

masthead, and stern lights. The panel must visually and audibly signal the failure of each of these navigation lights. Each light source must be connected to a separate fused branch circuit. The panel must have a fused feeder disconnect switch, and the fuses must have at least twice the rating of the largest branch circuit fuse and must be greater than the maximum panel load.

(c) *Dual light sources.* Each self-propelled vessel must have duplicate light sources for the side, masthead, and stern lights.

(d) *Navigation lights.* Each navigation light must meet the following:

(1) Meet the technical details of the applicable navigation rules.

(2) Be certified by an independent laboratory to the requirements of UL 1104 or an equivalent standard under § 110.20-1 of this chapter. Portable battery powered lights need meet only the requirements of the standard applicable to those lights.

(3) Be labeled with a label stating the following:

(i) "MEETS \_\_\_\_\_." (Insert the identification name or number of the standard under paragraph (d)(2) of this section to which the light was type-tested.)

(ii) "TESTED BY \_\_\_\_\_." (Insert the name or registered certification mark of the independent laboratory that tested the fixture to the standard under paragraph (d)(2) of this section).

(iii) Manufacturer's name.

(iv) Model number.

(v) Visibility of the light in nautical miles.

(vi) Date on which the fixture was type-tested.

(vii) Identification of bulb used in the compliance test.

(4) If it is a flashing light, have its intensity determined by the formula:

$$I_e = G / (0.2 + t_2 - t_1)$$

Where

$I_e$ =Luminous Intensity.

$G$ =Integral of  $I_{dt}$  evaluated between the limits of  $t_1$  and  $t_2$ .

$t_1$ =Time in seconds of the beginning of the flash.

$t_2$ =Time in seconds of the end of the flash.

$I$ =Instantaneous intensity during the flash.

NOTE: The limits,  $t_1$  and  $t_2$ , are to be chosen so as to maximize  $I_e$ .

(e) *Installation of navigation lights.* Each navigation light must:

(1) Be installed so that its location and its angle of visibility meet the applicable navigation rules;

(2) Except as permitted by the applicable navigation rules, be arranged so that light from a navigation light is not obstructed by any part of; the vessel's structure or rigging;

(3) Be wired by a short length of heavy-duty, flexible cable to a watertight receptacle outlet next to the light or, for permanently mounted fixtures, by direct run of fixed cable; and

(4) If it is a double-lens, two-lamp type, have each lamp connected to its branch circuit conductors either by an individual flexible cable and watertight receptacle plug or, for permanently mounted fixtures, by an individual direct run of fixed cable.

[CGD 74-125A, 47 FR 15236, Apr. 8, 1982, as amended by CGD 94-108, 61 FR 28282, June 4, 1996; 61 FR 33045, June 26, 1996; 62 FR 23909, May 1, 1997]

**§ 111.75-18 Signaling lights.**

Each self-propelled vessel over 150 gross tons when engaged on an international voyage must have on board an efficient daylight signaling lamp that may not be solely dependent upon the vessel's main source of electrical power and that meets the following:

(a) The axial luminous intensity of the beam must be at least 60,000 candelas.

(b) The luminous intensity of the beam in every direction within an angle of 0.7 degrees from the axial must be at least 50 percent of the axial luminous intensity.

[CGD 94-108, 61 FR 28282, June 4, 1996]

**§ 111.75-20 Lighting fixtures.**

(a) The construction of each lighting fixture for a non-hazardous location must meet—

(1) UL 595, until May 3, 1999;

(2) UL 1570, UL 1571, or UL 1572, as applicable, including marine supplement; or

(3) IEC 92-306.

(b) Each fixture globe, lens, or diffuser must have a high strength guard or be made of high strength material, except in an accommodation space, navigating bridge, gyro room, radio room, galley, or similar space where it is not subject to damage.

(c) No fixture may be used as a connection box for a circuit other than the branch circuit supplying the fixture.

(d) Lighting fixtures must be installed as follows:

(1) Each fixture in the weather or in a location exposed to splashing water must be watertight. Each fixture in a damp or wet location must at least be drip-proof.

(2) Each fixture and lampholder must be fixed. A fixture must not be supported by the screw shell of a lampholder.

(3) Each pendent-type fixture must be suspended by and supplied through a threaded, rigid conduit stem.

(4) Each tablelamp, desk lamp, floorlamp, and similar equipment must be secured in place so that it cannot be displaced by the roll or pitch of the vessel.

(e) Non-emergency and decorative interior lighting fixtures in environmentally-protected, non-hazardous locations need only meet the applicable UL type-fixture standards in UL 1570 through 1574 (and either the general section of the marine supplement or the general section of UL 595), UL 595, or IEC 92-306. These fixtures must have vibration clamps on fluorescent tubes longer than 102 cm (40 inches), secure mounting of glassware, and rigid mounting.

[CGD 74-125A, 47 FR 15236, Apr. 8, 1982, as amended by CGD 94-108, 61 FR 28283, June 4, 1996; 61 FR 36787, July 12, 1996; 62 FR 23909, May 1, 1997]

### Subpart 111.77—Appliances and Appliance Circuits

#### § 111.77-1 Overcurrent protection.

If a circuit supplies only one appliance or device, the rating or setting of the branch circuit overcurrent device must not be more than 150 percent of the rating of the appliance or device, or 15 amperes, whichever is greater.

#### § 111.77-3 Appliances.

All electrical appliances, including, but not limited to, cooking equipment, dishwashers, refrigerators, and refrigerated drinking water coolers, must meet UL safety and construction standards or equivalent standards under § 110.20-1 of this chapter. Also, this equipment must be suitably installed for the location and service intended.

[CGD 94-108, 61 FR 28283, June 4, 1996; 61 FR 33045, June 26, 1996]

### Subpart 111.79—Receptacles

#### § 111.79-1 Receptacle outlets; general.

(a) There must be a sufficient number of receptacle outlets in the crew accommodations for an adequate level of habitability.

(b) There must be a sufficient number of receptacle outlets throughout the machinery space so that any location can be reached by a portable power cord having a length not greater than 24 meters (75 feet).

(c) Each receptacle outlet must be compatible with the voltage and current of the circuit in which it is installed.

(d) Each receptacle outlet must be suitable for the environment in which it is installed and constructed to the appropriate NEMA or IEC protection standard as referenced in § 111.01-9. Special attention must be given to outlets in hazardous locations.

(e) A receptacle outlet must not have any exposed live parts with the plug opening uncovered.

[CGD 94-108, 61 FR 28283, June 4, 1996]

#### § 111.79-3 Grounding pole.

Each receptacle outlet that operates at 100 volts or more must have a grounding pole.

#### § 111.79-9 Transmitting power between receptacles.

(a) If it is necessary to transmit current in one direction between two receptacle outlets by a flexible cable with a plug on each end, such as a battery charging lead between a receptacle outlet on a ship and a receptacle outlet in a lifeboat, the plug that may