

equivalent, and will not cause distortion of the valve seat or valve.

[Amdt. 179-10, 36 FR 21348, Nov. 6, 1971, as amended by Amdt. 179-40, 52 FR 13046, Apr. 20, 1987; Amdt. 179-41, 52 FR 36672, Sept. 30, 1987; Amdt. 179-50, 60 FR 49077, Sept. 21, 1995; Amdt. 179-52, 61 FR 28680, June 5, 1996; Amdt. 179-53, 61 FR 51342, Oct. 1, 1996; 66 FR 45186, Aug. 28, 2001; 68 FR 75761, Dec. 31, 2003]

### Subpart D—Specifications for Non-Pressure Tank Car Tanks (Classes DOT-111AW and 115AW)

#### § 179.200 General specifications applicable to non-pressure tank car tanks (Class DOT-111).

#### § 179.200-1 Tank built under these specifications must meet the requirements of §§ 179.200, and 179.201.

#### § 179.200-3 Type.

Tank built under these specifications must be circular in cross section, with formed heads designed convex outward. When specified in § 179.201-1, the tank must have at least one manway or one expansion dome with manway, and such other external projections as are prescribed herein. When the tank is divided into compartments, each compartment must be treated as a separate tank.

[Amdt. 179-10, 36 FR 21348, Nov. 6, 1971]

#### § 179.200-4 Insulation.

(a) If insulation is applied, the tank shell and expansion dome when used must be insulated with an approved material. The entire insulation must be covered with a metal jacket of a thickness not less than 11 gauge (0.1196 inch) nominal (Manufacturer's Standard Gauge) and flashed around all openings so as to be weather tight. The exterior surface of a carbon steel tank and the inside surface of a carbon steel jacket must be given a protection coating.

(b) If insulation is a specification requirement, it shall be of sufficient thickness so that the thermal conductance at 60 °F is not more than 0.225 Btu per hour, per square foot, per degree F temperature differential, unless otherwise provided in § 179.201-1. If exterior

heaters are attached to tank, the thickness of the insulation over each heater element may be reduced to one-half that required for the shell.

[29 FR 18995, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 179-10, 36 FR 21349, Nov. 6, 1971; Amdt. 179-50, 60 FR 49078, Sept. 21, 1995]

#### § 179.200-6 Thickness of plates.

(a) The wall thickness after forming of the tank shell, dome shell, and of 2:1 ellipsoidal heads must be not less than specified in § 179.201-1, nor that calculated by the following formula:

$$t = \frac{Pd}{2SE}$$

Where:

$d$  = Inside diameter in inches;

$E$  = 0.9 Welded joint efficiency; except  $E=1.0$  for seamless heads;

$P$  = Minimum required bursting pressure in psig;

$S$  = Minimum tensile strength of plate material in p.s.i. as prescribed in § 179.200-7;

$t$  = Minimum thickness of plate in inches after forming.

(b) The wall thickness after forming of 3:1 ellipsoidal heads must be not less than specified in § 179.201-1, nor that calculated by the following formula:

$$t = \frac{Pd}{2SE} \times 1.83$$

Where:

$d$  = Inside diameter in inches;

$E$  = 0.9 Welded joint efficiency; except  $E=1.0$  for seamless heads;

$P$  = Minimum required bursting pressure in psig;

$S$  = Minimum tensile strength of plate material in p.s.i. as prescribed in § 179.200-7;

$t$  = Minimum thickness of plate in inches after forming.

(c) The wall thickness after forming of a flanged and dished head must be not less than specified in § 179.201-1, nor that calculated by the following formula:

$$t = \frac{5PL}{6SE}$$

Where:

$E$  = 0.9 Welded joint efficiency; except  $E=1.0$  for seamless heads;