

Subpart 111.55—Switches**§ 111.55-1 General.**

(a) Each switch must meet Article 380 of the National Electrical Code.

(b) Each switch that is in the weather must be in a watertight enclosure and be externally operable.

§ 111.55-3 Circuit connections.

The load side of each circuit must be connected to the fuse end of a fused-switch or to the coil end of a circuit breaker, except a generator which is connected to either end of a circuit breaker.

Subpart 111.59—Busways**§ 111.59-1 General.**

Each busway must meet article 364 of the NEC.

[CGD 94-108, 61 FR 28280, June 4, 1996]

§ 111.59-3 No mechanical cooling.

A busway must not need mechanical cooling to operate within its rating.

[CGD 94-108, 61 FR 28280, June 4, 1996]

Subpart 111.60—Wiring Materials and Methods**§ 111.60-1 Cable construction and testing.**

(a) Each marine shipboard cable must meet all of the construction and identification requirements of either IEEE Std 45, IEC 92-3, IEC 92-350, IEC 92-353, UL 1309, MIL-C-24640A, or MIL-C-24643A (incorporated by reference, see § 110.10-1 of this chapter), and the respective flammability tests contained in them and be of a copper stranded type.

NOTE TO PARAGRAPH (a): MIL-C-915 cable is acceptable only for repairs and replacements in kind. MIL-C-915 cable is no longer acceptable for alterations, modifications, conversions, or new construction. (See § 110.01-3 of this chapter).

(b) Each cable constructed to IEC 92-3 or IEC 92-353 must meet the flammability requirements of IEC 332-3, Category A.

(c) Electrical cable that has a polyvinyl chloride insulation with a nylon jacket (Type T/N) must meet UL 1309 or must meet the requirements for poly-

vinyl chloride insulated cable in section 18 of IEEE Std 45. If meeting the requirements for polyvinyl chloride insulated cable in IEEE Std 45, section 18, the following exceptions apply—

(1) The thickness of the polyvinyl chloride insulation must meet UL 83 for type THWN wire;

(2) Each conductor must have a nylon jacket;

(3) The thickness of the nylon jacket must meet UL 83 for type THWN wire;

(4) The material of the nylon jacket must meet ASTM D 4066 (incorporated by reference, see § 110.10-1 of this chapter);

(5) The cable must have identification provided by a durable printing or embossing on the cable jacket or a marker under the cable jacket that gives, at intervals not exceeding 610 mm (24 inches), the information required by section 18.8 of IEEE Std 45; and

(6) Type T (T/N) insulations are limited to a 75° C maximum conductor temperature rating.

(d) Electrical cable regardless of construction must meet, at a minimum, all of the performance and marking requirements of section 18 of IEEE Std 45.

(e) Medium voltage electric cable must meet the requirements of IEEE Std 45 and UL 1072, where applicable, for cables rated above 5,000 volts.

(f) Direct current electric cable, for industrial applications only, may be applied in accordance with IADC-DCCS-1/1991.

[CGD 94-108, 61 FR 28280, June 4, 1996, as amended at 62 FR 23908, May 1, 1997; USCG 1999-5151, 64 FR 67182, Dec. 1, 1999; USCG-1999-6096, 66 FR 29911, June 4, 2001]

§ 111.60-2 Specialty cable for communication and RF applications.

Specialty cables that cannot pass the flammability test contained in IEEE Std 45, IEEE Std 1202, ANSI/UL 1581 test VW-1, or IEC 332-3 Category A due to unique construction properties, such as certain coaxial cables, must—

(a) Be installed physically separate from all other cable; and

(b) Have fire stops installed—

(1) At least every 7 meters (21.5 feet) vertically, up to a maximum of 2 deck heights;

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- (2) At least every 15 meters (46 feet) horizontally;
- (3) At each penetration of an A or B Class boundary;
- (4) At each location where the cable enters equipment; or
- (5) In a cableway that has an A-60 fire rating.

[CGD 94-108, 61 FR 28280, June 4, 1996]

§ 111.60-3 Cable application.

(a) Cable constructed according to IEEE Std 45 must meet the cable application provisions of section 19 of IEEE Std 45. Cable constructed according to IEC 92-3, IEC 92-353, or UL 1309 must meet the provisions of section 19 of IEEE Std 45, except 19.6.1, 19.6.4, and 19.8. Cable constructed according to IEC 92-3 and IEC 92-353 must comply with the ampacity values of IEC 92-352, Table 1.

(b) Type T/N cables must meet section 19 of IEEE Std 45 for Type T insulation.

(c) Cable constructed according to IEEE Std 45 must be derated according to Table A6, Note 6, of IEEE Std 45. Cable constructed according to IEC 92-3 or IEC 92-353 must be derated according to IEC 92-352, paragraph 8. MIL-C-24640A and MIL-C-24643A cable must be derated according to MIL-HDBK-299(SH).

(d) Cables for special applications defined in section 19 of IEEE Std 45 must meet the provisions of that section.

[CGD 94-108, 61 FR 28280, June 4, 1996, as amended at 62 FR 23908, May 1, 1997; USCG-1999-6096, 66 FR 29911, June 4, 2001]

§ 111.60-4 Minimum cable conductor size.

Each cable conductor must be #18 AWG (0.82 mm²) or larger except—

- (a) Each power and lighting cable conductor must be #14 AWG (2.10 mm²) or larger; and

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- (b) Each thermocouple, pyrometer, or instrumentation cable conductor must be #22 AWG (0.33 mm²) or larger.

[CGD 94-108, 61 FR 28280, June 4, 1996]

§ 111.60-5 Cable installation.

(a) Each cable installation must meet—

- (1) Sections 20 and 22, except 20.11, of IEEE Std 45; or

- (2) IEC 92-3 and paragraph 8 of IEC 92-352.

(b) Each cable installation made in accordance with paragraph 8 of IEC 92-352 must utilize the conductor ampacity values of Table I of IEC 92-352.

(c) Cable must not be located in any tanks except to supply equipment or instrumentation specially designed for and compatible with such location and whose function require its installation in the tank. The cable must be compatible with the liquid or gas in the tank or be protected by an enclosure.

(d) Braided cable armor or cable metallic sheath must not be used as the grounding conductor.

[CGD 74-125A, 47 FR 15236, Apr. 8, 1982, as amended by CGD 94-108, 61 FR 28280, June 4, 1996]

§ 111.60-6 Fiber optic cable.

Each fiber optic cable must—

- (a) Be constructed to pass the flammability test contained in IEEE Std 45, IEEE Std 1202, ANSI/UL 1581 test VW-1, or IEC 332-3 Category A; or

- (b) Be installed in accordance with § 111.60-2.

[CGD 94-108, 61 FR 28280, June 4, 1996]

§ 111.60-7 Demand loads.

Generator, feeder, and bus-tie cables must be selected on the basis of a computed load of not less than the demand load given in Table 111.60-7.

TABLE 111.60-7—DEMAND LOADS

Type of circuit	Demand load
Generator cables	115 percent of continuous generator rating.
Switchboard bus-tie, except ship's service to emergency switchboard bus-tie.	75 percent of generating capacity of the larger switchboard.
Emergency switchboard bus-tie	115 percent of continuous rating of emergency generator.
Motor feeders	Article 430, National Electrical Code.