which may have been found necessary during construction or testing. If the manufacturer desires more than one set of approved plans, additional copies shall be submitted at that time.

(d) Upon receipt of corrected drawings, material affidavits, and satisfactory test report, the Commandant will issue a certificate of approval. No change shall be made in the design or construction without first receiving permission of the Commandant via the Commander of the Coast Guard District in which the lifeboat winch is built.

[CGFR 49–18, 14 FR 5112, Aug. 17, 1949, as amended by CGFR 58–31, 23 FR 6884, Sept. 6, 1958]

Subpart 160.016—Lamps, Safety, Flame, for Merchant Vessels

SOURCE: CGFR 50–12, 15 FR 3093, May 20, 1950, unless otherwise noted.

§ 160.016–1 Applicable specification.

(a) The following specification of the issue in effect on the date flame safety lamps are manufactured forms a part of this subpart:

(1) Military specification:

MIL-L-1204, Lamps, Safety, Flame.

(b) A copy of the above specification shall be kept on file by the manufacturer together with the approved plan and certificate of approval issued by the Coast Guard.

§ 160.016–2 Requirements.

(a) Flame safety lamps for use on merchant vessels shall comply with the construction requirements of Military Specification MIL-L-1204.

(b) [Reserved]

§ 160.016–4 Marking.

(a) Flame safety lamps shall be permanently and legibly marked with the name and address of the manufacturer and the type or model designation for the lamp.

(b) [Reserved]

§ 160.016–5 Procedure for approval.

(a) *General.* Flame safety lamps are approved for use on merchant vessels only by the Commandant, United States Coast Guard, Washington, DC 20226. Correspondence relating to the subject matter of this specification shall be addressed to the Commander of the Coast Guard District in which such devices are manufactured.

(b) *Pre-approval sample and plan.* In order to apply for approval of a flame safety lamp for use on merchant vessels, submit one complete sample, together with four copies of an arrangement plan (parts drawings are not required), together with a statement that the lamp meets the construction requirements of Military Specification MIL-L-1204, as amended, to the Commander of the Coast Guard District who will forward same to the Commandant for determination as to its suitability for use on merchant vessels.

Subpart 160.017—Chain Ladder

SOURCE: CGD 74–140, 46 FR 63286, Dec. 31, 1981, unless otherwise noted.

§ 160.017–1 Scope.

(a) This subpart contains standards and approval and production tests for chain ladders used on a merchant vessel to get on and off the vessel in an emergency.

(b) The requirements in this subpart apply to a chain ladder designed for use along a vertical portion of a vessel's hull.

§ 160.017–7 Independent laboratory.

The approval and production tests in this subpart must be conducted by or under the supervision of an independent laboratory accepted by the Coast Guard under subpart 159.010 of this chapter.

§ 160.017–9 Approval procedure.

(a) *General.* A chain ladder is approved by the Coast Guard under the procedures in subpart 159.005 of this chapter.

(b) *Approval testing.* Each approval test must be conducted in accordance with § 160.017–21.

(c) *Approval of alternatives.* A chain ladder that does not meet the materials, construction, or performance requirements of this subpart may be approved if the application and any approval tests prescribed by the Commandant in place of or in addition to the approval tests required by this subpart, show that the alternative materials, construction, or performance is at least as effective as that specified by the requirements of this subpart. The Commandant may also prescribe different production tests if the tests required by this subpart are not appropriate for the alternative ladder configuration.

§ 160.017–11 Materials.

(a) *Suspension members.* Each suspension member of a chain ladder must be a continuous length of non-kinking chain, such as single loop lock link coil chain, with a minimum breaking strength of at least 16 kN (3,560 lbs.).

(b) *Metal parts.* Each metal part of a ladder must be made of corrosion-resistant metal or of steel galvanized by the hot dip process after the part is formed. If the ends of galvanized fasteners are peened over to lock them in place, a corrosion resisting surface treatment must be applied to each peened surface.

(c) *Wooden parts.* Each wooden part of a ladder must be made of hardwood that is free of defects affecting its strength or durability.

