

PROTECTION RATINGS

The IP Code characterised by 2 numerals.

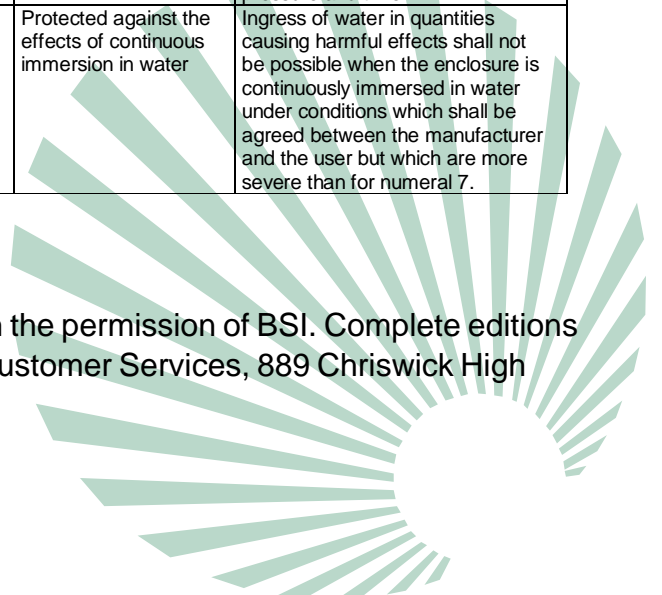
Example of IP Code: IP 4 4

Code letters _____ | _____ | _____
 First numeral | _____ | _____
 Second numeral | _____ | _____

