IP Ratings

IP Code *(Ingress Protection)*

International Standard CEI/IEC 529

The International Electrotechnical Commission established the IP Code to normalize degrees of protection provided by electrical enclosures, including luminaires. The classification system covers both foreign bodies, including dust (indicated by the first digit in the two digit code), and moisture (indicated by the second digit).

1st Digit	Protection From Dust
0	Non-protected
1	Protected against solid objects greater than 50mm
2	Protected against solid objects greater than 12mm
3	Protected against solid objects greater than 2.5mm
4	Protected against solid objects greater than 1.0mm
5	Dust-protected
6	Dust-tight

2nd Digit	Protection From Moisture
0	Non-protected
1	Protected against dripping water
2	Protected against dripping water when tilted up to 15°
3	Protected against spraying water
4	Protected against splashing water
5	Protected against water jets
6	Protected against heavy seas
7	Protected against the effects of immersion
8	Protected against submersion

For full technical discussion of the ratings and the qualifying tests for each of them, please refer to IEC International Standard Document 529.

Paramount manufactures many products rated for IP 65, available in our Starduster® LED, Fluorescent and H.I.D. technologies. Look for our IP 65 Rated logo (see below) on the individual product summary pages. For the most up-to-date listing of Paramount's IP rated luminaires, please visit the Our Products page of our website.

It is important to note that NEMA Enclosure Type Numbers also specifies degrees of protection, but covers different environmental factors. For additional NEMA 4X enclosure information, visit Paramount's website and click on the Tech References link, or click on the Learn link and reference the Technical category.

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IP 65

- 6 Indicates: Dust Tight – No ingress of Dust
- 5 Indicates: Protected against water jets against the enclosure from any direction shall have no harmful effects.

Dust Test, for first characteristic numeral 6:

The test is made using a dust chamber incorporating a means suitable to maintain talcum powder in suspension in a closed test chamber. The talcum powder used shall be able to pass through a square-meshed sieve the nominal wire diameter of which is 50 μm and the nominal width between wires 75 μm. The amount of talcum powder to be used is 2kg per cubic meter of the test chamber volume. It shall not have been used for more than 20 tests.

The enclosure under test is supported inside the test chamber and the pressure inside the enclosure is maintained below the surrounding atmospheric pressure by a vacuum pump.

The protection is satisfactory if no deposit of dust is observable inside the enclosure at the end of the test.

Test for protection against water, second characteristic numeral 5:

The test is made by spraying the enclosure from all practicable directions with a stream of water from a standard test nozzle. The conditions to be observed are as follows:

- Internal diameter of the nozzle: 6.3mm
- Delivery rate: 12.5 1/min ± 5%
- Water pressure: to be adjusted to achieve the specified delivery rate
- Core of the substantial stream: circle of approximately 40mm diameter at 2.5 m distance from nozzle
  - Test duration per square meter of enclosure surface area likely to be sprayed: 1 min.
  - Minimum test duration: 3 min.
  - Distance from nozzle to enclosure surface: between 2.5 and 3 m.

After testing in accordance with the appropriate requirements the enclosure shall be inspected for ingress of water.

In general, if any water has entered, it shall not:

- be sufficient to interfere with the correct operation of the equipment or impair safety:
- deposit on insulation parts where it could lead to tracking along the creepage distances:
- reach live parts or windings not designed to operate when wet:
- accumulate near the cable end or enter the cable if any.

If the enclosure is provided with drain-holes, it should be proved by inspection that any water which enters does not accumulate and that it drains away without doing any harm to the equipment.

For enclosures without drain-holes the relevant product standard shall specify the acceptance conditions if water can accumulate to reach live parts.