

and legible for the expected life of the device.

[CGFR 64-30, 29 FR 7388, June 6, 1964, as amended by CGD 72-163R, 38 FR 8122, Mar. 28, 1973; CGD 73-246R, 39 FR 36967, Oct. 16, 1974; CGD 75-008, 43 FR 9772, Mar. 9, 1978; CGD 92-045, 58 FR 41609, Aug. 4, 1993; CGD 95-028, 62 FR 51215, Sept. 30, 1997; USCG-1998-4442, 63 FR 52191, Sept. 30, 1998]

§ 160.064-6 Examinations, tests and inspections.

(a) *Manufacturer's inspection and tests.* Manufacturers of listed and labeled water safety buoyant devices shall maintain quality control of the materials used, manufacturing methods and the finished product so as to meet the applicable requirements, and shall make sufficient inspections and tests of representative samples and components produced to maintain the quality of the finished product. Records of tests conducted by the manufacturer and records of materials, including affidavits by suppliers that applicable requirements are met, entering into construction shall be made available to the recognized laboratory inspector or to the Coast Guard marine inspector, or both, for review upon request.

(b) *Laboratory inspections and tests.* Such examinations, inspections and tests as are required by the recognized laboratory for listed and labeled devices produced will be conducted by the laboratory inspector at the place of manufacture or other location at the option of the laboratory.

(c) *Test facilities.* The laboratory inspector, or the Coast Guard marine inspector assigned by the Commander of the District in which the factory is located, or both, shall be admitted to any place in the factory where work is being done on listed and labeled products, and either or both inspectors may take samples of parts or materials entering into construction or final assemblies, for further examinations, inspections, or tests. The manufacturer shall provide a suitable place and the apparatus necessary for the performance of the tests which are done at the place of manufacture.

(d) *Additional tests, etc.* Unannounced examinations, tests, and inspections of samples obtained either directly from the manufacturer or through commer-

cial channels may be made to determine the suitability of a product for listing and labeling, or to determine conformance of a labeled product to the applicable requirements. These may be conducted by the recognized laboratory or the United States Coast Guard.

[CGFR 64-30, 29 FR 7388, June 6, 1964, as amended by CGD 73-246R, 39 FR 36967, Oct. 16, 1974]

§ 160.064-7 Recognized laboratory.

(a) A manufacturer seeking Coast Guard approval of a product under this subpart shall follow the approval procedures of subpart 159.005 of this chapter, and shall apply for approval directly to a recognized independent laboratory. The following laboratories are recognized under § 159.010-7 of this part, to perform testing and approval functions under this subpart:

Underwriters Laboratories, 12 Laboratory Drive, P.O. Box 13995, Research Triangle Park, NC 27709-3995, (919) 549-1400.

(b) Production oversight must be performed by the same laboratory that performs the approval tests unless, as determined by the Commandant, the employees of the laboratory performing production oversight receive training and support equal to that of the laboratory that performed the approval testing.

[CGD 93-055, 61 FR 13931, Mar. 28, 1996]

Subpart 160.066—Distress Signal for Boats, Red Aerial Pyrotechnic Flare

SOURCE: CGD 76-183a, 44 FR 73050, Dec. 17, 1979, unless otherwise noted.

§ 160.066-1 Type.

(a) Red aerial pyrotechnic distress signals specified by this subpart must be either self-contained or pistol launched, and either meteor or parachute assisted type.

(b) [Reserved]

§ 160.066-5 Design, construction, and manufacturing requirements.

(a) Each signal must be either:

(1) A self-contained unit with all necessary components for firing the signal, or

(2) A cartridge intended for firing from a signal pistol that is approved under Subpart 160.028 of this chapter.

(b) Each signal unit must have an interior chamber which contains the main propulsion charge and which is constructed so that it is capable of withstanding the forces generated by ignition without rupture, crack, or deformation of any kind.

