

§ 160.156-7

46 CFR Ch. I (10-1-12 Edition)

IBR approved for §§160.156-7 and 160.156-13 (“IMO MSC Circ. 980”).

(6) MSC.1/Circular 1205, Guidelines for Developing Operation and Maintenance Manuals for Lifeboat Systems, (May 26, 2006), IBR approved for §160.156-21 (“IMO MSC.1 Circ. 1205”).

(e) International Organization for Standardization (ISO): ISO Central Secretariat [ISO Copyright Office], Case Postale 56, CH-1211 Geneve 20, Switzerland.

(1) ISO 527-1:1993(E), Plastics—Determination of tensile properties, Part 1: General Principles, First Edition (June 15, 1993), IBR approved for §160.156-11 (“ISO 527”).

(2) ISO 1172:1996(E), Textile-glass-reinforced plastics—Prepregs, moulding compounds and laminates—Determination of the textile-glass and mineral-filler content—Calcination methods, Second Edition (December 15, 1996), IBR approved for §§160.156-11 and 160.156-15 (“ISO 1172”).

(3) ISO 14125:1998(E), Fibre-reinforced plastic composites—Determination of flexural properties, First Edition (March 1, 1998), IBR approved for §160.156-11 (“ISO 14125”).

(4) ISO 15372:2000(E), Ships and marine technology—Inflatable rescue boats—Coated fabrics for inflatable chambers, First Edition (December 1, 2002), IBR approved for §§160.156-7 and 160.156-15 (“ISO 15372”).

(f) Military Specifications and Standards, Standardization Documents Order Desk, Building 4D, 700 Robins Avenue, Philadelphia PA 19111-5094, <https://assist.daps.dla.mil/quicksearch/>.

(1) MIL-C-19663D, Military Specification, Cloth, Woven Roving, For Plastic Laminate, (August 4, 1988), IBR approved for §160.156-7 (“MIL-C-19663D”).

(2) MIL-P-17549D(SH), Military Specification, Plastic Laminates, Fibrous Glass Reinforced, Marine Structural, (August 31, 1981), IBR approved for §§160.156-7 and 160.156-11 (“MIL-P-17549D(SH)”).

(3) MIL-R-21607E(SH), Military Specification, Resins, Polyester, Low Pressure Laminating, Fire-Retardant, (May 25, 1990), IBR approved for §160.156-11 (“MIL-R-21607E(SH)”).

(g) Society of Automotive Engineers (SAE), 400 Commonwealth Drive, Warrendale, PA 15096.

(1) SAE J1527 (Revised JAN93), Marine Fuel Hoses, (February 5, 1993), IBR approved for §160.156-7 (“SAE J1527”).

(2) [Reserved]

(h) Underwriters Laboratories (UL), 2600 NW., Lake Rd, Camas, WA 98607-8542.

(1) UL 1102, UL Standard for Safety for Nonintegral Marine Fuel Tanks, Fifth Edition (February 4, 1999), IBR approved for §160.156-7 (“UL 1102”).

(2) UL 1185, Standard for Safety for Portable Marine Fuel Tanks, Fourth Edition (September 26, 1996), IBR approved for §160.156-7 (“UL 1185”).

§ 160.156-7 Design, construction and performance of rescue boats and fast rescue boats.

(a) To seek Coast Guard approval of a rescue boat, including a fast rescue boat, a manufacturer must comply with, and each rescue boat must meet, the requirements of the following:

(1) IMO LSA Code chapter V (incorporated by reference, see §160.156-5 of this subpart);

(2) IMO Revised recommendation on testing, part 1/7 (incorporated by reference, see §160.156-5 of this subpart) applicable to the type of rescue boat;

(3) 46 CFR part 159; and

(4) This subpart.

(b) Each rescue boat must meet the following requirements:

(1) *Design.* (i) Each rescue boat must be designed to be operable by persons wearing immersion suits.

(ii) Each rescue boat should be designed following standard human engineering practices described in ASTM F 1166 (incorporated by reference, see §160.156-5 of this subpart). Design limits should be based on a range from the fifth percentile female to the ninety-fifth percentile male values for critical body dimensions and functional capabilities as described in ASTM F 1166. The dimensions for a person wearing an immersion suit correspond to the arctic-clothed dimensions of ASTM F 1166.

(2) *Visibility from operator's station.* (i) The operator's station must be designed such that the operator, when seated at the control station, has visibility 360 degrees around the rescue boat, with any areas obstructed by the rescue boat structure or its fittings

visible by moving the operator's head and torso.

(ii) The operator, while still being able to steer and control the speed of the rescue boat, must be able to see the water—

(A) Over a 90 degree arc within 3 m (10 ft) of each side of the rescue boat;

(B) Over a 30 degree arc within 1 m (3 ft, 3 in) of each side of the rescue boat; and

(C) Within 0.5 m (1 ft, 8 in) of the entrances designated for recovering persons from the water.

