

NEMA FAQs: Enclosures

This document answers frequently asked questions regarding NEMA enclosure types. For further information or to submit a question, please contact Program Manager [Gary MacFadden](#) via email, phone (703.841.3253), or fax (703.841.3353).

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1. Where can I find information about the NEMA type ratings?

The NEMA website provides a general description of enclosure types at www.nema.org/prod/be/enclosures/upload/NEMA_Enclosure_Types.pdf. For a complete description of enclosures, including test requirements, you will need the NEMA 250 standard. It is available for purchase from [IHS](#), [ANSI](#), and [Techstreet](#).

2. What are the size specifications for NEMA enclosures?

There are no standard sizes for NEMA enclosures. The NEMA 250 standard provides construction and test requirements, but each manufacturer designs their own enclosure.

3. Can I buy NEMA enclosures directly from NEMA?

NEMA does not manufacture or sell enclosures.

4. Where can I download CAD files for NEMA enclosures and/or buy NEMA enclosures?

Information about NEMA member organizations that manufacture enclosures can be found at www.nema.org/prod/be/enclosures.

5. Can I get NEMA to test my enclosure or provide a listing or certification?

NEMA standards are voluntary. NEMA neither tests products nor certifies that a product complies with a given NEMA standard. A manufacturer can choose to self-certify that the product meets the requirements of NEMA 250 or seek independent third-party verification (testing) that the product complies with the NEMA standard. This decision is based on the requirements of the marketplace, e.g., a test agency listing or mark may be required by a customer.

6. Who can test my enclosures for me?

NEMA is not affiliated with testing laboratories. To see a listing of testing facilities, go to www.nema.org/stds/conformity/links.cfm.

7. Can I get labels from NEMA to apply to my enclosures to indicate self-certification?

No, NEMA does not provide labeling.

8. Can I put a NEMA logo on my product or literature since I am self certifying to the NEMA standard?

No, the NEMA mark is a trademark of the National Electrical Manufacturers Association for its trade association services and publications, and it is to be used solely in connection with designating the National Electrical Manufacturers Association as the source of those goods and services. It is not a certification or conformity assessment mark.

Members of NEMA are entitled to use the NEMA member mark to signify membership in NEMA; however, use of the NEMA member mark must not be in close proximity to marks indicating certification or conformity assessment of specific products.

Everyone is permitted to identify self-certified products as NEMA 4, or NEMA 3R, etc. to signify a particular classification of product both on the product and within literature.

9. Can I self-certify more than one NEMA type rating on my enclosure?

Enclosures that meet the requirements for more than one type rating may be designated by a combination of type numbers, the smaller number being given first. The designation may include a combination of indoor, outdoor, hazardous location, and non-hazardous location ratings if they apply.

10. Which NEMA types correspond to environmental descriptions such as rainproof, driptight, dusttight, wet location, etc.?

NEMA does not cross-reference the type ratings with these environmental descriptions; however, NFPA 70 *National Electrical Code* has definitions and in some cases cross references for these descriptions.

11. Is there a cross reference between NEMA types and IEC 60529 IP ratings?

It is not possible to state that an IP rating is equivalent to a NEMA type designation. An IP rating only considers protection against ingress of solid foreign objects and ingress of water. The NEMA types consider these but also consider other items such as corrosions and construction details. For this reason, it is possible to say that a NEMA type is equivalent to an IP rating, but it is not possible to state that an IP rating is equivalent to a NEMA type. Further information is available from the NEMA website at www.nema.org/stds/briefcomparison.cfm.

12. Can the testing used to determine an IEC 60529 IP rating be correlated to NEMA dust and water performance testing?

The NEMA 250 standard has correlation tables for this. The NEMA 250 standard is available from [IHS](#), [ANSI](#), and [Techstreet](#).

13. How do the water test parameters compare between NEMA 250 hose testing and IEC 60529 IP hose testing?

See the table below.

Fluid Statics and Dynamic Comparison of Ingress Water Tests

Test Type	Flow Rate (gal./min.)	Flow Rate (l/min.)	Nozzle Diameter in./mm	Nozzle Area (sq. in.)	Nozzle Velocity (ft./sec.)	Equivalent Head (ft.)	Equivalent Pressure (psi)	Mass Flow (lbs./sec.)	Power (hp)	Total Force on Vertical Plate (lbs.)
Type 3	45.00	170	1.0000	0.7854	18.38	5.25	2.274	6.256	0.060	3.5716
Type 4	65.00	246	25.4	1.000	0.7854	26.55	10.85	4.744	9.037	7.4516
IPX5	3.30	12.5	0.2480	0.0483	21.93	7.46	3.235	0.459	0.006	0.3126
IPX6	26.42	100	6.3	0.4921	0.1902	44.55	30.82	13.357	3.672	5.0815
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14. Why is a Type 4X enclosure required to pass only a 200 hour salt spray test while outdoor enclosures are required to pass a 600 hour salt spray test?

NEMA 250 test requirements state that all outdoor enclosures are subject to 600 hours of salt spray and compared to G90 galvanized sheet steel. Type 4X enclosures are subject to 200 hours of salt spray and compared to American Iron and Steel Institute type 304 stainless steel.

15. Is it necessary to field test an enclosure that has openings that are intended to be closed at installation with the fittings in place, such as a conduit connection?

The fittings are to be independently tested to a type number equal to or better than the enclosure type rating on which they are intended to be installed. The assembly of the enclosure with the fittings installed is not required to be field tested.

16. I have several enclosures that I want to wall mount by drilling through the back and then sealing around the mounting holes with silicon. Is this an acceptable method?

NEMA 250 states that a number of type rated enclosures require a mounting means external to the equipment cavity unless an intermediate bracket or foot is used. The final installation is always subject to the approval of a local inspector.

17. Are NEMA enclosures rated for arc flash?

No, NEMA 250 does not address arc flash. Arc flash protection requirements are described in NFPA 70E *Standard for Electrical Safety in the Workplace*. NFPA 70E requires protective equipment and clothing if the operator intends to open an electrical enclosure containing voltage greater than 50 Vac. There are no tests specified in either NEMA 250 or NFPA 70E that rate an enclosure's resistance to arc flash energy.

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