(c) Signals must be constructed in lots numbered serially by the manufacturer. A new lot must be started when:

- (1) Any change in construction details occurs;
- (2) Any change in sources of raw materials occurs;
- (3) Production is started on a new production line or on a previously discontinued production line; or
- (4) A lot exceeds 30,000 units.

§ 160.066-7 Performance requirements

(a) Each signal must:

(1) Burn "vivid red" when tested as specified in §160.021-4(d)(7) for at least 5.5 seconds.

(2) Have a peak luminous intensity of at least 10,000 candela.

(3) Burn a total of not less than 1,000 candleminutes (Cm) using the formula $I \times T = Cm$

Where:

I = the luminous intensity measured as in subsection (c);

T = the total burn time of the device in minutes; and

Cm = the candle-minute rating of the device.

(4) Burn out completely before falling back to the level of launch.

(5) Function in a manner that would not cause burns or injury to an unprotected person firing the signal in accordance with the manufacturer's instructions.

(6) Not malfunction in a manner that would cause burns or injury to an unprotected person firing the signal in accordance with the manufacturer's instructions.

(b) Each signal must meet the requirements of paragraph (a) after:

- (1) Submersion in water for 24 hours, or
- (2) If protected by a sealed container, submersion in water for 24 hours inside the sealed container immediately followed by submersion for 10 minutes without the container, and

(3) Being exposed to the Elevated Temperature, Humidity, and Storage Test in §160.066-13(b).

(c) Testing for burn time and luminous intensity pursuant to paragraphs (a)(1) and (a)(2), respectively, shall be conducted in conformity with the following requirements and procedures:

(1) The chart speed of the light measuring equipment shall not be slower than 5 seconds per inch;

(2) The chart sweep of the light measuring equipment shall not be slower than .5 seconds for full scale;

(3) The first and last seconds of the burn shall be eliminated in measuring luminous intensity;

(4) The time during which the candle burns (excluding first and last seconds of burn) is to be used to determine the luminous intensity by averaging the readings taken during the burning; and

(5) Burn time is to be measured from first light of the signal to dark.

§ 160.066-9 Labeling.

(a) Each signal must be legibly and indelibly marked with the following information:

- (1) The manufacturer's name,
- (2) The designed burning time of the pyrotechnic candle(s),
- (3) The specific signal pistol for which the signal is designed, if any,
- (4) The lot number,
- (5) The Coast Guard approval number,
- (6) Operation and storage instructions,
- (7) The month and year of expiration determined by § 160.066-10, and
- (8) The words:

"Aerial Flare. Acceptable as a Day and Night Visual Distress Signal for boats as required by 33 CFR 175.110. For Emergency Use Only".

(b) If the signal is too small to contain all of the information required by paragraph (a) and any labeling which may be required by paragraph (d), the information required by paragraphs (a) (2), (6), and (8) may be printed on a separate piece of paper packed with each signal or with the smallest container in which several signals are packed.

(c) The largest carton or box in which the manufacturer ships signals must be

marked with the following or equivalent words: "Keep under cover in a dry place."

(d) Compliance with the labeling requirements of this section does not relieve the manufacturer of the responsibility of complying with the label requirements of the Federal Hazardous Substances Act, 15 U.S.C. 1263.

§ 160.066-10 Expiration date.

Each approved signal must have an expiration date marked on it. That date must not be more than forty-two months from date of manufacture.

§ 160.066-11 Approval procedures.

(a) Red aerial pyrotechnic flare distress signals are approved under the procedures of subpart 159.005 of this chapter.

(b) The manufacturer must produce a lot of at least 100 signals from which samples for approval testing must be drawn. Approval testing must be conducted in accordance with the operational tests in §160.066-12 and the technical tests in §160.066-13. In order for the signal to be approved, the samples must pass both the operational and the technical tests.

(c) The approval tests must be performed by an independent laboratory accepted by the Commandant under Subpart 159.010 of this chapter.

