



Hazardous Location Basics

Hazardous Location: An area where the possibility of explosion and fire is created by the presence of flammable gases, vapors, dusts, fibers, or flyings.

Class I (NEC-500-5): Those areas in which flammable gases or vapors may be present in the air in sufficient quantities to be explosive or ignitable.

Class II (NEC-500-6): Those areas made hazardous by the presence of combustible dust.

Class III (NEC-500-7): Those areas in which there are easily ignitable fibers or flyings present, due to type of material being handled, stored, or processed.

Division 1 (NEC-800-5, 6, 7): Division One in the normal situation, the hazard would be expected to be present in everyday production operations or during frequent repair and maintenance activity.

Division 2 (NEC-500-5, 6, 7): Division One in the abnormal situation, material is expected to be confined within closed containers or closed systems and will be present only through accidental rupture, breakage or unusual faulty operation

Groups (NEC-500-3): The gases and vapors of Class I locations are broken into four groups by the code A, B, C, and D. These materials are grouped according to the ignition temperature of the substance, its explosion pressure, and other flammable characteristics.

Class II: Dust locations-groups E, F, and G: These groups are classified according to the ignition temperature and the conductivity of the hazardous substance.

Seals (NEC-501-5 & 502-5): Special fittings that are required either to prevent the passage of hot gases in the case of an explosion in a Class I area or the passage of combustible dust, fibers, or flyings in a Class II or III area.

Articles 500 - 503 (1987 NEC): Explains in detail the requirements for the installation of wiring or electrical equipment in hazardous locations. These articles along with other applicable regulations, local governing inspection authorities, insurance representatives, and qualified engineering/technical assistance should be your guides to the installation of wiring or electrical equipment in any hazardous or potentially hazardous location.

Note: Fibers and flyings are not likely to be suspended in the air, but can collect around machinery or on lighting fixtures and where heat, sparks, or hot metal can ignite them.

Typical Class I Locations:

- Petroleum refineries, and gasoline storage and dispensing area.
- Industrial firms that use flammable liquids in dip tanks for parts cleaning or other operations.
- Petrochemical companies that manufacture from gas and oil.
- Dry-cleaning plants where vapors from cleaning fluids can be present.
- Companies that have spraying areas where they coat products with paint or plastics.
- Aircraft hangers and fuel servicing areas.
- Utility gas plants and operations involving storage and handling of liquefied petroleum gas or natural gas.

Typical Class II Locations:

- Grain Elevators, flour and feed mills.
- Plants that manufacture, use or store magnesium or aluminum powders.
- Plants that have chemical or metallurgical processes... producers of plastics, medicines, and fireworks, etc.
- Producers of starch or candies.
- Spice-grinding plants, sugar plants, and cocoa plants.
- Coal preparation plants and other carbon-handling or processing areas.

Typical Class III Locations:

- Textile mills, cotton gins, cottonseed mills, and flax processing plants.
- Any plant that shapes, pulverizes, or cuts wood and creates sawdust or flyings.