pressure, the weight of lading, the weight of structure supported by the cargo tank wall, and the effect of temperature gradients resulting from lading and ambient temperature extremes. When dissimilar materials are used, their thermal coefficients must be used in calculation of thermal stresses.

(2) Stress concentrations in tension, bending and torsion which occur at pads, cradles, or other supports must be considered in accordance with appendix G in Section VIII of the ASME Code.

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(g) * * *

(2) * * * Attachments meeting the requirements of this paragraph are not authorized for cargo tanks constructed under part UHT in Section VIII of the ASME Code.

(3) * * *

(i) Be fabricated from material determined to be suitable for welding to both the cargo tank material and the material of the appurtenance or structural support member; a Design Certifying Engineer must make this determination considering chemical and physical properties of the materials and must specify filler material conforming to the requirements in Section VIII of

the ASME Code (IBR, see § 171.7 of this subchapter).

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■ 106. In § 178.337-4, paragraph (a), the first three sentences in paragraph (b), and paragraph (e) are revised to read as follows:

§ 178.337-4 Joints.

(a) Joints shall be as required in Section VIII of the ASME Code (IBR, see § 171.7 of this subchapter), with all undercutting in shell and head material repaired as specified therein.

(b) Welding procedure and welder performance must be in accordance with Section IX of the ASME Code. In addition to the essential variables named therein, the following must be considered as essential variables: Number of passes; thickness of plate; heat input per pass; and manufacturer's identification of rod and flux. When fabrication is done in accordance with part UHT in Section VIII of the ASME Code, filler material containing more than 0.08 percent vanadium must not be used. * * *

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(e) The maximum tolerance for misalignment and butting up shall be in accordance with the requirement in Section VIII of the ASME Code.

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■ 107. In § 178.337-6, paragraph (a) is revised to read as follows:

§ 178.337-6 Closure for manhole.

(a) Each cargo tank marked or certified after April 21, 1994, must be provided with a manhole conforming to paragraph UG-46(g)(1) and other applicable requirements in Section VIII of the ASME Code (IBR, see § 171.7 of this subchapter), except that a cargo tank constructed of NQT steel having a capacity of 3,500 water gallons or less may be provided with an inspection opening conforming to paragraph UG-46 and other applicable requirements of the ASME Code instead of a manhole.

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■ 108. In § 178.337-8, paragraphs (b)(1) and (b)(2) are revised to read as follows:

§ 178.337-8 Openings, inlets, and outlets.

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(b) * * *

(1) A valve conforming to The Chlorine Institute, Inc., Dwg. 101-7 (IBR, see § 171.7 of this subchapter), must be installed under each liquid angle valve.

(2) A valve conforming to The Chlorine Institute, Inc., Dwg. 106-6 (IBR, see § 171.7 of this subchapter),

must be installed under each gas angle valve.

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■ 109. In § 178.337-9, paragraph (b)(8) is revised to read as follows:

§ 178.337-9 Pressure relief devices, piping, valves, hoses, and fittings.

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(b) * * *

(8) *Chlorine cargo tanks.* Angle valves on cargo tanks intended for chlorine service must conform to the standards of The Chlorine Institute, Inc., Dwg. 104-8 (IBR, see § 171.7 of this subchapter). Before installation, each angle valve must be tested for leakage at not less than 225 psig using dry air or inert gas.

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■ 110. In § 178.337-10, paragraph (d)(1) is revised to read as follows:

§ 178.337-10 Accident damage protection.

(d) * * *

(1) Tanks manufactured on or before December 31, 1974: Dwg. 137-1 (IBR, see § 171.7 of this subchapter), or Dwg. 137-2 (IBR, see § 171.7 of this subchapter).

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■ 111. In § 178.337-16, paragraphs (a), (b)(1), and (b)(2) are revised to read as follows:

§ 178.337-16 Testing.

(a) *Inspection and tests.* Inspection of materials of construction of the cargo tank and its appurtenances and original test and inspection of the finished cargo tank and its appurtenances must be as required by Section VIII of the ASME Code (IBR, see § 171.7 of this subchapter) and as further required by this specification, except that for cargo tanks constructed in accordance with part UHT in Section VIII of the ASME Code the original test pressure must be at least twice the cargo tank design pressure.

(b) * * *

(1) Each cargo tank constructed in accordance with part UHT in Section VIII of the ASME Code must be subjected, after postweld heat treatment and hydrostatic tests, to a wet fluorescent magnetic particle inspection to be made on all welds in or on the cargo tank shell and heads both inside and out. The method of inspection must conform to appendix 6 in Section VIII of the ASME Code except that permanent magnets shall not be used.

(2) On cargo tanks of over 3,500 gallons water capacity other than those described in paragraph (b)(1) of this section unless fully radiographed, a test must be made of all welds in or on the shell and heads both inside and outside