

International standard IEC 60529 classifies the degrees of protection provided against the intrusion of solid objects (body parts, hands, fingers), dust, accidental contact, and water in electrical enclosures. The classification is defined by "IP Code" or International Protection Rating, also interpreted as Ingress Protection Rating. The standard aims to provide users with more detailed information than vague marketing terms, such as "waterproof."

IP is followed by digits indicating the rating. The digits indicate conformity with the conditions summarized in the following tables. Where there is no protection rating with regard to one of the criteria, the digit is replaced with the letter X.

FIRST NUMBER Protection against solid objects		SECOND NUMBER Protection against liquids	
IP	TESTS	IP	TESTS
0	No protection.	0	No protection.
1	Protected against solid objects up to 50mm (accidental touch by hands)	1	Protected against vertically falling drops of water (condensation)
2	Protected against solid objects up to 12mm (fingers)	2	Protected against direct sprays of water up to 15° from the vertical
3	Protected against solid objects over 2.5mm (tools and wires)	3	Protected against sprays to 60° from the vertical
4	Protected against solid objects over 1mm (tools, wires and small wires)	4	Protected against water sprayed from all directions, limited ingress permitted
5	Protected against dust-limited ingress (no harmful deposit)	5	Protected against low pressure jets of water from all directions, limited ingress permitted
6	Totally protected against dust.	6	Protected against strong jets of water (for use on ship decks), limited ingress protection
		7	Protected against the effects of immersions between 15 cm and 1 m
		8	Protected against long periods of immersion under pressure

The standard defines additional letters that can be appended to classify only the level of protection against access to hazardous parts by persons:

LEVEL	Protected against access to hazardous parts with
A	Back of hand
B	Finger
C	Tool
D	wire

Further letters can be appended to provide additional information related to the protection of the device:

LETTER	Meaning
H	High voltage device
M	Device moving during water test
S	Device standing still during water test
W	Weather conditions

Products are tested by an accredited testing laboratory and a TEST CERTIFICATE is issued for the appropriate rating for the product.

The National Electrical Manufacturers Association (NEMA) in the US also publishes protection ratings for enclosures similar to the IP system. NEMA dictates other product features not addressed by IP codes such as corrosion, resistance, gasket aging, and construction practices. (IP codes can be mapped to NEMA ratings, but NEMA ratings cannot be mapped to IP codes).