

Where:

cm=Circular-mil area of conductor

K=3.28 ohms/mil-meter (metric)

=10.75 ohm/mil-foot (english)

(a constant representing the resistance of copper).

I=Load current, in amperes.

L=length of conductor from center of distribution, in meters (feet).

E=Voltage drop at load, in volts.

(q) If used, each armored cable metallic covering must:

(1) Be electrically continuous; and

(2) Be grounded at each end of the run to:

(i) The metallic hull; or

(ii) The common ground plate on nonmetallic vessels; and

(3) Have final sub-circuits grounded at the supply end only.

(r) A portable or temporary electric cord or cable must be constructed and used in compliance with the requirements of §111.60-13 in subchapter J of this chapter for a flexible electric cord or cable.

[CGD 85-080, 61 FR 997, Jan. 10, 1996; 61 FR 20557, May 7, 1996, as amended by CGD 97-057, 62 FR 51050, Sept. 30, 1997; CGD 85-080, 62 FR 51358, Sept. 30, 1997]

#### § 183.350 Batteries—general.

(a) Where provisions are made for charging batteries, there must be natural or induced ventilation sufficient to dissipate the gases generated.

(b) Each battery must be located as high above the bilge as practicable, secured to protect against shifting with the roll and pitch of the vessel, and free from exposure to water splash or spray.

(c) Batteries must be accessible for maintenance and removal.

(d) Connections must be made to battery terminals with permanent type connectors. Spring clips or other temporary type clamps are prohibited.

(e) Batteries must be mounted in trays lined with, or constructed of, a material that is resistant to damage by the electrolyte.

(f) Battery chargers must have an ammeter connected in the charging circuit.

(g) If the batteries are not adjacent to a distribution panel or switchboard that distributes power to the lighting, motor, and appliance circuits, the bat-

tery lead must have a fuse in series as close as practicable to the battery.

(h) Batteries used for engine starting are to be located as close as possible to the engine or engines served.

[CGD 85-080, 61 FR 997, Jan. 10, 1996; 61 FR 20557, May 7, 1996]

#### § 183.352 Battery categories.

This section applies to batteries installed to meet the requirements of §183.310 for secondary sources of power to vital loads, or sources of power to final emergency loads.

(a) *Large*. A large battery installation is one connected to a battery charger having an output of more than 2 kilowatts (kw), computed from the highest possible charging current and the rated voltage of the battery installation.

(b) *Small*. A small battery installation is one connected to a battery charger having an output of 2 kw or less, computed as above.

[CGD 85-080, 61 FR 997, Jan. 10, 1996, as amended by CGD 97-057, 62 FR 51050, Sept. 30, 1997]

#### § 183.354 Battery installations.

(a) *Large batteries*. Each large battery installation must be located in a locker, room or enclosed box solely dedicated to the storage of batteries. Ventilation must be provided in accordance with §111.15-10 in subchapter J of this chapter. Electrical equipment located within the battery enclosure must be approved by an independent laboratory for Class I, Division 1, Group B hazardous locations and meet §111.105 in subchapter J of this chapter.

(b) *Small batteries*. Each small battery installation must be located in a well ventilated space and protected from falling objects. A small battery installation must not be in a closet, storeroom or similar space.

#### § 183.360 Semiconductor rectifier systems.

(a) Each semiconductor rectifier system must have an adequate heat removal system that prevents overheating.

(b) Where a semiconductor rectifier system is used in a propulsion system or in other vital systems it must:

(1) Have a current limiting circuit;