

	Example of re-quired stamping
Design service temperature	Minus 423° F.
Inner tank	Inner Tank.
Material	ASTM A240-304.
Shell thickness	Shell 3/16 inch.
Head thickness	Head 3/16 inch.
Inside diameter	ID 107 inch.
Inner tank builder's initials	ABC.
Date of original test (month and year) and initials of person conducting original test.	00-0000GHK.
Water capacity	00000 lbs.
Outer jacket	Outer jacket.
Material	ASTM A515-70.
Outer jacket builder's initials	DEF.
Car assembler's initials (if other than inner tank or outer jacket builder).	XYZ.

1½ inches high, with the statement, "vacuum jacketed."

[Amdt. 179-32, 48 FR 27708, June 16, 1983, as amended at 66 FR 45391, Aug. 28, 2001; 68 FR 75763, Dec. 31, 2003]

§ 179.401 Individual specification requirements applicable to inner tanks for cryogenic liquid tank car tanks.

§ 179.401-1 Individual specification requirements.

In addition to § 179.400, the individual specification requirements for the inner tank and its appurtenances are as follows:

(b) Any stamping on the shell or heads of the inner tank is prohibited.

(c) In lieu of the stamping required by paragraph (a) of this section, the specified markings may be incorporated on a data plate of corrosion-resistant metal, fillet welded in place on the head of the outer jacket at the "B" end of the car.

§ 179.400-25 Stenciling.

Each tank car must be stenciled in compliance with the provisions of the AAR Specifications for Tank Cars, appendix C (IBR, see § 171.7 of this subchapter). The stenciling must also include the following:

(a) The date on which the rupture disc was last replaced and the initials of the person making the replacement, on the outer jacket in letters and figures at least 1½ inches high.

(b) The design service temperature and maximum lading weight, in letters and figures at least 1½ inches high adjacent to the hazardous material stencil.

(c) The water capacity, in pounds net at 60 °F., with the tank at its coldest operating temperature, after deduction for the volume above the inlet to the pressure relief device or pressure control valve, structural members, baffles, piping, and other appurtenances inside the tank, in letters and figures at least 1½ inches high.

(d) Both sides of the tank car, in letters at least 1½ inches high, with the statement "Do Not Hump or Cut Off While in Motion."

(e) The outer jacket, below the tank classification stencil, in letters at least

DOT specification	113A60W	113C120W
Design service temperature, °F.	- 423	- 260.
Material	§ 179.400-5	§ 179.400-5.
Impact test (weld and plate material).	§ 179.400-5(c) ..	§ 179.400-5(c).
Impact test values	§ 179.400-5(d) ..	§ 179.400-5(d).
Standard heat transfer rate. (Btu per day per lb. of water capacity, max.) (see § 179.400-4).	0.097	0.4121.
Bursting pressure, min. psig.	240	300.
Minimum plate thickness shell, inches (see § 179.400-7(a)).	3/16	3/16.
Minimum head thickness, inches (see § 179.400-8 (a), (b), and (c)).	3/16	3/16.
Test pressure, psig (see § 179.400-16).	60	120.
Safety vent bursting pressure, max. psig.	60	120.
Pressure relief valve start-to-discharge pressure, psig (±3 psi).	30	75.
Pressure relief valve vapor tight pressure, min. psig.	24	60.
Pressure relief valve flow rating pressure, max. psig.	40	85.
Alternate pressure relief valve start to-discharge pressure, psig (±3 psi).	90.
Alternate pressure relief valve vapor tight pressure, min. psig.	72.
Alternate pressure relief valve flow rating pressure, max. psig.	100.
Pressure control valve Start-to-vent, max. psig (see § 179.400-20(c)(4)).	17	Not required.
Relief device discharge restrictions.	§ 179.400-20	179.400-20.

§ 179.500

DOT specification	113A60W	113C120W
Transfer line insulation	§ 179.400-17	Not required.

[Amdt. 179-32, 48 FR 27708, June 16, 1983, as amended at 49 FR 24318, June 12, 1984; 65 FR 58632, Sept. 29, 2000; 66 FR 45390, Aug. 28, 2001]

**§ 179.500 Specification DOT-107A * * *
* seamless steel tank car tanks.**

§ 179.500-1 Tanks built under these specifications shall meet the requirements of § 179.500.

§ 179.500-3 Type and general requirements.

(a) Tanks built under this specification shall be hollow forged or drawn in one piece. Forged tanks shall be machined inside and outside before ends are necked-down and, after necking-down, the ends shall be machined to size on the ends and outside diameter. Machining not necessary on inside or outside of seamless steel tubing, but required on ends after necking-down.

(b) For tanks made in foreign countries, chemical analysis of material and all tests as specified must be carried out within the limits of the United States under supervision of a competent and disinterested inspector; in addition to which, provisions in § 179.500-18 (b) and (c) shall be carried out at the point of manufacture by a recognized inspection bureau with principal office in the United States.

(c) The term "marked end" and "marked test pressure" used throughout this specification are defined as follows:

(1) "Marked end" is that end of the tank on which marks prescribed in § 179.500-17 are stamped.

(2) "Marked test pressure" is that pressure in psig which is indicated by the figures substituted for the **** in the marking DOT-107A **** stamped on the marked end of tank.

(d) The gas pressure at 130°F in the tank shall not exceed 7/10 of the marked test pressure of the tank.

[Amdt. 179-32, 48 FR 27708, June 16, 1983, as amended at 66 FR 45186, 45391, Aug. 28, 2001]

§ 179.500-4 Thickness of wall.

(a) Minimum thickness of wall of each finished tank shall be such that at a pressure equal to 7/10 of the marked

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test pressure of the tank, the calculated fiber stress in psi at inner wall of tank multiplied by 3.0 will not exceed the tensile strength of any specimen taken from the tank and tested as prescribed in § 179.500-7(b). Minimum wall thickness shall be 1/4 inch.

(b) Calculations to determine the maximum marked test pressure permitted to be marked on the tank shall be made by the formula:

$$P = [10S(D^2 - d^2)] / [7(D^2 + d^2)]$$

Where:

P = Maximum marked test pressure permitted;

$$S = U / 3.0$$

Where:

U = Tensile strength of that specimen which shows the lower tensile strength of the two specimens taken from the tank and tested as prescribed in § 179.500-7(b).

3 = Factor of safety.

$(D^2 - d^2)/(D^2 + d^2)$ = The smaller value obtained for this factor by the operations specified in § 179.500-4(c).

(c) Measure at one end, in a plane perpendicular to the longitudinal axis of the tank and at least 18 inches from that end before necking-down:

d = Maximum inside diameter (inches) for the location under consideration; to be determined by direct measurement to an accuracy of 0.05 inch.

t = Minimum thickness of wall for the location under consideration; to be determined by direct measurement to an accuracy of 0.001 inch.

$$\text{Take } D = d + 2t.$$

Calculate the value of $(D^2 - d^2)/(D^2 + d^2)$

(1) Make similar measurements and calculation for a corresponding location at the other end of the tank.

(2) Use the smaller result obtained, from the foregoing, in making calculations prescribed in paragraph (b) of this section.

[29 FR 18995, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 179-31, 47 FR 43067, Sept. 30, 1982; 66 FR 45391, Aug. 28, 2001]

§ 179.500-5 Material.

(a) Tanks shall be made from open-hearth or electric steel of uniform quality. Material shall be free from seams, cracks, laminations, or other defects injurious to finished tank. If