North American Hazardous (Classified) Locations

Installation of electrical equipment within hazardous (classified) locations in the United States is in accordance with provisions of the National Electrical Code (NEC), ANSI/NFPA 70, Article 500, and within Canada in accordance with the provisions of the Canadian Electrical Code (CEC) C22.1, Part 1, Section 18.

Hazardous (classified) locations, in both the United States and Canada, are divided into three classes:

- Class 1- Presence of flammable gases or vapors may be present in quantities sufficient to produce explosive or ignitable mixtures.
- Class 11- Presence of combustible dusts, powders or grains.
- Class 111- Presence of easily ignitable fibers or flyings.

Hazardous Location Level of Risk

The classes listed above are further categorized based upon the level of risk present:

- Division 1- Locations in which hazardous concentrations of flammable gases or vapors- or combustible dust in suspension- continuously, intermittently or periodically under normal operating conditions.
- Division 2- Locations in which flammable gases or vapors are present, but normally confined within closed containers or systems from which they can escape only under abnormal or fault conditions. Combustible dusts are not normally in suspension nor likely to be thrown in to suspension.

Hazardous Group Classifications

Flammable gases, vapors and ignitable dusts, fibers and flyings are classified into groups according to the energy required to ignite the most easily ignitable mixture within air. Group classifications are:

- Class 1 group classifications-
  - Group A- Atmospheres containing acetylene.
  - Group B- Atmospheres containing hydrogen, fuel and combustible process gases containing more than 30 percent hydrogen by volume or gases or vapors of equivalent hazard.
  - Group C- Atmospheres such as ethyl ether, ethylene, or gasses or vapors of equivalent hazard.
  - Group D- Atmospheres such as acetone, ammonia, benzene, butane, cyclopropane, ethanol, gasoline, hexane, methanol, methane, natural gas, naphtha, propane or gases or vapors of equivalent hazard.
  - Group E- Atmospheres containing combustible metal dusts including aluminum, magnesium, and their commercial alloys, and other metals of similarly hazardous characteristics.
  - Group F- Atmospheres containing combustible carbonaceous dusts including carbon black, charcoal, coal or other dusts that have been sensitized by other materials so they present an explosion hazard.
  - Group G- Atmosphere containing combustible dusts no included in Group E or F, including flour wood, grain and other dusts of similarly hazardous characteristics.
- Class 111 group classifications-
  - Class 111/Division 1- A Class 111, Division 1 location is a location in which easily ignitable fibers or material processing combustible flying are handled, manufactured or used.
  - Class 111/Division 11- A Class 111, Division 2 location is a location in which easily ignitable fibers are stored or handled.