ARTICLE
503 Class III Locations

Part I. General

503.1 Scope. This article covers the requirements for electrical and electronic equipment and wiring for all voltages in Class III, Division 1 and Division 2 locations where fire or explosion hazards might exist due to nonmetal combustible fibers/flyings or ignitible fibers/flyings.

Class III locations usually include textile mills that process cotton, rayon, and other fabrics, where easily ignitible fibers/flyings are present in the manufacturing process. Sawmills and other woodworking plants, where sawdust, wood shavings, and combustible fibers/flyings are present, also can become hazardous locations. However, if wood flour (dust) is present, the location is a Class II, Group G location and not a Class III location.

Fibers/flyings are hazardous not only because they are easily ignited, but also because flames quickly spread through them. Such fires travel with a rapidity approaching an explosion and are commonly called flash fires.

Class III, Division 1 applies to locations where material is handled, manufactured, or used. Division 2 applies to locations where material is stored or handled but where no manufacturing processes are performed. Unlike Class I and Class II locations, Class III locations do not have material group designations.

Δ **503.5 General.** Equipment installed in Class III locations shall be able to function at full rating without developing surface temperatures high enough to cause excessive dehydration or gradual carbonization of accumulated fibers/flyings.

Informational Note No. 1: See NFPA 505, *Fire Safety Standard for Powered Industrial Trucks Including Type Designations, Areas of Use, Conversions, Maintenance, and Operations*, for information on electric trucks.

Informational Note No. 2: Organic material that is carbonized or excessively dry is highly susceptible to spontaneous ignition.

503.6 Zone Equipment. Equipment listed and marked in accordance with 506.9(C)(2) for Zone 20 locations and with a temperature marking in accordance with 500.8(D)(3) shall be permitted in Class III, Division 1 locations.

Equipment listed and marked in accordance with 506.9(C)(2) for Zone 20, Zone 21, or Zone 22 locations and with a temperature marking in accordance with 500.8(D)(3) shall be permitted in Class III, Division 2 locations.

Part II. Wiring

503.10 Wiring Methods. Wiring methods shall comply with 503.10(A) or (B).

Informational Note: See Article 100 for the definition of *restricted industrial establishment [as applied to hazardous (classified) locations]*.

(A) Class III, Division 1.

Δ **(1) General.** In Class III, Division 1 locations, the following wiring methods shall be permitted:

(1) Rigid metal conduit (RMC), PVC conduit, RTRC conduit, intermediate metal conduit (IMC), electrical metallic tubing (EMT), dusttight wireways, or Type MC or Type MI cable with listed termination fittings.
(2) Type PLTC cable or Type PLTC-ER cable used in Class 2 and Class 3 circuits, including installation in cable tray systems. The cable shall be terminated with listed fittings. Type PLTC-ER cable shall include an equipment grounding conductor in addition to a drain wire that might be present.
(3) Type ITC cable or Type ITC-ER cable as permitted in 335.4 and terminated with listed fittings. Type ITC-ER cable shall include an equipment grounding conductor in addition to a drain wire.
(4) Type MV, Type TC, or Type TC-ER cable, including installation in cable tray systems. Type TC-ER cable shall include an equipment grounding conductor in addition to a drain wire that might be present. The cable shall be terminated with listed fittings.
(5) Cablebus.
(6) In restricted industrial establishments, listed Type P cable with metal braid armor, with an overall jacket, that is terminated with fittings listed for the location, and installed in accordance with Part II of Article 337. If installed in ladder, ventilated trough, or ventilated channel cable trays, cables shall be installed in a single layer, with a space not less than the larger cable diameter between the two adjacent cables unless otherwise protected against dust buildup resulting in increased heat.

Informational Note No. 1: See UL 1309A, *Outline of Investigation for Cable for Use in Mobile Installations*, for information on construction, testing, and marking of Type P cable.

Informational Note No. 2: See ANSI/UL 2225, *Cables and Cable-Fittings for Use in Hazardous (Classified) Locations*, for information on construction, testing, and marking of cable fittings.

(2) Boxes and Fittings. All boxes and fittings shall be dusttight.

Δ **(3) Flexible Connections.** Where flexible connections are necessary, one or more of the following shall be permitted:

(1) Dusttight flexible connectors
(2) Liquidtight flexible metal conduit (LFMC) with listed fittings
(3) Liquidtight flexible nonmetallic conduit (LFNC) with listed fittings and bonded in accordance with 503.30(B)
(4) Interlocked armor Type MC cable having an overall jacket of suitable polymeric material and installed with listed dusttight termination fittings
(5) Flexible cord in accordance with 503.140
(6) For elevator use, an identified elevator cable of Type EO, Type ETP, or Type ETT, shown under the "use" column