

The National Electrical Code (NEC) has strict requirements for cabling in hazardous locations, which are loosely defined as “Classified Locations” where fire or explosion hazards exist due to flammable gases, vapors, dusts or fibers. Approved wiring methods range from a rigid, highly impenetrable type of cable, such as Type MI (mineral insulated cable) to a raceway system, such as rigid metallic conduit or intermediate metal conduit. These wiring methods are safe and reliable, but not when flexibility is needed. Hope is not lost though because the NEC accommodates flexible connections in hazardous locations.

RELEVANT ARTICLES OF THE NEC

The NEC, officially NFPA 70, provides a practical safeguard from hazards arising from the use of electricity. Article 501 of the NEC (specifically, 501.10(A) and (B)) addresses the wiring methods that are approved for Class I, Division 1, and Class I, Division 2, locations and references 501.140, which provides additional details on allowed usage.

There are two divisions of Class I hazardous locations to consider: Class I, Division 1, and Class I, Division 2. The provisions vary slightly between the two locations.

The NEC considers Class I, Division 1, applications the most hazardous and states, “Where necessary to employ flexible connections, as at motor terminals, flexible fittings listed for the location, or flexible cord in accordance with the provisions of 501.140 terminated with cord connectors listed for the location, shall be permitted.”

Class I, Division 2, locations are considered less hazardous, so all wiring methods approved for Division 1 and a few additional methods are allowed. NEC Article 501.10(B)(2) permits flexible cord to be used “where provision must be made for limited flexibility...the following shall be permitted: ... (5) Flexible cord listed for extra-hard usage and terminated with listed fittings. A conductor for use as an equipment grounding conductor shall be included in the flexible cord.”

As stated above, flexible cord products can be used in Class I, Division 1, hazardous locations as long as the guidelines of 501.140 are followed. 501.140 is titled Flexible Cords, Class I, Divisions 1 and 2, and has two subsections: (A) Permitted Uses and (B) Installation. Users of flexible cords in Classified Hazardous Locations should carefully read this section of the code. 501.145 Receptacles and Attachment Plugs, Class I, Divisions 1 and 2, may also be of interest to users who need modular connections on equipment.



USING A FLEXIBLE CORD

The NEC requires a flexible cord to be protected from damage by its location or by a suitable guard and that it only be used in industrial establishments where conditions of maintenance and engineering supervision allow only qualified persons install and service the installation.

The conditions of maintenance and supervision shouldn't be an issue for most equipment users where Class I, Division 1, locations exist, but it may be an issue for some agricultural users. Both Division 1 and 2 locations require the use of cords listed for extra-hard usage. Examples of those cord types would be the SO, ST, SE and W cord types found in Table 400.4 of the NEC.

Another difficulty in connecting cords in hazardous locations is identifying connectors that are listed for use in those locations. Several of the connector and gland manufacturers have tables published on their websites indicating which of their product lines meet specific hazardous location requirements.



Contact your local Anixter sales representative for assistance with your search for the right flexible products for your hazardous locations.

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