






UL & NEMA RATINGS

Underwriters Laboratories
National Electric Manufacturer's Association

for enclosures

Source: www.nema.org
njsullivan.com

Protection Against		Non-Hazardous Locations												
		Indoor						Indoor/outdoor						
		1	2	5	12	12K	13	3	3S	3R	4	4X	6	6P
SOLIDS		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
					✓	✓	✓			✓	✓	✓	✓	✓
				✓	✓	✓	✓			✓	✓	✓	✓	✓
								✓	✓		✓	✓	✓	✓
LIQUIDS		1	2	5	12	12K	13	3	3S	3R	4	4X	6	6P
			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
											✓	✓	✓	✓
													✓	✓
														✓
								✓	✓	✓	✓	✓	✓	✓
									✓					
CHEMICALS		1	2	5	12	12K	13	3	3S	3R	4	4X	6	6P
					✓	✓	✓							
							✓							
												✓		✓
IEC 60529 Cross-Reference		IP 20	IP 22	IP 53	IP 54		IP 55	IP 24		IP 66	IP 67		IP 68	

Note: The UL/NEMA enclosure type numbers meet or exceed the test requirements for the associated IEC Classification; for this reason the chart above cannot be used to convert from IEC Classifications to UL/NEMA enclosure type numbers.



Underwriters Laboratories
www.ul.com

Safety Consulting and Certification Company

- Requires compliance testing of electrical enclosures by qualified evaluators independent of the manufacturer
- Sends site inspectors to manufacturers ensure adherence to prescribed manufacturing methods and materials specifications
- Specifies that an enclosure fails the water-tight test if even a single drop of water enters the enclosure



National Electrical Manufacturers Association
www.nema.org

The most prevalent in the USA

- Not requires Independent testing
- Leaves compliance up to the manufacturer
- Performs tests for environmental conditions such as corrosion, rust, icing, oil, and coolants



International Electrotechnical Commission
www.iec.ch

The most prevalent in the world

- Requires testing for compliance by qualified evaluators independent of the manufacturer
- Provides a system for specifying the enclosures of electrical equipment on the basis of the degree of protection
- Not specifies degree of protection against mechanical damage of equipment, risk of explosions, or conditions such as moisture (produced, for example, by condensation), corrosive vapors, fungus, or vermin

The tests and evaluations for other characteristics are not identical between the standards, so the IEC Enclosure Classification Designations cannot be exactly equated with UL/NEMA Enclosure Type Numbers.