§ 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 53683, 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.

[CGFR 68–82, 33 FR 18828, Dec. 18, 1968, as amended by USCG–2003–16630, 73 FR 65166, Oct. 31, 2008]

§ 54.01–25 Miscellaneous pressure components (modifies UG–11).

(a) Pressure components for pressure vessels shall be as required by UG–11 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) All pressure components conforming to an accepted ANSI (American National Standards Institute) Standard referred to in an adopted code, specification or standard or in this subchapter shall also be marked in accordance with MSS SP–25 (incorporated by reference; see 46 CFR 54.01–1).

[CGFR 68–82, 33 FR 18828, Dec. 18, 1968, as amended by CGFR 69–127, 35 FR 9977, June 17, 1970; USCG–2003–16630, 73 FR 65167, Oct. 31, 2008]

§ 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.

[CGFR 68–82, 33 FR 18828, Dec. 18, 1968, as amended by USCG–2003–16630, 73 FR 65167, Oct. 31, 2008]

§ 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

less of the allowable stress listed in section VIII of the ASME Boiler and Pressure Vessel Code for calculating thickness.

(c) Telltale holes shall not be permitted in pressure vessels containing dangerous fluids, such as acid, poison, corrosives, etc.

(d) Exemption from these corrosion allowance requirements will be granted by the Commandant in those cases where:

(1) The contents of the pressure vessel is judged to be sufficiently noncorrosive; and,

(2) Where the external surface is also protected from corrosion. A suitable vapor barrier is adequate protection, while paint or other thin coatings exposed to weather or mechanical damage are not acceptable.

NOTE: No applied linings except as provided in Part UCL of section VIII of the ASME Boiler and Pressure Vessel Code shall be acceptable.

[CGFR 68–82, 33 FR 18828, Dec. 18, 1968, as amended by CGFR 72–59R, 37 FR 6189, Mar. 25, 1972; USCG–2003–16630, 73 FR 65167, Oct. 31, 2008]

§ 54.01–40 External pressure (modifies UG–28).

(a) The exemption from external pressure consideration provided by the note under UG–28(f) does not apply.

(b) Vessels which may at times be subjected to partial vacuum due to nature of the contents, temperature, unloading operations, or other facet of employment shall either have vacuum breaker protection or be designed for not less than one-half atmosphere of external pressure.

[CGFR 70–143, 35 FR 19906, Dec. 30, 1970]

Subpart 54.03—Low Temperature Operation

§ 54.03–1 Scope.

The pressure vessels for low temperature operation shall be as required by section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1) as modified by this subpart.

[CGFR 68–82, 33 FR 18828, Dec. 18, 1968, as amended by USCG–2003–16630, 73 FR 65167, Oct. 31, 2008]

§ 54.03–5 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.

[CGFR 68–82, 33 FR 18828, Dec. 18, 1968, as amended by CGFR 69–127, 35 FR 9977, June 17, 1970]

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)

[CGFR 68–82, 33 FR 18828, Dec. 18, 1968, as amended by USCG–2003–16630, 73 FR 65167, Oct. 31, 2008]

§ 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