NEMA Ratings

ENCLOSURE TYPES – NEMA RATINGS

NEMA stands for National Electrical Manufacturers Association.

NEMA ratings are standards that are useful in defining the types of environments in which an electrical enclosure can be used. The NEMA rating system is defined by the National Electrical Manufacturers Association, and frequently signifies a fixed enclosure's ability to withstand certain environmental conditions.

NEMA 1
Indoor use primarily to provide a degree of protection against limited amounts of falling dirt.

NEMA 2
Indoor use primarily to provide a degree of protection against limited amounts of falling water and dirt.

NEMA 3
Outdoor use primarily to provide a degree of protection against rain, sleet, windblown dust and damage from external ice formation.

NEMA 3R
Outdoor use primarily to provide a degree of protection against rain, sleet, and damage from external ice formation.

NEMA 3S
Outdoor use primarily to provide a degree of protection against rain, sleet, windblown dust and to provide for operation of external mechanisms when ice-laden.

NEMA 4
Indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, hose-directed water and damage from external ice formation.

NEMA 4X
Indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, hose-directed water, and damage from external ice formation.

NEMA 5
Indoor use primarily to provide a degree of protection against settling airborne dust, falling dirt, and dripping non-corrosive liquids.

NEMA 6
Indoor or outdoor use primarily to provide a degree of protection against hose-directed water, and the entry of water during occasional temporary submersion at a limited depth, and damage from external ice formation.

NEMA 6P
Indoor or outdoor use primarily to provide a degree of protection against hose-directed water, the entry of water during prolonged submersion at a limited depth, and damage from external ice formation.

NEMA 7
Indoor use in locations classified as Class I, Division 1, Groups A, B, C or D hazardous locations as defined in the National Electric Code (NFPA 70) (Commonly referred to as explosion-proof).

NEMA 8
Indoor or outdoor use in locations classified as Class I, Division 2, Groups A, B, C or D hazardous locations as defined in the National Electric Code (NFPA 70) (commonly referred to as oil-immersed).

NEMA 9
Indoor use in locations classified as Class II, Division 1, Groups E, F and G hazardous locations as defined in the National Electric Code (NFPA 70) (commonly referred to as dust-ignition proof).

NEMA 10
Intended to meet the applicable requirements of the Mine Safety and Health Administration (MSHA).

NEMA 12
Indoor use primarily to provide a degree of protection against circulating dust, falling dirt and dripping non-corrosive liquids.

NEMA 12/K (enclosures with knockouts)
Indoor use primarily to provide a degree of protection against circulating dust, falling dirt, and dripping non-corrosive liquids.

NEMA 13
Indoor use primarily to provide a degree of protection against dust, spraying of water, oil, and non-corrosive coolant.

NEMA COMPARISONS TO IP (IEC CLASSIFICATION)

The NEMA Rating system is a standard primarily used in North America for rating enclosures. The table below shows the equivalent IP ratings. NEMA standards meet or exceed the IP ratings listed, but the reverse cannot be assumed.

NEMA Rating	Description	Equivalent IP Rating
1	GENERAL PURPOSE. Intended for use indoors.	IP 10
2	GENERAL PURPOSE. Intended for use indoors with additional drip protection.	IP 11
3 & 3S	GENERAL PURPOSE WEATHER-RESISTANT. Intended for use outdoors with protection from windblown dust, rain and sleet, and undamaged by the formation of ice.	IP 54
3R	GENERAL PURPOSE WEATHER-RESISTANT. Intended for use outdoors with protection from falling rain and sleet, and undamaged by the formation of ice.	IP 14
4 & 4X	GENERAL PURPOSE WEATHER-PROOF. Intended for use indoors or outdoors with protection from wash-down environment and corrosion resistance.	IP 65
5	GENERAL PURPOSE DUST-TIGHT. Intended for use indoors or outdoors with protection from dust provided by gaskets.	IP 52
6 & 6P	GENERAL PURPOSE SUBMERSIBLE. Intended for use indoors or outdoors with protection from occasional submersion.	IP 67
7	HAZARDOUS. Intended for indoor use in Class I, Groups A, B, C, and D environments per NFPA rating system.	N/A
8	HAZARDOUS. Intended for indoor or outdoor use in Class I, Groups A, B, C, and D environments per NFPA rating system.	N/A
9	HAZARDOUS. Intended for indoor or outdoor use in Class II, Groups E, F, and G environments per NFPA rating system.	N/A
12 & 12K	INDUSTRIAL USE. Intended for use in industrial applications with protection from dust and non-corrosive liquid drip.	IP 52
13	INDUSTRIAL USE. Intended for use in industrial applications with protection from dust, spraying water, oil and non-corrosive liquid drip.	IP 54