

R&D Engineering Note: Comparison: UL50E Hosedown Test to IEC 60529 IPX6

Document No.	RDEN1901
Author	C.Camilleri
Checked	G.Zammit
Revision	1.0
Date	16.04.2019

1) *UL 50E vs IEC 60529*

a) UL 50E

8.6 Hosedown test

8.6.1 The enclosure and its external mechanisms shall be subjected to a stream of water from a hose that has a 25 mm inside diameter (1 inch inside diameter) nozzle that delivers at least 240 L per minute (65 gallons per minute). The water shall be directed at all joints from a distance of 3.0 – 3.5 m (10 – 12 feet). The nozzle shall be moved along each joint one time at a uniform nominal rate of 6 mm/s (1/4 inch per second). A conduit may be installed to equalize internal and external pressures, but shall not serve as a drain.

8.6.2 The enclosure shall be considered to have met the requirements if at the conclusion of the test no water has entered the enclosure.

This test is a requirement for Type 4 and Type 4X ratings.

b) IEC 60529

14.2.6 Test for second characteristic numeral 6 with the 12,5 mm nozzle

The test is made by spraying the enclosure from all practicable directions with a stream of water from a standard test nozzle as shown in figure 6.

The conditions to be observed are as follows:

- internal diameter of the nozzle: 12,5 mm;
- delivery rate: 100 l/min \pm 5 %;
- water pressure: to be adjusted to achieve the specified delivery rate;
- core of the substantial stream: circle of approximately 120 mm diameter at 2,5 m distance from nozzle;
- test duration per square metre of enclosure surface area likely to be sprayed: 1 min;
- minimum test duration: 3 min;
- distance from nozzle to enclosure surface: between 2,5 m and 3 m.

The two tests are summarized in the table below:

	UL50E clause 8.6	IEC60529 clause 14.2.6
Nozzle diameter	25 mm	12.5 mm
Flow rate	240 l/min	100 l/min
Distance	3.0 - 3.5 m	2.5 - 3.0 m
Velocity	6 mm/s	-
Test duration	-	1min/m ² ; minimum 3 min
Pass condition	No water has entered the enclosure.	Water projected in powerful jets against the enclosure from any [practicable] direction shall have no harmful effects.

Therefore, it can be concluded that a unit meeting the requirements of the *Hosedown test* (UL50E, Clause 8.6) satisfies the *IPX6* requirements (IEC 60529, Clause 14.2.6). However, a unit meeting the *IPX6* requirements still needs to be evaluated to the requirements of the *Hosedown test*.