(d) *Wood preservative.* After each wooden part is formed and finished, it must be treated with water-repellant wood preservative that is properly applied.

(e) *Lashing rings.* The inside diameter of each lashing ring must be at least 75 mm (3 in.). Each lashing ring must have a minimum breaking strength of at least 16 kN (3,560 lbs.).

§ 160.017–13 Construction.

(a) *General.* Each chain ladder must have two suspension members. Each step in the ladder must be supported at each end by a suspension member.

(b) *Suspension member.* The distance between the two suspension members must be at least 400 mm (16 in.), but not more than 480 mm (19 in.). The chain between each top lashing ring and the first step must be long enough so that the distance between the center of the lashing ring and the top of the first step is approximately 600 mm (24 in.).

(c) *Lashing rings.* A lashing ring must be securely attached to the top and bottom of each suspension member. The means of attachment must be at least as strong as the chain and the lashing ring.

(d) *Thimble or wear plate.* A thimble or wear plate must be attached to the chain where it can slide on its connections to the lashing rings.

(e) *Steps.* Each step of a ladder must have two rungs arranged to provide a suitable handhold and stepping surface. The distance between steps must be uniform. This distance must be between 300 mm (12 in.) and 380 mm (15 in.).

(f) *Rungs.* Step rungs must meet the following requirements:

(1) Each rung must be wooden, or a material of equivalent strength, durability, handhold, and step surface characteristics.

(2) In order to provide a suitable handhold and step surface, the width of each rung must be at least 40 mm (1½ in.) and the thickness must be at least 25 mm (1 in.), but not more than 40 mm (1½ in.).

(3) The distance between the rungs in each step must be uniform. This distance must be between 40 mm (1½ in.) and 65 mm (2½ in.).

(4) Each rung must be attached to a spacer ear by a method that prevents the rung from rotating and that supports it in a horizontal position when the ladder is hung vertically.

(g) *Spacer ears.* Spacer ears must meet the following requirements:

(1) All spacer ears on a ladder must be the same size and shape.

(2) The top and bottom of each spacer ear must be attached to a suspension member.

(3) The top point of attachment must be at least 100 mm (4 in.) above the top surfaces of the rungs attached to the spacer ear.

(4) Each spacer ear made of sheet metal must have features such as formed ribs, rolled flange edges, and stress relief holes at the ends of cuts,

to prevent the ear from bending or tearing.

(h) *Fasteners.* Each fastening device must have a means to prevent the device from loosening.

(i) *Workmanship.* A ladder must not have splinters, burrs, sharp edges, corners, projections, or other defects that could injure a person using the ladder.

§ 160.017–15 Performance.

(a) Each chain ladder must be capable of being rolled up for storage.

(b) Each ladder when rolled up must be able to unroll freely and hang vertically.

§ 160.017–17 Strength.

(a) Each chain ladder must be designed to pass the approval tests in § 160.17–21.

(b) [Reserved]

§ 160.017–21 Approval tests.

(a) *General.* Each approval test must be conducted on a ladder of the longest length for which approval has been requested. If a ladder fails one of the tests in this section, the cause of the failure must be identified and any needed changes made. After a test failure and any design change, the failed test, and any other previously completed tests affected by the design change, must be rerun.

(b) *Visual examination.* Before starting the tests described in this section, an assembled chain ladder is examined for evidence of noncompliance with the requirements in §§ 160.017.11, 160.017–13, and 160.017–15.

(c) The following approval tests must be conducted:

(1) *Strength test #1.* An assembled ladder is supported so that a static load, if placed on any of its steps, would exert a force both on the step and each suspension member. A static load of 315 kg (700 lb.) is then placed on one step for at least one minute. The load must be uniformly distributed over a contact surface that is approximately 100 mm (4 in.) wide. The center of the contact surface must be at the center of the step. This test is performed on six different steps. No step may break, crack, or incur any deformation that remains after the static load is removed. No attachment between any step and a suspension member may loosen or break during this test.