[CGD 76-183a, 44 FR 73050, Dec. 17, 1979, as amended by CGD 93-055, 61 FR 13931, Mar. 28, 1996]

§ 160.066-12 Operational tests.

(a) The procedure for conducting operational tests is described in figure (1).

(1) An "accept lot" decision must be reached in order to pass the operational tests.

(2) If a "reject lot" decision is reached, the entire lot is rejected.

(3) Signals from "reject lots" may be reworked by the manufacturer to correct the deficiency for which they were rejected and be resubmitted for inspection.

Records shall be kept of the reasons for rejection, the reworking performed on the "reject lot", and the result of the second test. Signals from "reject lots" may not, unless subsequently accepted, be sold or offered for sale as being in compliance with this specification.

(b) Each signal selected for the operational tests must be conditioned by:

(1) Being submerged under at least 25 mm (1 in.) of water for 24 hours without any protection other than its waterproofing; or

(2) If waterproofing is provided by a sealed plastic bag or other waterproof packaging, submersion under 25 mm (1 in.) of water for 24 hours in the packaging, followed immediately by submersion under 25 mm (1 in.) of water for 10 minutes with the signal removed from the packaging.

(c) After each signal selected has undergone the conditioning required by paragraph (b) of this section it must be fired as described by the manufacturer's operating instructions. The following data as observed must be recorded for each signal:

(1) Burning time of the pyrotechnic candle;

(2) Color;

(3) Whether the pyrotechnic candle burns out above, at, or below the level of launch.

(d) A signal fails the operational tests if:

(1) It fails to fire,

(2) The pyrotechnic candle fails to ignite,

(3) The pyrotechnic candle continues to burn after it falls back to the level of launch,

(4) The observed color is other than vivid red, or

(5) The burning time is less than 5.5 seconds.

(e) A lot is rejected if a "reject lot" decision is reached using Figure (1) and Table 1 after completion of the operational tests.

