

§ 179.220-7 Materials.

(a) The plate material used to fabricate the inner container and nozzles must meet one of the following specifications and with the indicated minimum tensile strength and elongation in the welded condition.

(b) Carbon steel plate: The maximum allowable carbon content must be 0.31 percent when the individual specification allows carbon content greater than this amount. The plates may be clad with other approved materials.

Specifications	Minimum tensile strength (p.s.i.) welded condition¹	Minimum elongation in 2 inches (percent) weld metal (longitudinal)
AAR TC 128, Gr. B	81,000	19
ASTM A 516 ² , Gr. 70	70,000	20

¹Maximum stresses to be used in calculations.

²This specification is incorporated by reference (IBR, see §171.7 of this subchapter).

(c) *Aluminum alloy plate:* Aluminum alloy plate must be suitable for welding and comply with one of the following specifications (IBR, see §171.7 of this subchapter): * * *

Specifications	Minimum tensile strength (p.s.i.) welded condition^{3,4}	Minimum elongation in 2 inches (percent) weld metal (longitudinal)
ASTM B 209, Alloy 5052 ¹	25,000	18
ASTM B 209, Alloy 5083 ²	38,000	16
ASTM B 209, Alloy 5086 ¹	35,000	14
ASTM B 209, Alloy 5154 ¹	30,000	18
ASTM B 209, Alloy 5254 ¹	30,000	18
ASTM B 209, Alloy 5454 ¹	31,000	18
ASTM B 209, Alloy 5652 ¹	25,000	18

¹For fabrication, the parent plate material may be 0 H112, or H32 temper, but design calculations must be based on the minimum tensile strength shown.

²0 temper only.

³Weld filler metal 5556 must not be used.

⁴Maximum stresses to be used in calculations.

(d) High alloy steel plate: High alloy steel plate must comply with one of the following specifications (IBR, see §171.7 of this subchapter):

Specifications	Minimum tensile strength (p.s.i.) welded condition¹	Minimum elongation in 2 inches (percent) weld metal (longitudinal)

ASTM A 240/A 240M (incorporated by reference; <i>see</i> §171.7 of this subchapter), Type 304	75,000	30
ASTM A 240/A 240M (incorporated by reference; <i>see</i> §171.7 of this subchapter), Type 304L	70,000	30
ASTM A 240/A 240M (incorporated by reference; <i>see</i> §171.7 of this subchapter), Type 316	74,000	30
ASTM A 240/A 240M (incorporated by reference; <i>see</i> §171.7 of this subchapter), Type 316L	70,000	30

¹Maximum stresses to be used in calculations.

(e) Manganese-molybdenum steel plate: Manganese-molybdenum steel plate must be suitable for fusion welding and must comply with the following specification (IBR, *see* §171.7 of this subchapter):

Specifications	Minimum tensile strength (p.s.i.) welded condition¹	Minimum elongation in 2 inches (percent) weld metal (longitudinal)
ASTM A 302, Gr. B	80,000	20

¹Maximum stresses to be used in calculations.

(f) Plate materials used to fabricate the outer shell and heads must be those listed in paragraphs (b), (c), (d), or (e) of this section. The maximum allowable carbon content must be 0.31 percent when the individual specification allows carbon content greater than this amount. The plates may be clad with other approved materials.

(g) All appurtenances on the inner container in contact with the lading must be made of approved material compatible with the plate material of the inner container. These appurtenances must not be subject to rapid deterioration by the lading, or must be coated or lined with suitable corrosion resistant material. See AAR Specifications for Tank Cars, appendix M, M4.05 for approved material specifications for castings for fittings.

[Amdt. 179–9, 36 FR 21340, Nov. 6, 1971, as amended by Amdt. 179–28, 46 FR 49906, Oct. 8, 1981; Amdt. 179–40, 52 FR 13048, Apr. 20, 1987; Amdt. 179–52, 61 FR 28681, June 5, 1996; 66 FR 45186, Aug. 28, 2001; 67 FR 51660, Aug. 8, 2002; 68 FR 75762, Dec. 31, 2003]