



IP PROTECTION CLASSES

The protection of enclosures against ingress of particles or against ingress of water is defined in IEC529 (BVSEN60529:1991). Conversely, an enclosure which protects equipment against ingress of particles will also protect a person from potential hazards within that enclosure, and this degrees of protection is also defined by the standard.

The degrees of protection are most commonly expressed as “IP” followed by two numbers, eg. IP65, where the numbers define the degree of protection. The first digit shows the extent to which equipment is protected against particles, or to which persons are protected from enclosed hazards. The second digit indicates the extent of protection against water. The wording in the table is not exactly as used in the standards document, but the dimensions are accurate.

The first digit in the rating is the protection against contact and foreign bodies. The second digit in the rating is the water protection factor.

First Index	Protection against human contact	Protection against foreign bodies
0	No special protection	
1	With back of a hand	Large foreign bodies, diam. >50mm
2	With a finger	Medium-sized foreign bodies, diam. >12.5mm
3	With tools and wires, etc. with a thickness >2.5mm	Small foreign bodies, diam. >2.5mm
4	With tools and wires, etc. with a thickness >1mm	Granular foreign bodies, diam >1mm
5	Complete protection	Dust-protected; dust deposits are permitted, but their volume must not affect the function of the unit
6	Complete protection	Dust-proof

Second Index	Water protection against
0	No special protection
1	Water dripping vertically
2	Water dripping at an angle (up to 15° from the vertical)
3	Spray water (any direction up to 60° from the vertical)
4	Spray water from all directions
5	Water jets from a nozzle in all directions
6	High pressure jets
7	Temporary immersion
8	Permanent immersion

Example: One would expect a bottle of wine to be rated IP67. If, however, it were rated only to IP31, one could experience exceedingly damp trousers.