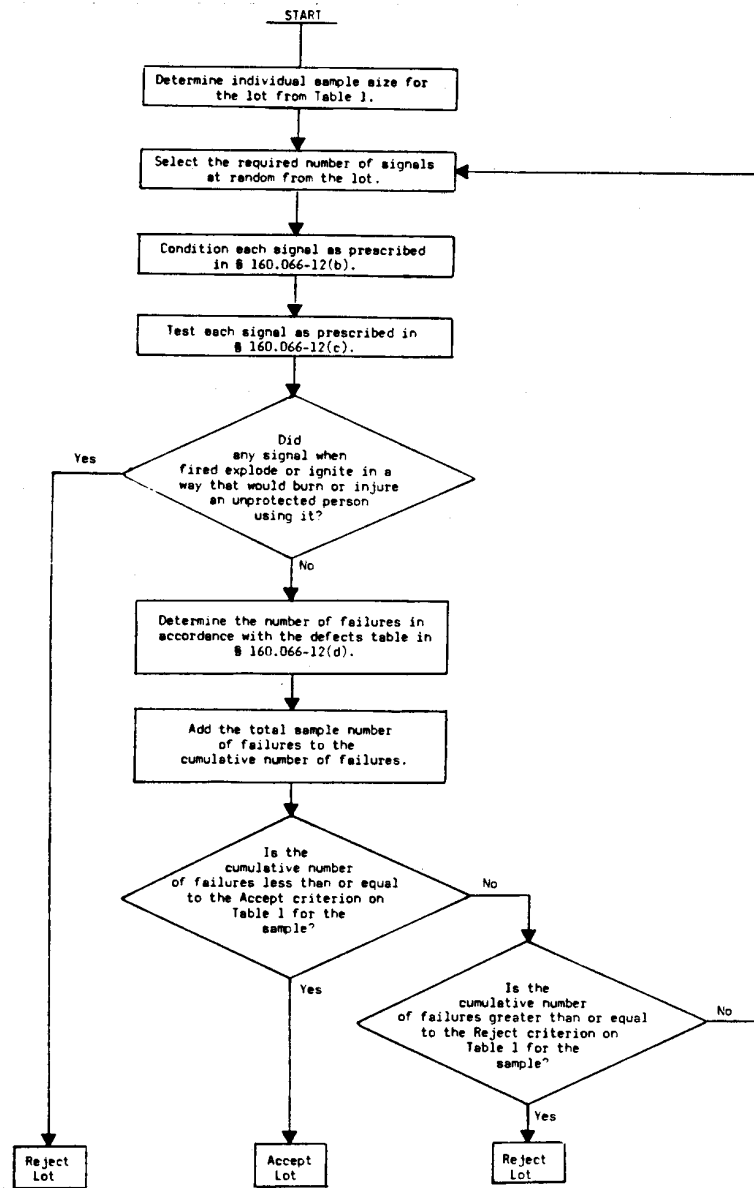


Figure 1. Operational test procedure.

TABLE 1— ACCEPT AND REJECT CRITERIA FOR OPERATIONAL TEST LOTS

Lot size	Individual sample size	Sample	Cumulative sample size	Accept ¹	Reject ¹
280 or less.	8	First	8	(²)	4
		Second	16	1	5
		Third	24	2	6
		Fourth	32	3	7
		Fifth	40	5	8
		Sixth	48	7	9
		Seventh	56	9	10
281 to 500.	13	First	13	(²)	4
		Second	26	1	6
		Third	39	3	8
		Fourth	52	5	10
		Fifth	65	7	11
		Sixth	78	10	12
		Seventh	91	13	14
501 to 1,200.	20	First	20	(²)	5
		Second	40	3	8
		Third	60	6	10
		Fourth	80	8	13
		Fifth	100	11	15
		Sixth	120	14	17
		Seventh	140	18	19
1,201 to 3,200.	32	First	32	1	7
		Second	64	4	10
		Third	96	8	13
		Fourth	128	12	17
		Fifth	160	17	20
		Sixth	192	21	23
		Seventh	224	25	26
More than 3,200.	50	First	50	2	9
		Second	100	7	14
		Third	150	13	19
		Fourth	200	19	25
		Fifth	250	25	29
		Sixth	300	31	33
		Seventh	350	37	38

¹ Cumulative number of failures.
² Lot may not be accepted. Next sample must be tested.

§ 160.066-13 Technical tests.

(a) The following conditions apply to technical tests as described in this section:

- (1) A total of nine signals must be selected at random from the lot being tested;
- (2) If the signals are protected by sealed packaging, then the conditioning for the technical tests must be conducted with the signal in the sealed packaging;
- (3) If signals in the test sample fail to pass one of the technical tests, the entire lot is rejected;
- (4) Signals from “reject lots” may be reworked by the manufacturer to correct the deficiency for which they were rejected and be resubmitted for inspection. Records shall be kept of the reasons for rejection, the reworking per-

formed on the “reject lot”, and the result of the second test. Signals from “reject lots” may not, unless subsequently accepted, be sold or offered for sale as being in compliance with this specification.

(b) The Elevated Temperature, Humidity, and Storage Test must be conducted in the following manner:

- (1) Select three signals from the nine;
- (2) Place each signal in a thermostatically controlled even-temperature oven held at 55 Degrees C (131 Degrees F), and at not less than 90% relative humidity, for at least 72 hours (If for any reason it is not possible to operate the oven continuously for the 72 hour period, it may be operated at the required temperature and humidity for 8 hours of each 24 during the 72 hour conditioning period.);

(3) After removal from the oven immediately place each signal in a chamber:

- (i) At a temperature of at least 20 degrees C (68 degrees F) but not more than 25 degrees C (77 degrees F);
- (ii) At not less than 65% relative humidity;
- (iii) For ten days;

(4) Then remove each signal from any sealed packaging and fire it.

