§ 54.01–17 Pressure vessel for human occupancy (PVHO).

Pressure vessels for human occupancy (PVHO’s) must meet the requirements of subpart B (Commercial Diving Operations) of part 197 of this chapter.

[CGD 76–009, 43 FR 53883, Nov. 16, 1978]

§ 54.01–18 Plan approval.

(a) Manufacturers intending to fabricate pressure vessels, heat exchangers, evaporators, and similar appurtenances, covered by the regulations in this part shall submit detailed plans in accordance with subpart 50.20 of this subchapter.

(b) The following information shall be submitted:

(1) Calculations for all pressure containment components including the maximum allowable working pressure, the hydrostatic or pneumatic test pressure, and the intended safety device setting.

(2) Joint design and methods of attachment of all pressure containment components.

(3) Foundations and supports (design and attachment).

(4) Pertinent calculations for pressure vessel foundations and/or supports.

(5) A bill of material meeting the requirements of section VIII of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1), as modified by this part.

(6) A diagrammatic arrangement drawing of the assembled unit indicating location of internal and external components.


§ 54.01–30 Loadings (modifies UG–22).

(a) The loadings for pressure vessels shall be as required by UG–22 of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1) except as noted otherwise in this section.

(b) In evaluating loadings for certain pressure vessel applications, the Commandant may require consideration of the following loads in addition to those listed in UG–22 of section VIII of the ASME Boiler and Pressure Vessel Code:

(1) Loading imposed by vessel’s attitude in roll, list, pitch and trim.

(2) Dynamic forces due to ship motions.


§ 54.01–35 Corrosion (modifies UG–25).

(a) Vessels or portions of vessels subject to corrosion shall be as required by UG–25 of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1) except as noted otherwise in this section.

(b) The pressure portions of pressure vessels shall:

(1) Normally have a corrosion allowance of one-sixth of the calculated thickness, or one-sixteenth inch, whichever is smaller, added to the calculated thickness as determined by the applicable design formula.

(2) Be specifically evaluated in cases where unusually corrosive cargoes will be involved, for the possible increase of this corrosion allowance.

(3) Have no additional thickness required when acceptable corrosion resistant materials are used.

(4) Not normally need additional thickness allowance when the effective stress (either S or SE depending on the design formula used) is 80 percent or
§ 54.05–3 General.

(a) Requirements for ferritic steels, high alloy steels, and heat treated ferritic steels are contained in §§54.25–10, 54.25–15, and 54.25–20 respectively of this subchapter.

(b) Requirements for toughness testing of material product forms and weldments (including weld procedure qualification and production toughness tests) are contained in subpart 54.05.

(c) Materials suitable for a given minimum service temperature may be used in warmer service. Steels differing in chemical composition, mechanical properties, or heat treatments from those specified may be specially approved by the Commandant. Similarly, aluminum alloys and other nonferrous materials not intended to be covered by these sections may be specially considered by the Commandant for service at any low temperature.


Subpart 54.05—Toughness Tests

§ 54.05–1 Scope (replaces UG–84).

The toughness tests of materials used in pressure vessels shall be as required by this subpart in lieu of requirements in UG–84 of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)


§ 54.05–3 Tests required.

(a) Where material or welding toughness tests are required by §§54.25–10, 54.25–15, 54.25–20, and subpart 57.03 or 57.06 of this subchapter, the following requirements shall apply:

(1) Additional requirements for ferritic steels with properties enhanced by heat treatment are in §54.25–20.

(2) Certified reports of toughness tests by the material manufacturer will be acceptable evidence provided the specimens taken are representative of the material delivered and that the material is not subject to treatment during or following fabrication that will reduce its impact properties. If