(iii) In order to see a person in the water during recovery or docking operations, a hatch must be provided in fully enclosed rescue boats so that the operator can stand with his or her head outside the rescue boat for increased visibility, provided the operator can still steer and control the speed of the rescue boat.

(3) *Construction.* Each major rigid structural component of each rescue boat must be constructed of steel, aluminum, or Fiber Reinforced Plastic (FRP), or materials accepted by the Commandant as equivalent or superior.

(i) *General.* Metals in contact with each other must be either galvanically compatible or insulated with suitable non-porous materials. Provisions must also be made to prevent loosening or tightening resulting from differences of thermal expansion, freezing, buckling of parts, galvanic corrosion, or other incompatibilities.

(ii) *Steel.* Sheet steel and plate must be low carbon, commercial quality, either corrosion resistant or galvanized as per ASTM A 653, coating designation G90 (incorporated by reference, see §160.156-5 of this subpart). Structural steel plates and shapes must be carbon steel as per ASTM A 36 (incorporated by reference, see §160.156-5 of this subpart), or an equivalent or superior steel accepted by the Commandant. All steel products, except corrosion resistant steel, must be galvanized to provide high quality zinc coatings suitable for the intended service life in a marine environment. Corrosion resistant steel must be a type 302 stainless steel per ASTM A 276, ASTM A 313, or ASTM A 314 (incorporated by reference, see §160.156-5 of this subpart) or another corrosion resistant stainless steel of

equal or superior corrosion resistant characteristics.

(iii) *Aluminum.* Aluminum and aluminum alloys must conform to ASTM B 209 (incorporated by reference, see §160.156-5 of this subpart) and be high purity for good marine corrosion resistance, free of iron, and containing not more than 0.6 percent copper.

(iv) *Fiber Reinforced Plastic (FRP).*

(A) *Resin.* Any resin used for the hull, canopy, hatches, rigid covers, and enclosures for the engine, transmission, and engine accessories, must be fire retardant and accepted by the Commandant in accordance with 46 CFR part 164, subpart 164.120.

(B) *Glass reinforcement.* Any glass reinforcement used must have good laminated wet strength retention and must meet the appropriate specification in this paragraph. Glass cloth must be a finished fabric woven from "E" electrical glass fiber yarns meeting ASTM D 4029-09 commercial style designation 1564 (incorporated by reference, see §160.156-5 of this subpart). Woven roving must conform to MIL-C-19663D (incorporated by reference, see §160.156-5 of this subpart). Other glass materials equivalent or superior in strength, design, wet out, and efficiency will be given consideration on specific request to the Commandant.

(C) *Laminate.* All exposed surfaces of any finished laminate must present a smooth finish, and there must be no protruding surface fibers, open voids, pits, cracks, bubbles, or blisters. The laminate must be essentially free from resin-starved or overimpregnated areas, and no foreign matter must remain in the finished laminate. The entire laminate must be fully cured and free of tackiness, and must show no tendency to delaminate, peel, or craze in any overlay. The laminate must not be released from the mold until a Barcol hardness reading of not less than 40-55 is obtained from at least 10 places on the non-gel coated surface, including all interior inner and outer hull surfaces and built-in lockers. The mechanical properties of the laminate must meet the requirements for a Grade 3 laminate as specified in Table I of MIL-P-17549D(SH) (incorporated by

reference, see §160.156-5 of this subpart). Other grades will be given consideration on specific request to the Commandant.

(4) *Welding.* Welding must be performed by welders certified by the Commandant, a classification society recognized by the Commandant in accordance with 46 CFR 8.220, the U.S. Navy, or the national body where the rescue boat is constructed or the national body's designated recognized organization. Only electrodes intended for use with the material being welded may be used. All welds must be checked using appropriate non-destructive tests.

(5) *Rescue boat buoyancy.* (i) The buoyancy material must be accepted by the Commandant as meeting the performance requirements of IMO Revised recommendation on testing, Part 1, 6.2.2 to 6.2.7, with a density of $32 \pm 8 \text{ kg/m}^3$ ($2 \pm 0.5 \text{ lb/ft}^3$). The buoyancy foam or rescue boat manufacturer must certify the results of the testing to IMO Revised recommendation on testing, part 1, 6.2.2 to 6.2.7 and submit those results to the Commandant. A list of accepted buoyancy foams may be obtained from the Commandant upon request.

(ii) All voids in the hull and canopy required to provide buoyancy for positive stability and self righting must be completely filled with Coast Guard-accepted buoyancy material.

(iii) Air in the inflated collar of a rigid-hull inflatable rescue boat will not be considered inherently buoyant material for the purposes of meeting the additional 280 N/person requirement of the LSA Code, chapter IV/4.4.4.

