TABLE 12. Hazardous Location Classifications per National Electrical Code (NEC) Article 500

CLASS	DIVISION	GROUP
CLASS I Locations in which flammable gases or vapors are (or may be) present in the air in quantities great enough to produce explosive or ignitable mixtures.	**DIVISION 1:** Locations in which hazardous concentrations of flammable gases or vapors exist continuously, intermittently, or periodically under normal conditions. -or- Locations in which hazardous concentrations of flammable gases or vapors may exist frequently because of repair or maintenance operations or because of leakage. -or- Locations in which breakdown or faulty operation of equipment or processes might release hazardous concentrations of flammable gases or vapors. **DIVISION 2:** Locations in which volatile flammable liquids or flammable gases are handled, processed, or used, but are normally kept in closed containers and can only escape due to accidental rupture. -or- Locations in which hazardous concentrations of gases or vapors are normally prevented by mechanical ventilation and might become hazardous due to failure of the ventilating equipment. -or- Locations that are adjacent to Class I, Division 1 locations.	**GROUP A:** Atmospheres containing acetylene **GROUP B:** Atmospheres containing: acrolein (inhibited) butadiene ethylene oxide hydrogen manufactured gases containing more than 30% hydrogen by volume propylene oxide **GROUP C:** Atmospheres containing: allyl alcohol carbon monoxide cyclopropane diethyl ether ethylene hydrogen sulfide methyl ether n-propyl ether or gas or vapors of equivalent hazard **GROUP D:** Atmospheres containing: acetone ammonia benzene butane butyl alcohol ethane ethyl alcohol gasoline heptanes hexanes methane (natural gas) methyl alcohol methyl ethyl ketone (MEK) naphtha octanes pentanes propane styrene toluene xylenes or gas or vapors of equivalent hazard
CLASS II Locations in which there are explosive mixtures of air and combustible dust.	**DIVISION 1:** Locations in which explosive or ignitible amounts of combustible dust is or may be in suspension in the air continuously, intermittently, or periodically under normal operating conditions. -or- Locations where mechanical failure or abnormal operation of machinery or equipment might cause explosive or ignitable mixtures to be produced. -or- Locations in which combustible electrically conductive dust is present. **DIVISION 2:** Locations where combustible dust deposits exist but are not likely to be thrown into suspension in the air, but where the dust deposits may be heavy enough to interfere with safe heat dissipation from electric equipment. -or- Locations where combustible dust deposits may be ignited by arcs, sparks, or burning material from electric equipment.	**GROUP E:** Atmospheres containing combustible: metal dusts regardless of resistivity -or- dusts of similarly hazardous characteristics having resistivity of less than 100,000 ohm-centimeter **GROUP F:** atmospheres containing combustible: carbon black, charcoal, or coke dusts which have more than 8% total volatile material -or- carbon black, charcoal, or coke dusts sensitized by other materials so that they present an explosion hazard, and having a resistivity greater than 100 ohm-centimeter but equal to or less than 100,000,000 ohm-centimeter **GROUP G:** Atmospheres containing dusts having resistivity of 100,000,000 ohm-centimeter or greater (nonconductive dusts)
CLASS III Locations in which there is the presence of easily-ignited fibers or flyings, but where the fibers or flyings are not likely to be in suspension in the air in quantities great enough to produce ignitable mixtures.	**DIVISION 1:** Locations in which easily ignitable fibers or materials producing flyings are handled, manufactured, or used. **DIVISION 2:** Locations in which easily ignitable fibers are stored or handled (except in a manufacturing process).	(NOT GROUPED) Manufacturers include: textile mills, clothing plants, fiber processing plants Easily ignitable fibers include: cotton, rayon, sisal, hemp, jute

TABLE 13. NEMA Enclosure Ratings for Nonhazardous Locations

Standard NEMA (IEC)*	Intended Use	Accidental bodily contact	Falling dirt	Dust, lint, fibers (non-volatile)	Windblown dust	Falling liquid, light splash	Hosedown and heavy splash	Rain, snow, and sleet	Ice buildup	Oil or coolant seepage	Oil or coolant spray and splash	Occasional submersion	Prolonged sub-mersion	Corrosive agents
NEMA 1 (IP10)	Indoor	Yes	Yes	...	...	...	...	...	...	...	...	...	...	...
NEMA 2 (IP11)	Indoor	Yes	Yes	...	...	Yes	...	...	...	...	...	...	...	...
NEMA 3 (IP54)	Outdoor	Yes	Yes	Yes	Yes	Yes	...	Yes	...	...	...	...	...	...
NEMA 3S (IP54)	Outdoor	Yes	Yes	Yes	Yes	Yes	...	Yes	Yes	...	...	...	...	...
NEMA 4 (IP56)	Indoor or Outdoor	Yes	Yes	Yes	Yes	Yes	Yes	Yes	...	...	...	...	...	...
NEMA 4X (IP56)	Indoor or Outdoor	Yes	Yes	Yes	Yes	Yes	Yes	Yes	...	...	...	...	...	Yes
NEMA 6 (IP67)	Indoor or Outdoor	Yes	Yes	Yes	Yes	Yes	Yes	Yes	...	...	...	Yes	...	...
NEMA 6P (IP67)	Indoor or Outdoor	Yes	Yes	Yes	Yes	Yes	Yes	Yes	...	...	...	Yes	Yes	Yes
NEMA 12 (IP52)	Indoor	Yes	Yes	Yes	...	Yes	...	...	...	Yes	...	...	...	...
NEMA 13 (IP54)	Indoor	Yes	Yes	Yes	...	Yes	...	...	...	Yes	Yes	...	...	...

*The IEC equivalents listed in this column are approximate: NEMA types *meet or exceed* the test requirements for the associated IEC classifications.

TABLE 14. IP Enclosure Ratings for Nonhazardous Locations

1ST CHARACTERISTIC: Protection against contact and penetration of solid bodies	
Numeral	**Short Description**
0	Non-protected
1	Protected against solid objects greater than 50 mm
2	Protected against solid objects greater than 12 mm
3	Protected against solid objects greater than 2.5 mm
4	Protected against solid objects greater than 1.0 mm
5	Dust protected
6	Dust-tight
2ND CHARACTERISTIC: Protection against the penetration of liquids	
Numeral	**Short Description**
0	Non-protected
1	Protected against dripping water
2	Protected against dripping water when tilted up to 15°
3	Protected against spraying water
4	Protected against splashing water
5	Protected against water jets
6	Protected against heavy seas
7	Protected against the effects of immersion
8	Protected against submersion