HAZARDOUS OR CLASSIFIED LOCATIONS

Electrical devices used in hazardous areas need to be certified for use according to the requirements specified for the area.

In North America, certification is provided by:

- Factory Mutual — An approval agency primarily concerned with insurance underwriting.
- Underwriters Laboratories — An independent product safety testing and certification organization.
- CSA — A not-for-profit membership-based association serving business, industry, government, consumers in Canada, developing standards addressing public safety and health.

Hazardous locations in North America are separated by divisions, classes and groups to define the level of safety required for equipment installed in these locations.

Division - the division defines the probability of hazardous material being present in an ignitable concentration in the surrounding atmosphere.
  - Division 1 - the substance referred to by class is present during normal conditions.
  - Division 2 - the substance referred to by class is present only in abnormal conditions, such as a container failure or system breakdown.

Class - the classes defines the general nature of hazardous material in the surrounding atmosphere.
  - Class I - Hazardous because flammable gases or vapors are present in the air in quantities sufficient to produce explosive or ignitable mixtures.
  - Class II - Hazardous because combustible or conductive dusts are present.
  - Class III - Hazardous because ignitable fibers or flyings are present, but not likely to be in suspension in sufficient quantities to produce ignitable mixtures. Examples are: typical wood chips, cotton, flax and nylon. Group classifications are not applied to this class.

Group - the group defines the hazardous material in the surrounding atmosphere.
  - Group A - Acetylene
  - Group B - Hydrogen, fuel and combustible process gases containing more than 30% hydrogen by volume or gases of equivalent hazard such as butadiene, ethylene, oxide, propylene oxide and acrolein.
  - Group C - Carbon monoxide, ether, hydrogen sulfide, morpholine, cyclopropane, ethyl and ethylene or gases of equivalent hazard.
  - Group D - Gasoline, acetone, ammonia, benzene, butane, cyclopropane, ethanol, hexane, methanol, methane, vinyl chloride, natural gas, naphtha, propane or gases of equivalent hazard.
  - Group E - Combustible metal dusts, including aluminum, magnesium and their commercial alloys or other combustible dusts whose particle size, abrasiveness and conductivity present similar hazards in connection with electrical equipment.
  - Group F - Carbonaceous dusts, carbon black, coal black, charcoal, coal or coke dusts that have more than 8% total entrapped volatiles or dusts that have been sensitized by other material so they present an explosion hazard.
  - Group G - Flour dust, grain dust, flour, starch, sugar, wood, plastic and chemicals.