

IP Codes: Degrees of Protection Provided by Enclosures

IP codes describe the degrees of protection provided by the enclosures of electrical equipment. Some of our lighting products have IP ratings to enable you to determine where you can use them.

The first number in the code is the protection afforded against solids and the second, against liquids. A rope light rated IP 67 protects against dust (6) and temporary immersion in water (7.)

The IP standards were developed by the European Committee for Electrotechnical Standardization (CENELEC.)

Protection Against Solids (first number in code)		
	Brief Description	Definition
0	Not protected.	
1	Protected against solid foreign objects of 50mm diameter and greater.	The object probe, sphere of 50mm diameter, shall not fully penetrate. The full diameter of the object shall not pass through an opening of the enclosure.
2	Protected against solid foreign objects of 12.5mm diameter and greater.	The object probe, sphere of 12.5mm diameter, shall not fully penetrate. The full diameter of the object shall not pass through an opening of the enclosure.
3	Protected against solid foreign objects of 2.5mm diameter and greater.	The object probe, sphere of 2.5mm diameter, shall not penetrate at all. The full diameter of the object shall not pass through an opening of the enclosure.
4	Protected against solid foreign objects of 1mm diameter and greater.	The object probe, sphere of 1mm diameter, shall not penetrate at all. The full diameter of the object shall not pass through an opening of the enclosure.
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.
6	Dust-tight.	No ingress of dust.

Protection Against Liquids (second number in code)		
	Brief Description	Definition
0	Not protected.	
1	Protected against vertically falling water drops.	Vertically falling drops shall have no harmful effects.
2	Protected against vertically falling water drops when enclosure is tilted up to 15°.	Vertically falling drops have no harmful effects when the enclosure is tilted at any angle up to 15° on either side of the vertical.
3	Protected against spraying water.	Water sprayed at an angle up to 60° degrees on either side of the vertical shall have no harmful effects.
4	Protected against splashing water.	Water splashed against the enclosure from any direction shall have no harmful effects.
5	Protected against water jets.	Water projected in jets against the enclosure from any direction shall have no harmful effects.
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 1 meter in water under standardized 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 manufacturer and the user, but are more severe than for number 7.