

Tricky Enclosures



TUV Rheinland
of North America

From the Series: TUV informs about the Hazards of Unlisted/Unlabeled Equipment

The NEC in its section 110-3 states:

“Suitability of equipment use may be identified by a description marked on or provided with a product to identify the suitability of the product for a specific purpose, environment, or application.”

The same section also states that *Suitability of equipment may be evidenced by listing or labeling.* However, what if the listing and labeling is for one type of environment and the manufacturer designates the use of the system for a different type of environment? What if the design engineer just overlooked the application of an enclosure for unlisted equipment?

We have quite often come across control panel and other types of enclosures that were NEMA rated for certain environments, but were actually installed in a more severe environmental condition, that exposed it to unanticipated hazards.

We want to draw the attention of AHJ inspectors, contractors and manufacturers to NEMA rating descriptions with the intention of creating awareness about the possible hazards involved in approving unlisted and unlabeled equipment and systems.

NEMA 1

Type 1 enclosures are intended for indoor use primarily to provide a degree of protection against contact with the enclosed equipment or locations where unusual service conditions do not exist.

NEMA 2

Type 2 enclosures are intended for indoor use primarily to provide a degree of protection against limited amounts of falling water and dirt.

NEMA 3

Type 3 enclosures are intended for outdoor use primarily to provide a degree of protection against windblown dust, rain, and sleet; and to be undamaged by the formation of ice on the enclosure.

NEMA 3R

Type 3R enclosures are intended for outdoor use primarily to provide a degree of protection against falling rain; and to be undamaged by the formation of ice on the enclosure.

NEMA 4

Type 4 enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, and hose directed water; and to be undamaged by the formation of ice on the enclosure.

NEMA 4X

Type 4X enclosures are intended for indoor and outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, and hose-directed water; and to be undamaged by the formation of ice on the enclosure.

NEMA 6

Type 6 enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against the entry of water during temporary submersion at a limited depth; and to be undamaged by the formation of ice on the enclosure.

NEMA 7

Type 7 enclosures are for indoor use in locations classified as Class I, Groups A, B, C, or D, as defined in the National Electrical Code. Type 7 enclosures shall be capable of withstanding the pressures resulting from an internal explosion of specified gases, and contain such an explosion sufficiently that an explosive gas-air mixture existing in the atmosphere surrounding the enclosure will not be ignited. Enclosed heat generating devices shall not cause external surfaces to reach temperatures capable of igniting explosive gas-air mixtures in the surrounding atmosphere. Enclosures shall meet explosion, hydrostatic, and temperature design tests.

NEMA 9

Type 9 enclosures are intended for indoor use in locations classified as Class II, Groups E, F, or G, as defined in the National Electrical Code. Type 9 enclosures shall be capable of preventing the entrance of dust. Enclosed heat generating devices shall not cause external surfaces to reach temperatures capable of igniting or discoloring dust on the enclosure or igniting dust-air mixtures in the surrounding atmosphere. Enclosures shall meet dust penetration and temperature design tests, and aging of gaskets (if used).

NEMA 12

Type 12 enclosures are intended for indoor use primarily to provide a degree of protection against dust, falling dirt, and dripping non-corrosive liquids.

NEMA 13

Type 13 enclosures are intended for indoor use primarily to provide a degree of protection against dust, spraying of water, oil, and non-corrosive coolant.

In case you have any additional questions about suitability of an enclosure or a system in certain applications, please do not hesitate to **contact** your TUV partner

TUV Rheinland of North America, Inc.
12 Commerce Road
Newtown, CT 06470
TEL: 203-426-0888
FAX: 203-426-4009
Email: info@tuv.com or
call 1-TUV-RHEINLAND

For more information refer to:
www.us.tuv.com