

NEMA Ratings

Enclosure Classifications and Types

NEMA Type 1: General purpose: intended for indoor use primarily to provide a degree of protection against contact with the enclosed parts in locations without unusual service conditions.

NEMA Type 2: Drip proof: intended for indoor use primarily to provide a degree of protection against limited amounts of falling water or dirt.

NEMA Type 3: Rain-tight, dust-tight, and sleet (ice) resistant: intended for outdoor use primarily to provide a degree of protection against windblown dust, rain, and sleet; undamaged by the formation of ice on the enclosure.

NEMA Type 3S: Rain-tight, dust-tight, and sleet (ice) resistant: intended for outdoor use primarily to provide a degree of protection against wind-blown dust, rain, and sleet; external mechanism remains operable when ice laden.

NEMA Type 3R: Rain-tight, dust-tight, and sleet (ice) resistant: intended for outdoor use primarily to provide a degree of protection against falling rain and sleet, undamaged by the formation of ice on the enclosure.

NEMA Type 4: Water-tight and dust-tight; intended for indoor or outdoor use to provide a degree of protection against splashing water, water seepage, falling or hose-directed water and severe external condensation, undamaged by the formation of ice on the enclosure.

NEMA Type 4X: Water-tight, dust-tight, and corrosion resistant: same as Type 4 enclosure, but provides additional protection to resist corrosion.

NEMA Type 6: Submersible: intended for indoor or outdoor use to provide a degree of protection against entry of water during submersion at a limited depth.

NEMA Type 6P: Submersible: same as Type 6 enclosure, but provides prolonged submersion protection at a limited depth.

NEMA Type 7 (A, B, C, and D): Explosion proof, Class 1, Division 1, Groups A, B, C, and D hazardous locations: designed to contain an internal explosion without causing an external hazard when installed in the indicated atmospheres and locations. Class 1, Division 1 locations are those in which hazardous atmospheres are, or may be, present under normal operating conditions.

These enclosures are also suitable for Class 1, Division 2 locations in which hazardous atmospheres are present only in case of accidental rupture or breakdown of equipment, or abnormal operation. Type 1 general purpose enclosures may be permitted in a Class 1, Division 2 location subject to the approval authority. (ref: national electrical code 501-3,b3).

Group designations are described in national building code as follows:

Group A—Atmospheres containing acetylene

Group B—atmospheres containing hydrogen

Group C—atmospheres containing ethylether vapors, ethylene or cyclopropane

Group D—Atmospheres containing gasoline, hexane, naphtha, benzene, benzyl, lacquer, solvent vapors or natural gas.

NEMA Type 9 (E, F, and G): Dust ignition proof, Class ii, groups E, F, and G hazardous locations:

Designed to prevent the entrance of dust, and the enclosed devices do not produce sufficient heat to cause external surface temperatures capable of igniting dust on the enclosure or in the surrounding atmosphere. Class ii, Division 1 locations are those in which combustible dust is, or may be, present under normal operating conditions. These enclosures are also suitable for Class ii, Division 2 locations in which hazardous dust is present only under abnormal conditions.

The group designations are described in the national electrical code as follows:

Group E—atmospheres containing metal dust, including aluminum, magnesium, their commercial alloys, and other metals of similarly hazardous characteristics.

Group F—atmospheres containing carbon black, coal or coke dust.

Group G—Atmospheres containing flour, starch or grain dust.