

by either the wet fluorescent magnetic particle method conforming to appendix U in Section VIII of the ASME Code, liquid dye penetrant method, or ultrasonic testing in accordance with appendix 12 in Section VIII of the ASME Code. Permanent magnets must not be used to perform the magnetic particle inspection.

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■ 112. In § 178.337–18, paragraph (a) introductory text is revised to read as follows:

**§ 178.337–18 Certification.**

(a) At or before the time of delivery, the cargo tank motor vehicle manufacturer must supply and the owner must obtain, a cargo tank motor vehicle manufacturer's data report as required by Section VIII of the ASME Code (IBR, see § 171.7 of this subchapter), and a certificate stating that the completed cargo tank motor vehicle conforms in all respects to Specification MC 331 and the ASME Code. The registration numbers of the manufacturer, the Design Certifying Engineer, and the Registered Inspector, as appropriate, must appear on the certificates (see subpart F, part 107 in subchapter A of this chapter).

\* \* \* \* \*

■ 113. In § 178.338–1, paragraphs (a)(1) and (c) are revised to read as follows:

**§ 178.338–1 General requirements.**

(a) \* \* \*

(1) *Design pressure* means the “MAWP” as used in Section VIII of the ASME Code (IBR, see § 171.7 of this subchapter), and is the gauge pressure at the top of the tank.

\* \* \* \* \*

(c) Each tank must be designed, constructed, certified, and stamped in accordance with Section VIII of the ASME Code.

\* \* \* \* \*

■ 114. In § 178.338–2, paragraphs (a), (c), and (e) are revised to read as follows:

**§ 178.338–2 Material.**

(a) All material used in the construction of a tank and its appurtenances that may come in contact with the lading must be compatible with the lading to be transported. All material used for tank pressure parts must conform to the requirements in Section II of the ASME Code (IBR, see § 171.7 of this subchapter). All material used for evacuated jacket pressure parts must conform to the chemistry and steelmaking practices of one of the material specifications in Section II of the ASME Code or the following ASTM Specifications: A 242, A 441, A 514, A

572, A 588, A 606, A 607, A 633, A 715 (IBR, see § 171.7 of this subchapter).

\* \* \* \* \*

(c) Impact tests are required on all tank materials, except materials that are excepted from impact testing by the ASME Code, and must be performed using the procedure prescribed in Section VIII of the ASME Code.

\* \* \* \* \*

(e) Each tank constructed in accordance with part UHT in Section VIII of the ASME Code must be postweld heat treated as a unit after completion of all welds to the shell and heads. Other tanks must be postweld heat treated as required in Section VIII of the ASME Code. For all tanks the method must be as prescribed in the ASME Code. Welded attachments to pads may be made after postweld heat treatment.

\* \* \* \* \*

■ 115. In § 178.338–3, paragraph (b), the last sentence in paragraph (g)(2), and paragraph (g)(3)(i) are revised to read as follows:

**§ 178.338–3 Structural integrity.**

\* \* \* \* \*

(b) *Static design and construction.* (1) The static design and construction of each tank must be in accordance with appendix G in Section VIII of the ASME Code (IBR, see § 171.7 of this subchapter). The tank design must include calculation of stress due to the design pressure, the weight of lading, the weight of structures supported by the 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 the 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.

\* \* \* \* \*

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

■ 116. In § 178.338–4, paragraph (a) is revised to read as follows:

**§ 178.338–4 Joints.**

(a) All joints in the tank, and in the jacket if evacuated, must be as prescribed in Section VIII of the ASME Code (IBR, see § 171.7 of this subchapter), except that a butt weld with one plate edge offset is not authorized.

\* \* \* \* \*

■ 117. In § 178.338–5, paragraph (a) is revised to read as follows:

**§ 178.338–5 Stiffening rings.**

(a) A tank is not required to be provided with stiffening rings, except as prescribed in Section VIII of the ASME Code (IBR, see § 171.7 of this subchapter).

\* \* \* \* \*

■ 118. In § 178.338–6, paragraph (a) is revised to read as follows:

**§ 178.338–6 Manholes.**

(a) Each tank in oxygen service must be provided with a manhole as prescribed in Section VIII of the ASME Code (IBR, see § 171.7 of this subchapter).

\* \* \* \* \*

■ 119. In § 178.338–13, the last three sentences in paragraph (a) introductory text and the last two sentences in paragraph (b) introductory text are revised to read as follows:

**§ 178.338–13 Supports and anchoring.**

\* \* \* \* \*

(a) \* \* \* The design calculations for the supports and load-bearing tank or jacket, and the support attachments must include beam stress, shear stress, torsion stress, bending moment, and acceleration stress for the loaded vehicle as a unit, using a safety factor of four, based on the tensile strength of the material, and static loading that uses the weight of the cargo tank and its attachments when filled to the design weight of the lading (see appendix G in Section VIII of the ASME Code) (IBR, see § 171.7 of this subchapter), multiplied by the following factors. The effects of fatigue must also be considered in the calculations. Minimum static loadings must be as follows:

(b) \* \* \* Static loadings must take into consideration the weight of the tank and the structural members when the tank is filled to the design weight of