

## Electrical Sources in Hazardous Locations

An explosion or fire can cause havoc in any company's operations. Rebuilding after a fire can take years. One major cause of explosions and fire in industry is electrical sources. Potential losses can be reduced by having proper electrical installations and equipment.

Hazardous locations require specially designed electrical equipment to protect against increased fire potential. Certain electrical components and instruments are engineered specifically for locations designated as hazardous due to the possibility of ignitable quantities of flammable liquids, gases, vapors, combustible dusts, or ignitable fibers.

- Class I hazardous locations: flammable vapors or gases.
- Class II hazardous locations: combustible dusts.
- Class III hazardous locations: ignitable fibers and filings.

Each of class is divided into two hazard categories, Division 1 and Division 2. The divisions identify the degree of potential for an ignitable atmosphere to exist. Class and Division explanations are detailed in Articles 500 - 503 of the National Electric Code (NEC), and in OSHA 29CFR 1910.39.

Before selecting electrical equipment and the associated wiring for any hazardous location, determine the exact nature and concentrations of the flammable materials. An electrical fitting or device which is safe for installation in an atmosphere of combustible dust may not be safe in an atmosphere containing flammable vapors or gases.

Class I electrical wiring applications are commonly called "Explosion Proof." Properly installed and maintained class I equipment will not ignite the dangerous atmosphere surrounding it, and is approved for use in specific hazardous areas. Explosion proof fittings are designed to contain any arcing, intense heat, and explosions. These fixtures are distinctive in appearance.

Class II locations may require "Dust-ignition proof" fixtures. These fixtures are designed in such a manner that their construction prohibits ignitable amounts of dust from entering the devices.

Hazardous areas that must have approved electrical installations include, but are not limited to: locations where volatile flammable liquids are transferred from one container to another; interiors of spray booths; in the vicinity of spray painting operations where volatile flammable solvents are used; locations where dangerous concentrations of suspended dust are likely, such as in grain elevators; and gasoline fueling stations.

Remember to think electrical safety when proposing any electrical systems that will be located in a hazardous location.

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