(6) *Coated fabric.* Any coated fabric used in the construction of inflatable chambers on a rescue boat must be shown to have been subjected to the criteria listed in IMO MSC Circ. 980 for Inflation Chamber Characteristics Test (incorporated by reference, see §160.156-5 of this subpart) by meeting the requirements of ISO 15372 (incorporated by reference, see §160.156-5 of this subpart). The color of the finished fabric must be vivid reddish orange color number 12197 of FED-STD-595C (incorporated by reference, see §160.156-5 of this subpart), or a durable fluorescent color of a similar hue. Each

seam must be at least as strong as the weakest of the materials joined by the seam. Each seam must be covered with tape where necessary to prevent lifting of and damage to fabric edges.

(7) *Engines.* (i) In order to be accepted by the Commandant, any spark ignition engine fitted to an approved rescue boat must meet the U.S. Environmental Protection Agency emission requirements in 40 CFR part 91 or part 1045, as applicable, or for a compression ignition engine the requirements in 40 CFR part 89, part 94, or part 1042, as applicable, and have reports containing the same information as recommended by MSC Circ. 980 (incorporated by reference, see §160.156-5 of this subpart) certified and witnessed by a U.S. Coast Guard inspector or an independent laboratory.

(ii) A hydraulic system, if used to start the engine, must be in accordance with 46 CFR part 58, subpart 58.30, with hose and fittings in accordance with 46 CFR part 56, subpart 56.60 except that—

(A) Push-on type fittings such as Aeroquip 1525-X, 25156-X, and FC332-X are not permitted; and

(B) The length of nonmetallic flexible hose is limited to 760 mm (30 in). Longer nonmetallic flexible hoses may be allowed in emergency steering systems at the discretion of the Commandant.

(iii) If a hand pump is provided, or if the engine has a manual starting system, adequate space must be provided for the hand pump or hand start operation.

(8) *Fuel system.* (i) The fuel system must meet 46 CFR 56.50-75(b) and, except as specified in this paragraph, the fuel tank must meet 46 CFR 58.50-10.

(ii) The fuel tank and fuel system must be in accordance with paragraph (b)(8)(ii)(A), (B), or (C) of this section, as follows:

(A) Permanently installed fuel systems must meet the requirements in 46 CFR 160.135-7.

(B) Portable fuel systems for outboard engines must meet UL 1185 (incorporated by reference, see §160.156-5 of this subpart) or equivalent, except that hoses must be Coast Guard Type A per SAE J1527 (incorporated by reference, see §160.156-5 of this subpart), and hose clamps, primers, filters, and

strainers must be successfully tested in accordance with 33 CFR 183.590. Anti-siphon devices must be provided in the fuel system to prevent fuel spillage when the hose is disconnected. Arrangements must be provided to secure the fuel tank in its normal operating position on the rescue boat.

(C) Fuel systems for outboard engines using non-integral, permanently installed fuel tanks must meet the requirements of 33 CFR part 183, subpart J—Fuel Systems. UL 1102 (incorporated by reference, see § 160.156-5 of this subpart) meets these requirements for fuel tanks.

(9) *Starting system batteries.* Each battery fitted in a totally enclosed rescue boat must be stored in a sealed compartment with exterior venting. If the rescue boat has more than one engine, then only one starting battery is required per engine.

(10) *Exhaust.* Engine exhaust must be routed away from bilge and potential oil drips. Any paint used on engines, manifolds, or exhaust must not give off fumes when heated. All exhaust lagging must be non-absorbent.

(11) *Propeller guard.* Each propeller on a rescue boat must be fitted with a propeller guard with a maximum opening of 76 mm (3 in) on all sides on which a person is likely to be exposed.

(12) *Control and steering station.* Rescue boat starting, maneuvering, and steering controls must be provided at the control and steering station.

(i) The throttle must be a continuous manual control and must be able to be set and locked at any position.

(ii) The control and steering station must be designed and laid out in accordance with ASTM F 1166 sections 9 and 10, so that controls and displays are unambiguous, accessible, and easy to reach and use from the operator's normal seated position, while wearing an immersion suit or a lifejacket.

(iii) Each control, gauge, or display must be identified by a marking posted on, above, or adjacent to the respective item. Each control must operate in a logical manner and be marked with an arrow to show direction of movement of control which will cause an increased response. Each gauge must be marked with the normal operating range and indicate danger or abnormal

conditions. Each marking must be permanent and weatherproof.

(iv) Gauges, and audio and visual alarms, must be provided to monitor at least the following parameters on in-board engines—

(A) Coolant temperature, for a liquid cooled engine;

(B) Oil pressure, for an engine with an oil pump;

(C) Tachometer, for an engine not provided with over-speed protection; and

(D) State of charge, or rate of charge, for each rechargeable engine starting power source.

