

NEMA/IP Rating Definitions and Conversions

NEMA enclosure	IP Code
1	IP20
2	IP22
3, 3X, 3S, 3SX	IP55
3R, 3RX	IP24
4, 4X	IP66
5	IP53
6	IP67
6P	IP68
12, 12K, 13	IP54

NEMA Type	Definition
1	General-purpose. Protects against dust, light, and indirect splashing but is not dust-tight; primarily prevents contact with live parts; used indoors and under normal atmospheric conditions.
2	Drip-tight. Similar to Type 1 but with addition of drip shields; used where condensation may be severe (as in cooling and laundry rooms).
3	Weather-resistant. Protects against falling dirt and windblown dust, against weather hazards such as rain, sleet and snow, and is undamaged by the formation of ice. Used outdoors on ship docks, in construction work, and in tunnels and subways.
3R	As 3, but <i>omits</i> protection against windblown dust.
3S	As 3, but also operable when laden with ice.
3X, 3RX, 3SX	X indicates additional corrosion protection; commonly used near salt water.
4 and 4X	Watertight. Must exclude at least 65 GPM of water from a 1 in nozzle delivered from a distance not less than 10 ft for 5 min. Used outdoors on ship docks, in dairies, in wastewater treatment plants and breweries. X (as 4X) indicates additional corrosion resistance.
5	Dust-tight. Provided with gaskets or equivalent to exclude dust; used in steel mills and cement plants.
6 and 6P	Submersible. Design depends on specified conditions of pressure and time; submersible in water or oil; used in quarries, mines, and manholes. 6 is temporarily submersible, 6P withstands occasional prolonged submersion. Neither are intended for continuous submersion.
7	Certified and labelled for use in areas with specific hazardous conditions: for indoor use in Class I, Groups A, B, C, and D environments as defined in NFPA standards such as the NEC.
8	Certified and labeled for use in areas with specific hazardous conditions: for indoor and outdoor use in locations classified as Class I, Groups A, B, C, and D as defined in NFPA standards such as the NFPA 70.
9	Certified and labelled for use in areas with specific hazardous conditions: for indoor and outdoor use in locations classified as Class II, Groups E, F, or G as defined in NFPA standards such as the NEC.
10	MSHA. Meets the requirements of the Mine Safety and Health Administration, 30 CFR Part 18 (1978).
11	General-purpose. Protects against the corrosive effects of liquids and gases. Meets drip and corrosion-resistance tests.
12 and 12K	General-purpose. Intended for indoor use, provides some protection against dust, falling dirt, and dripping non-corrosive liquids. Meets drip, dust, and rust resistance tests.
13	General-purpose. Primarily used to provide protection against dust, spraying of water and non-corrosive coolants. Meets oil exclusion and rust resistance design tests.

FIRST Digit Level	Effective Against	Description
0	—	No protection
1	>50 mm	Any large surface of the body, no protection against deliberate contact with a body part
2	>12.5 mm	Fingers or similar objects
3	>2.5 mm	Tools, thick wires, etc.
4	>1 mm	Most wires, slender screws, large ants etc.
5	Dust protected	Ingress of dust is not entirely prevented, but it must not enter in sufficient quantity to interfere with the satisfactory
6	Dust tight	No ingress of dust; complete protection against contact (dust tight). A vacuum must be applied.

SECOND Digit Level	Protection against	Effective against
0	None	—
1	Dripping water	Dripping water (vertically falling drops) shall have no harmful effect on the specimen when mounted in an upright position.
2	Dripping water when tilted at 15°	Vertically dripping water shall have no harmful effect when the enclosure is tilted at an angle of 15° from its normal position.
3	Spraying water	Water falling as a spray at any angle up to 60° from the vertical shall have no harmful effect.
4	Splashing of water	Water splashing against the enclosure from any direction shall have no harmful effect, utilizing either: a) an oscillating fixture, or b) A spray nozzle with no shield.
5	Water jets	Water projected by a nozzle (6.3 mm) against enclosure from any direction shall have no harmful effects.
6	Powerful water jets	Water projected in powerful jets (12.5 mm nozzle) against the enclosure from any direction shall have no harmful effects.
6K	Powerful water jets with increased pressure	Water projected in powerful jets (6.3 mm nozzle) against the enclosure from any direction.
7	Immersion, up to 1 m depth	Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 m of submersion)
8	Immersion, 1 m or more depth	The equipment is suitable for continuous immersion in water under conditions which shall be specified by the manu
9K	Powerful high temperature water jets	Protected against close-range high pressure, high temperature spray downs.