(5) The test sample fails the test if:

- (i) Any signal ignites or decomposes before firing;

- (ii) Any signal when fired malfunctions in a manner that would cause burns or injury to an unprotected person firing the signal, or;

- (iii) Two or more of the signals fail to project and ignite the pyrotechnic candle.

(c) The Spontaneous Combustion Test must be performed in the following manner:

(1) Select three signals from the remaining six signals and place them in a thermostatically controlled even temperature over for 48 hours at a temperature of 75 degrees C (167 degrees F).

(2) The test sample fails the test if any signal ignites or decomposes during the test.

(d) The Luminous Intensity and Chromaticity Test must be performed in the following manner:

(1) Remove the pyrotechnic candle from the remaining three signals.

(2) Ignite, measure, and record the intensity of the burning candle with a visual photometer or equivalent photometric device or automatic recorder:

(i) While the specimen is supported in a horizontal position and the photometer is at right angles to the axis of the specimen,

(ii) At a distance of at least 3 m (10 ft.).

(3) Calculate the intensity of the candle as in §160.066-7(c).

(4) Measure and record the chromaticity of the burning candle as specified in §160.021-4(d)(4).

(5) The test sample fails the test if more than one signal has a luminous intensity of less than 10,000 candela, or more than one signal is not "vivid red".

§160.066-15 Production testing.

(a) Production tests must be performed under the procedures in Subpart 159.007 of this chapter.

(b) The operational tests in §160.066-12 must be performed for every lot of signals produced.

(c) The technical tests in §160.066-13 must be performed at least once every twelve months, or at least once every 10 lots, whichever occurs first.

(d) If a lot is rejected on the basis of the technical tests, then each subsequent lot produced must be tested according to the technical tests until samples from a lot pass these tests.

(e) An independent laboratory acceptable to the Commandant must perform or directly supervise:

(1) Each technical test, and

(2) All operational tests for at least four lots in a 12 month period, unless fewer than four lots are produced in a 12 month period. If less than four lots are produced in a 12 month period, each operational test must be performed or directly supervised by the independent laboratory.

(f) If a lot selected by the independent laboratory for an operational test is rejected, then the operational tests for the next lot produced, and the rejected lot, if reworked, must be performed or directly supervised by the independent laboratory. The tests required by this paragraph must not be counted for the purpose of meeting the requirements of paragraph (e).

(g) The independent laboratory selects the lots upon which technical tests are performed.

(h) If the manufacturer produces more than four lots within a 12 month period, the independent laboratory selects the lots for which it performs or directly supervises the operational tests.

(i) The operational test performed or directly supervised by the independent laboratory must occur at least once during each quarterly period, unless no lots are produced during that period.

(j) The independent laboratory, when it performs or directly supervises the technical tests required by paragraph (c) or (d) of this section, must inspect the signals selected for testing and compare them with the approved plans. Each signal inspected must conform to the plans.

Subpart 160.071 [Reserved]

Subpart 160.072—Distress Signals for Boats, Orange Flag

SOURCE: CGD 76-183a, 44 FR 73054, Dec. 17, 1979, unless otherwise noted.

§160.072-1 Applicability.

(a) This subpart establishes standards for distress flags for boats.

(b) [Reserved]

§160.072-3 General performance requirements.

(a) Each flag must:

(1) Be a square or rectangle at least 90 cm (36 inches) wide and at least 90 cm (36 inches) long. If the flag is a rectangle, the shorter side cannot be less than $\frac{2}{3}$ the length of the longer side;

(2) Have no less than 70% of the total area colored a bright red-orange color;

(3) Display a black disc and a black square on the red-orange background on both sides arranged as follows:

(i) The diameter of the disc and the length of one side of the square shall be equal, and shall each be $\frac{1}{3}$ of the length of the longest side of the flag, or 30 cm (12 inches), whichever is greater.

(ii) The disc and square must be centered on one axis of the flag parallel to the longest side of the flag as shown in