

**§ 154.620 Design temperature below  $-55^{\circ}\text{C}$  ( $-67^{\circ}\text{F}$ ) and down to  $-165^{\circ}\text{C}$  ( $-265^{\circ}\text{F}$ ).**

Plates, forgings and forged or rolled fittings, and rolled, forged or extruded bars and shapes for cargo tanks, secondary barriers, and process pressure vessels for a design temperature below  $-55^{\circ}\text{C}$  ( $-67^{\circ}\text{F}$ ) and down to  $-165^{\circ}\text{C}$  ( $-265^{\circ}\text{F}$ ) must:

(a) Meet § 54.25–10(b)(2), § 54.25–15, or § 54.25–20 of this chapter; or

(b) Be of an aluminum alloy that is specially approved by the Commandant (CG–ENG).

[CGD 74–289, 44 FR 26009, May 3, 1979, as amended by CGD 82–063b, 48 FR 4782, Feb. 3, 1983]

**§ 154.625 Design temperature below  $0^{\circ}\text{C}$  ( $32^{\circ}\text{F}$ ) and down to  $-165^{\circ}\text{C}$  ( $-265^{\circ}\text{F}$ ).**

Pipes, tubes, forgings, castings, bolting, and nuts for cargo and process piping for a design temperature below  $0^{\circ}\text{C}$  ( $32^{\circ}\text{F}$ ) and down to  $-165^{\circ}\text{C}$  ( $-265^{\circ}\text{F}$ ) must meet § 56.50–105 of this chapter.

**§ 154.630 Cargo tank material.**

(a) If a material of a cargo tank is not listed in §§ 154.610, 154.615 or § 154.620, the allowable stress of that material must be specially approved by the Commandant (CG–ENG).

(b) For cargo tanks of aluminum alloys with welded connections, the minimum tensile strength ( $\sigma_B$ ) for the calculations under § 154.440, § 154.447 and § 154.450 must be the minimum tensile strength of the alloy in the annealed condition.

(c) Increased yield strength and tensile strength of a material at low temperature for independent tanks type A, B, and C must be specially approved by the Commandant (CG–ENG).

[CGD 74–289, 44 FR 26009, May 3, 1979, as amended by CGD 82–063b, 48 FR 4782, Feb. 3, 1983]

CONSTRUCTION

**§ 154.650 Cargo tank and process pressure vessel welding.**

(a) Cargo tank and process pressure vessel welding must meet Subpart 54.05 and Part 57 of this chapter.

(b) Welding consumables used in welding cargo tanks must meet § 57.02–4 of this chapter.

(c) Independent tanks must meet the following:

(1) Each welded joint of the shells must be a full penetration butt weld, except dome to shell connections may have full penetration tee welds.

(2) Each nozzle weld must be of the full penetration type, except for small penetrations on domes.

(d) Each welded joint in an independent tank type C or in a process pressure vessel must meet part 54 of this chapter, except that any backing rings must be removed unless specially approved by the Commandant (CG–OES).

(e) Each welded joint in a membrane tank must meet the quality assurance measures, weld procedure qualification, design details, materials, construction, inspection, and production testing of components developed during the prototype testing program that are specially approved by the Commandant (CG–OES) under this part.

(f) Each welded joint in a semi-membrane tank must meet paragraph (c) or (e) of this section.

[CGD 74–289, 44 FR 26009, May 3, 1979, as amended by CGD 82–063b, 48 FR 4782, Feb. 3, 1983]

**§ 154.655 Stress relief for independent tanks type C.**

For a design temperature colder than  $-10^{\circ}\text{C}$  ( $14^{\circ}\text{F}$ ), an independent tank type C of:

(a) Carbon and carbon-manganese steel must be stress relieved by post-weld heat treatment under § 54.25–7 of this chapter or by mechanical stress relief under subpart 54.30 of this chapter; or

(b) Materials other than carbon and carbon manganese steel must be stress relieved as required under part 54 of this chapter. The procedure for stress relieving must be specially approved by the Commandant (CG–OES).

**§ 154.660 Pipe welding.**

(a) Pipe welding must meet part 57 of this chapter.

(b) Longitudinal butt welds, in piping that does not meet a standard or specification under § 56.60–1 of this chapter,