(2) *Strength test #2.* A ladder is suspended vertically to its full length from its top lashing rings. A static load of 900 kg (2000 lbs.) is then applied to the bottom lashing rings so that it is distributed equally between the suspension members. The suspension members, lashing rings, and spacer ears must not break, incur any elongation or deformation that remains after the test load is removed, or be damaged in any other way during this test.

(3) *Strength test #3.* A rolled-up ladder is attached by its top lashing rings to anchoring fixtures in a location away from any wall or structure that would prevent it from falling freely, and where it can hang to its full length vertically. The ladder when dropped must unroll freely. When unrolling the ladder, its steps and attachments must not become cracked, broken, or loosened. Other similar damage making the ladder unsafe to use must likewise not occur.

§ 160.017–25 Marking.

(a) Each chain ladder step manufactured under Coast Guard approval must be branded or otherwise permanently and legibly marked on the bottom with—

(1) The name of the manufacturer;

(2) The manufacturer's brand or model designation;

(3) The lot number and date of manufacture; and

(4) The Coast Guard approval number.

(b) [Reserved]

§ 160.017–27 Production tests and examination.

(a) *General.* Each ladder manufactured under Coast Guard approval must be tested in accordance with this section and subpart 159.007 of this chapter. Steps that fail testing may not be marked with the Coast Guard approval number and each assembled ladder that fails testing may not be sold as Coast Guard approved.

(b) *Test #1: Steps.* Steps must be separated into lots of 100 steps or less. One step from each lot must be selected at random and tested as described in

§ 106.017–21(c)(1), except that the step may be supported at the points where it would be attached to suspension members in an assembled ladder. If the step fails the test, ten more steps must be selected at random from the lot and tested. If one or more of the ten steps fails the test, each step in the lot must be tested.

(c) *Test #2: Ladders.* Assembled ladders must be separated into lots of 20 ladders or less One ladder must be selected at random from the ladders in the lot. The ladder selected must be at least 3 m (10 ft.) long or, if each ladder in the lot is less than 3 m long, a ladder of the longest length in the lot must be selected. The ladder must be tested as prescribed in § 160.017–21(c)(2), except that only a 3 m section of the ladder need be subjected to the static load. If the ladder fails the test each other ladder in the lot must be tested.

(d) *Independent laboratory.* Each production test must be conducted or supervised by an independent laboratory. However, if a test is performed more than 4 different times per year, laboratory participation is required only 4 times per year. If the laboratory does not participate in all tests, the times of laboratory participation must be as selected by the laboratory. The times selected must provide for effective monitoring throughout the production schedule.

(e) *Visual examination.* The visual examination described in § 160.017–21(b) must be conducted as a part of each production test.

Subpart 160.021—Hand Red Flare Distress Signals

SOURCE: CGD 76–048a and 76–048b, 44 FR 73060, Dec. 17, 1979, unless otherwise noted.

§ 160.021–1 Incorporation by reference.

(a) The following is incorporated by reference into this subpart:

(1) ''The Universal Color Language'' and ''The Color Names Dictionary'' in *Color: Universal Language and Dictionary of Names,* National Bureau of Standards Special Publication 440, December 1976.

(b) NBS Special Publication 440 may be obtained by ordering from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 (Order by SD Catalog No. C13.10:440).

(c) Approval to incorporate by reference the publication listed in this section was obtained from the Director of the Federal Register on November 1, 1979. The publication is on file at the Federal Register Library.

§ 160.021–2 Type.

(a) Hand red flare distress signals specified by this subpart shall be of one type which shall consist essentially of a wooden handle to which is attached a tubular casing having a sealing plug at the handle end, the casing being filled with a flare composition and having a button of ignition material at the top, with a removable cap having a friction striking material on its top which may be exposed for use by pulling a tear strip. The flare is ignited by scraping the friction striker on top of the cap against the igniter button on top of the flare. The general arrangement of the flare is shown by Figure No. 160.021–2(a). Alternate arrangements which conform to all the performance requirements of this specification (and other arrangements which conform with all performance requirements except candlepower and burning time, but provide not less than 3,000 candelaminutes with a minimum of ⅓ minute burning time) will be given special consideration.