

at least 50 percent of the values listed in Table 164.018-9

(j) After retroreflective material is tested in accordance with the "soil resistance and cleanability" test method described in §164.018-11(b)(3) the material must not have any visible damage or permanent soiling.

(k) Except as provided in paragraphs (c) through (j) of this section, retroreflective material when tested in accordance with the test methods listed in §164.018-11 must meet the requirements prescribed for those test methods in Federal Specification L-S-300.

TABLE 164.018-9—REFLECTIVE INTENSITY

Divergence angle ¹ (Observation angle) ²	Incidence angle ¹ (Entrance angle) ²	Reflective intensity ¹ (Specific intensity per unit area) ²
0.2°	-4°	150
.2°	+30°	75
.2°	+45°	50
.5	-4°	57
.5	+30°	33
.5	+45°	25
2.0°	-4°	2.5
2.0°	+30°	2.0
2.0°	+45°	1.0

¹These terms are described in Federal Specification L-S-300.

²These terms are described in Federal Test Method Standard 370.

§ 164.018-11 Approval tests.

(a) Retroreflective material submitted for Coast Guard approval must be tested in accordance with the following test methods described in Federal Specification L-S-300:

(1) Test conditions.

(2) Test panels.

(3) Adhesion test method using a 0.79 kg (1.75 lb.) test weight, except that one test panel must be immersed in distilled water in a covered container for 16 hours before the weight is applied and the other test panel must be immersed in salt water (4% NaCl by weight) in a covered container for 16 hours before the weight is applied. (This test method is required only for retroreflective material that is designed for use with an adhesive. If a particular test panel used in testing results in a test failure, the retroreflective material will not be approved for attachment to material of the type used as the test panel. The retroreflective material may nevertheless be approved for use with other types of material depending on the re-

sults of testing with the other panels. See paragraph (d) of this section for a listing of tests panels used.)

(4) Flexibility at standard conditions test method, except that when testing Type I material—

(i) The material must be unmounted;

(ii) A 1.5 mm (1/16-inch) mandrel must be used in place of the mandrel described in the test method; and

(iii) After testing at standard conditions, the material must be placed in a chamber at a temperature of -18 °C. (0 °F.) for at least 1 hour and then retested in the chamber at that temperature.

(5) Reflective intensity.

(6) Resistance to accelerated weathering test method and subtest methods "reflective intensity after accelerated weathering," "reflective intensity during rainfall," and "adhesion after accelerated weathering." (The "adhesion after accelerated weathering" test method is required only for materials designed for use with an adhesive. The "resistance to accelerated weathering" test method must be performed for 250 hours, if testing Type I material, and for 1,000 hours if testing Type II material.)

(7) Resistance to heat, cold, and humidity.

(8) Fungus resistance.

(b) Retroreflective material submitted for approval must also be tested as follows:

(1) *Resistance to water immersion.* Two test panels are used. The test panels and test conditions must meet paragraphs (a)(1) and (a)(2) of this section. The retroreflective material on each test panel is cut with a sharp knife from each corner to the corner diagonally opposite so that an "X" is formed. The cuts must be made completely through the material to the metal panel. One panel is immersed in distilled water in a covered container. The other panel is immersed in salt water (4% NaCl by weight) in a covered container. After 16 hours in water, the panels are removed from the containers, rinsed of deposits, and dried. Reflective intensity values at the angles listed in Table 164.018-9 must be measured within 2 hours after removal of the panels from the water. When

measuring the reflective intensity values, the area within 5 mm (0.2 in.) of either side of the “X” cuts, and within 5 mm of the cut edges of the material, must not be counted.

(2) *Abrasion resistance.* One test panel is used. The panel and test conditions must meet paragraphs (a)(1) and (a)(2) of this section. The test apparatus must meet Federal Test Method Standard 141, Method 6142, except that the brush must be dry. One thousand brush strokes are applied to the material. The test panel is then wiped with a clean soft cloth. Thereafter, the reflective intensity of the area of the material in contact with the brush is measured at the angles listed in Table 164.018-9.

(3) *Soil resistance and cleanability.* One panel is used. The test panel and test conditions must meet paragraphs (a)(1) and (a)(2) of this section. A soiling medium is applied to the material as described in Federal Test Method Standard 141, Method 6141. The soiled area is then covered with a laboratory watch glass or similar device. After 24 hours, the material is uncovered and the soil medium wiped off with a clean, dry, soft cloth. The material is then wetted with mineral spirits and wiped with a cloth soaked in mineral spirits. Thereafter, it is washed with a 1 percent (by weight) solution of detergent in warm water and rinsed and dried with a clean, dry, soft cloth.

(c) Each measurement of reflective intensity required in paragraphs (a), (b)(1), and (b)(2) of this section must be made using either—

(1) The L-S-300 procedure for measuring reflective intensity; or

(2) The procedure for measuring specific intensity per unit area in Federal Test Method Standard 370, except that the test apparatus arrangement required in L-S-300 must be used.

(d) If material is designed for use with an adhesive, the “adhesion” test method required by paragraph (a)(3) of this section must be repeated using a 0.79 kg. (1.75 lb.) test weight and using each of the following materials as test panels in place of the aluminum test panels required by this test method:

(1) Smooth panel of cured polyester laminating resin meeting MIL-R-21607 (Types I and II material).

(2) Cotton drill (Type I material only) meeting CCC-C-426, or cotton duck meeting CCC-C-443 (Type I material only).

(3) Vinyl-nylon laminated cloth meeting MIL-C-43006 (Type I material only).

(4) Vinyl film meeting L-P-375 (Type I material only).

(5) Rubber coated cloth meeting MIL-C-17415 (Type I material only).

(e) Each flexible material listed in paragraph (d) of this section when used as a test panel must be bonded to a rigid backing.

(f) Test panel material listed in paragraph (d) of this section must—

(1) Be taken from an item of Coast Guard approved lifesaving equipment; or

(2) Be certified by the manufacturer of the material that it meets the applicable specification in paragraph (d) of this section.

§ 164.018-13 Production inspections.

The Coast Guard does not inspect retroreflective material approved under this subpart on a regular schedule. However, the Commandant may select samples and conduct tests and examinations whenever necessary to determine whether retroreflective material is being manufactured in compliance with the requirements of this subpart.

Subpart 164.019—Personal Flotation Device Components

SOURCE: CGD 84-068, 58 FR 29494, May 20, 1993, unless otherwise noted.

§ 164.019-1 Scope.

(a) This subpart contains general requirements for standard personal flotation device (PFD) components, procedures for acceptance of non-standard PFD components, and production quality control requirements for all PFD components, used in the construction of PFDs approved under part 160 of this subchapter.

(b) Other subparts of this part contain specific requirements applicable to particular PFD components used in the construction of Coast Guard-approved PFDs.