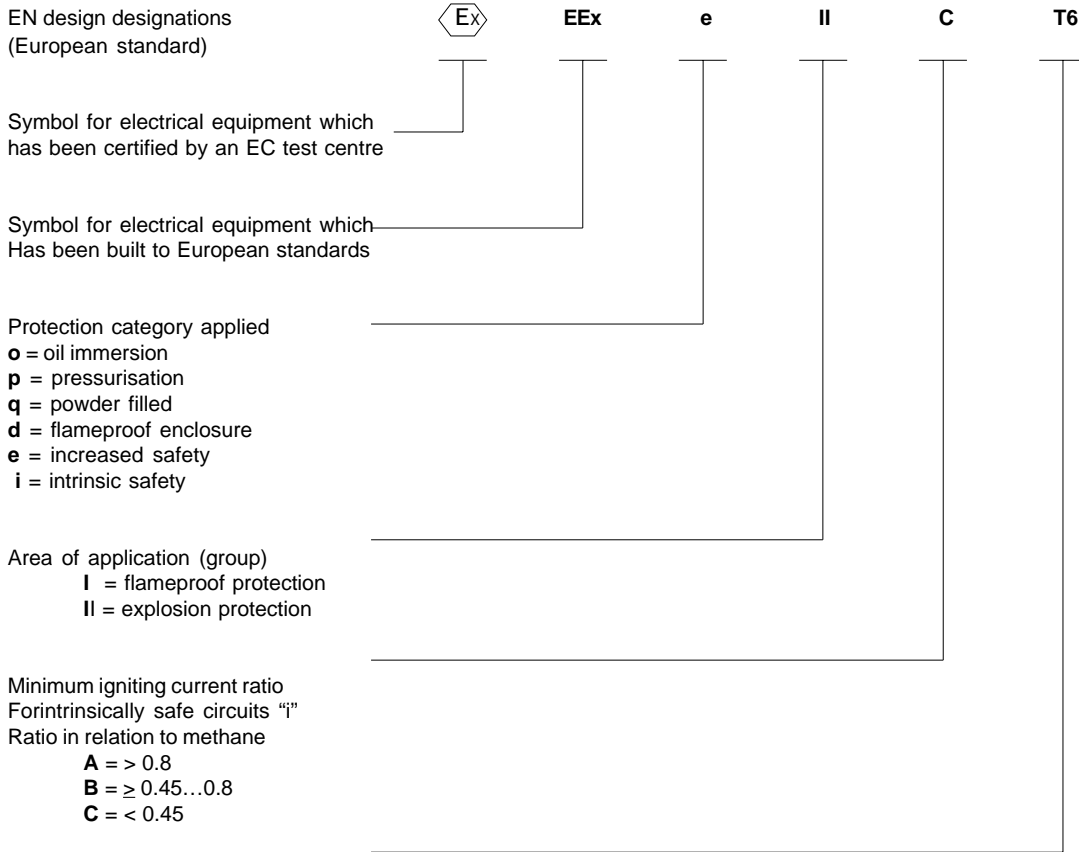
Degrees of protection for protection against contact and foreign objects indicated by first characteristic numeral			Degrees of protection against water indicated by the second characteristic numeral		
1st numeral	Degree of protection Description	Definition	2nd numeral	Degree of protection Description	Definition
0	Non-protected	-	0	Non-protected	-
1	Protected against solid foreign objects with a diameter of 12.5mm and greater	The object probe, a sphere 50 mm diameter, shall not fully penetrate*)	1	Protected against vertically falling water drops	Vertically falling drops shall have no harmful effects.
2	Protected against solid foreign objects of 2.5mm diameter and greater	The object probe, sphere 12.5mm diameter, shall not fully penetrate*) The jointed test finger 12 mm diameter 80 mm length, shall have adequate clearance from hazardous parts.	2	Protected against vertically falling water drops when the enclosure tilted up to 15°	Vertically falling drops shall have no harmful effects when the enclosure is tilted at any angle up to 15° on either side of the vertical.
3	Protected against solid foreign objects of 2.5 mm diameter and greater	The object probe of 2.5 mm diameter, shall not penetrate at all*)	3	Protected against spraying water	Water sprayed at an angle of up to 60° on either side of the vertical shall have no harmful effects.
4	Protected against solid foreign objects of 1.0 mm diameter and greater	The object probe of 1.0 mm diameter shall not penetrate at all*)	4	Protected against splashing water	Water splashed against the enclosure from any direction shall have no harmful effects.
5	Dust-protected	Ingress of dust is not totally prevented, but dust shall not penetrate in a quantity to interfere with satisfactory operation of the apparatus or to impair safety.	5	Protected against water jets	Water projected in jets against the enclosure from any direction shall have no harmful effects.
6	Dust-tight	No ingress of dust (at a partial vacuum of 20 mbar inside the enclosure).	6	Protected against powerful water jets	Water projected in powerful jets against the enclosure from any direction shall have no harmful effects.
			7	Protected against the effects of temporary immersion in water	Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is temporarily immersed in water under standardised conditions of pressure and time.
			8	Protected against the effects of continuous immersion in water	Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is continuously immersed in water under conditions which shall be agreed between the manufacturer and the user but which are more severe than for numeral 7.

*) Note: The full diameter of the object probe shall not pass through an opening of the enclosure.

Extracts from BS EN 60529: 1991 are produced with the permission of BSI. Complete editions of the standards can be obtained by post from BSI Customer Services, 889 Chriswick High Road, London W4 4AL.



Explosion Protection for Electrical Equipment in Accordance with European Standards



Temperature category
T1 = > 450°C ignition temperature, 450°C maximum surface temperature
T2 = > 300°C ignition temperature, 300°C maximum surface temperature
T3 = > 200°C ignition temperature, 200°C maximum surface temperature
T4 = > 135°C ignition temperature, 135°C maximum surface temperature
T5 = > 100°C ignition temperature, 100°C maximum surface temperature
T6 = > 85°C ignition temperature, 85°C maximum surface temperature

Protection for Electrical Equipment in Accordance with US Standards

NEMA	Protection classifications
4	Enclosures for indoor and outdoor siting with protection from wind-driven dust and rain, and splashed water.
4x	Enclosures for indoor and outdoor siting with protection from corrosion, wind-driven dust and rain, and splashed water.
12, 12 K	Enclosures preferably for indoor siting with protection from dust, dripping water and dripping, non-corrosive fluids.

Source: Anonymous (1998), Rittal Catalogue 29, Taren Point: Rittal.

