Pipeline and Hazardous Materials Safety Administration, DOT § 178.346–2

§ 178.346–2 Material and thickness of material.

The type and thickness of material for DOT 406 specification cargo tanks must conform to §178.345–2, but in no case may the thickness be less than that determined by the minimum thickness requirements in §178.330(a). The following Tables I and II identify cated farther from the top and bottom centerline than 16 percent of the shell’s circumference.

(i) For a self-supporting cargo tank, no more than two such joints may be used on the top of the tank. They may not be located farther from the top centerline than 12.5 percent of the shell’s circumference.

(iii) Compliance test. Two test specimens of the material to be used in the manufacture of a cargo tank must be tested to failure in tension. The test specimens must be of the same thicknesses and joint configuration as the cargo tank, and joined by the same welding procedures. The test specimens may represent all the tanks that are made of the same materials and welding procedures, have the same joint configuration, and are made in the same facility within 6 months after the tests are completed. Before welding, the fit-up of the joints on the test specimens must represent production conditions that would result in the least joint strength. Evidence of joint fit-up and test results must be retained at the manufacturers’ facility.

(iv) Weld joint efficiency. The lower value of stress at failure attained in the two tensile test specimens shall be used to compute the efficiency of the joint as follows: Determine the failure ratio by dividing the stress at failure by the mechanical properties of the adjacent metal; this value, when multiplied by 0.75, is the design weld joint efficiency.

(10) The requirements of paragraph UW–9(d) in Section VIII of the ASME Code do not apply.

[bibliography]
§ 178.346–3 Pressure relief.

(a) Each cargo tank must be equipped with a pressure relief system in accordance with §178.345–10 and this section.

(b) Type and construction. In addition to the pressure relief devices required in §178.345–10:

(1) Each cargo tank must be equipped with one or more vacuum relief devices;

(2) When intended for use only for lading meeting the requirements of §173.33(c)(1)(iii) of this subchapter, the cargo tank may be equipped with a normal vent. Such vents must be set to open at not less than 1 psig and must be designed to prevent loss of lading through the device in case of vehicle upset; and

(3) Notwithstanding the requirements in §178.345–10(b), after August 31, 1996, each pressure relief valve must be able to withstand a dynamic pressure surge reaching 30 psig above the design set pressure and sustained above the set pressure for at least 60 milliseconds with a total volume of liquid released not exceeding 1 L before the relief valve recloses to a leak-tight condition. This requirement must be met regardless of vehicle orientation. This capability must be demonstrated by testing. TTMA RP No. 81 (IBR, see §171.7 of this subchapter), cited at §178.345–10(b)(3)(i), is an acceptable test procedure.

(c) Pressure settings of relief valves. (1) Notwithstanding the requirements in §178.345–10(d), the set pressure of each primary relief valve must be not less than 110 percent of the MAWP or 3.3 psig, whichever is greater, and not more than 138 percent of the MAWP. The valve must close at not less than the MAWP and remain closed at lower pressures.

(2) Each vacuum relief device must be set to open at no more than 6 ounces vacuum.

(d) Venting capacities. (1) Notwithstanding the requirements in §178.345–10(e) and (g), the primary pressure relief valve must have a venting capacity of at least 6,000 SCFH, rated at not greater than 125 percent of the tank test pressure and not greater than 3