(13) *Drain plug.* The position of each drain plug must be clearly indicated by a permanent marking inside the lifeboat. The marking must be an arrow pointing in the direction of the plug, and the words "Drain Plug" must be 76 mm (3 in) high and have letters of a color that contrast with their background. The marking must be clearly visible to a person within the vicinity of the drain plug.

(14) *Remote steering.* The procedure to change over from remote to local steering must be simple, not require the use of tools, and be clearly posted. There must be sufficient clear space to install, operate, remove, and stow the removable tiller arm. The tiller arm and its connection to the rudder stock must be of sufficient strength so that there is no slippage or bending of the tiller arm. Rudder stops or other means must be provided to prevent the rudder from turning too far on either side.

(15) *Lifelines.* Buoyant lifelines must be of ultraviolet resistant material.

(16) *Rails provided as handholds.* Rails provided as handholds on rigid and rigid-inflated rescue boats must extend for half the length of the rescue boat on both sides of the hull, and the clearance between the rail and hull must be at least 38 mm (1.5 in). The rails must be attached to the hull below the chine or turn of the bilge, must be faired to prevent any fouling, and not project beyond the widest part of the rescue boat.

(17) *Equipment list.* A weatherproof equipment list must be permanently mounted in a conspicuous and prominent location on a stowage locker or

compartment, or on inside of canopy. The list must include a stowage plan oriented such that the stowage location of each item of loose equipment is readily apparent.

(18) *Release mechanism.* Each release mechanism fitted to a rescue boat, including a fast rescue boat, must be identified at the application for approval of the prototype rescue boat and must be approved under subparts 160.133 or 160.170 of this part. The release lever or control must be red in color, and the area immediately surrounding the control must be a sharply contrasting light color. An illustrated operating instruction plate or placard, showing the correct off-load and emergency on-load release procedure and recovery procedure, must be posted so that it is visible and legible from the helmsman's normal operating position. The plate or placard must be corrosion resistant and weatherproof and must be marked with the word "Danger".

(19) *Painter/painter release.* Each rescue boat must be fitted with a device to secure the painter near the bow of the rescue boat. The device must be arranged such that the rescue boat does not exhibit unsafe or unstable characteristics when being towed by the ship with the ship underway at 5 knots. A quick-release device must be provided, which allows the painter to be released from inside the rescue boat while under tension. The quick-release handle must be clearly identified by a label.

(20) *Canopy lamp.* Any exterior rescue boat position-indicating light must be approved by the Commandant under approval series 161.101.

(21) *Manually controlled interior light.* Any interior light must be approved by the Commandant under approval series 161.101.

(22) *Manual bilge pump.* Each rescue boat that is not automatically self-bailing must be fitted with a manual bilge pump approved under 46 CFR part 160, subpart 160.044, or an engine-powered bilge pump.

(23) *Labels and notices.* Any labels, caution and danger notices, and any operating, maintenance, or general instructions, must be in accordance with ASTM F 1166, Section 15, in terms of format, content, lettering size and spacing, color, and posted location.

They must be illustrated with symbols in accordance with IMO Res. A.760(18) (incorporated by reference, see § 160.156-5 of this subpart), as applicable. Information and instruction plates, not specifically mentioned in this section, must not be posted in the vicinity of the control and steering station without prior approval from the Commandant. Identification label plates, if required, must be posted on or above the component or equipment to be identified.

(24) *Stowage.* Each stowage compartment must be supported and secured against movement. It must have adequate hand access for removing and storing the required equipment, and for cleaning the inside of the compartment. There must be sufficient stowage volume to store the equipment required by 46 CFR 199.175.

(25) *Rescue boat equipment.* The rescue boat must be designed to accommodate and carry the equipment required by 46 CFR 199.175.

(26) *Exterior color.* The primary color of the exterior of the hull, exterior of any canopy or bow cover, and the interior of a rescue boat not covered by a canopy or bow cover must be a highly visible color equivalent to vivid reddish orange color number 12197 of FED-STD-595C, or a durable fluorescent color of a similar hue.

(27) *Navigation light.* Each rescue boat must have navigation lights that are in compliance with the applicable sections of the International and Inland Navigation Rules and meet 46 CFR 111.75-17.

(28) *Retroreflective material.* The exterior of each rescue boat and canopy must be marked with Type II retroreflective material approved under 46 CFR part 164, subpart 164.018. The arrangement of the retroreflective material must comply with IMO Res. A.658(16) (incorporated by reference, see § 160.156-5 of this subpart).

(c) Determinations of equivalence of design, construction, and materials will be made by the Commandant only.

§ 160.156-9 Preapproval review.

(a) Except as provided in paragraph (c) of this section, the Commandant must conduct the preapproval review,