

Test Report



Mcwane Services Private Ltd

REPORT NUMBER: 4786435947-45

PROJECT NUMBER: 4786435947

Location (a)

UL India Lab,

UL India Pvt Limited,
Laboratory building,
Kalyani Platina

Campus, Sy.no.129/4,
EPIP Zone, Phase II,
Whitefield,

Bangalore – 560 066

P:91-80-41384400

F:91-80-28413759

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Location (b)


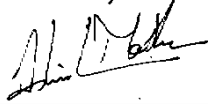
UL India Pvt Limited,
413 Sector-8, IMT

Manesar, Gurgaon.P:

91-124-22990246

TEST DISCIPLINE: ELECTRONICS**General details**

Customer	Mwane Services Private Ltd		
Manufacturer	62, Fifth Floor Time Square, ATT Colony Balasundaram Road, Coimbatore , TN 641018		
Program	NABL		
Test Lab Location	(a) UL Bangalore	Refer to Cover page for the Location address	
Item Under Test	ISO Valve components with powder coating		
Type / Model	Powder Coated Cover and Powder Coated Bonnet with a coating thickness of 300-400 microns		
Number of samples	One- Cover, One Bonnet		
Sample Identification	Model: ISO Valve Cover, sample card no. 1893281 Model: ISO Valve Bonnet, sample card no. 1893282		
Serial Number (If any)	NA		
Condition of IUT on receipt	Good		
Date of Receipt	11 June 2014		
Applicable Standard	ASTM B117 Designation: B117-11- Standard Practice for Operating Salt Spray(Fog) apparatus		
Date of Testing (Start date)	11 June 2014	End Date	14 June 2014
Lab general* ambient condition	Temperature in °C		23±5°C
	Relative humidity in %		<70%
Date of Reporting	23 June 2014		
Test In-charge	Pradeep. N		

 Praveen D Project Engineer Reviewed by	 Ashish Mathur Lab Group Leader Authorised signatory
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Disclaimer

*The results of testing in this report apply only to the sample product/item, which was tested. UL Lab has not participated in the sample selection. This Test report shall not be reproduced except in full or partial without the written approval of the Lab. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties. *The applicable standard ambient condition supersedes the lab general ambient conditions.*

General Remarks

Testing of Coated ISO Valve components as per ASTM B117 Designation: B117-11-Standard Practice for Operating Salt Spray (Fog) apparatus

Client requirement:

The Hook portion (a small inside portion of bolt hole marked in the images) of the Cover and Bonnet had a thinner coating hence it was masked before conducting the Salt mist test.

Test results:

Test No.	Test Name	Results
1	Visual Inspection Test (Before Salt Mist Test)	The Visual inspection before Salt mist test did not exhibit any mechanical deterioration or corrosion.
2	Salt Mist Test (96 hours)	No mechanical deterioration or corrosion of module components were observed
3	Visual Inspection Test (After Salt Mist Test)	The Visual inspection after Salt mist test did not exhibit any mechanical deterioration or corrosion.

Test methodology adopted as per ASTM B117

Visual inspection (Before Salt Mist Test)

Test samples

One Powder Coated ISO Valve cover and one Powder Coated ISO Valve bonnet were submitted for testing.


Test conditions

Carefully inspect each sample under an illumination of not less than 1000 lux for the following conditions:

1. No mechanical deterioration of module components which would significantly impair their Function during their intended life.
2. No mechanical corrosion of module components which would significantly impair their Function during their intended life.

Compliance Criteria – The Visual inspection before Salt mist test shall not exhibit any mechanical deterioration or corrosion on which would significantly impair their function during their intended life.

Result –The Visual inspection before Salt mist test did not exhibit any mechanical deterioration or corrosion on samples.



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12-LO-F0851, Issue 2.0

Before test Images;

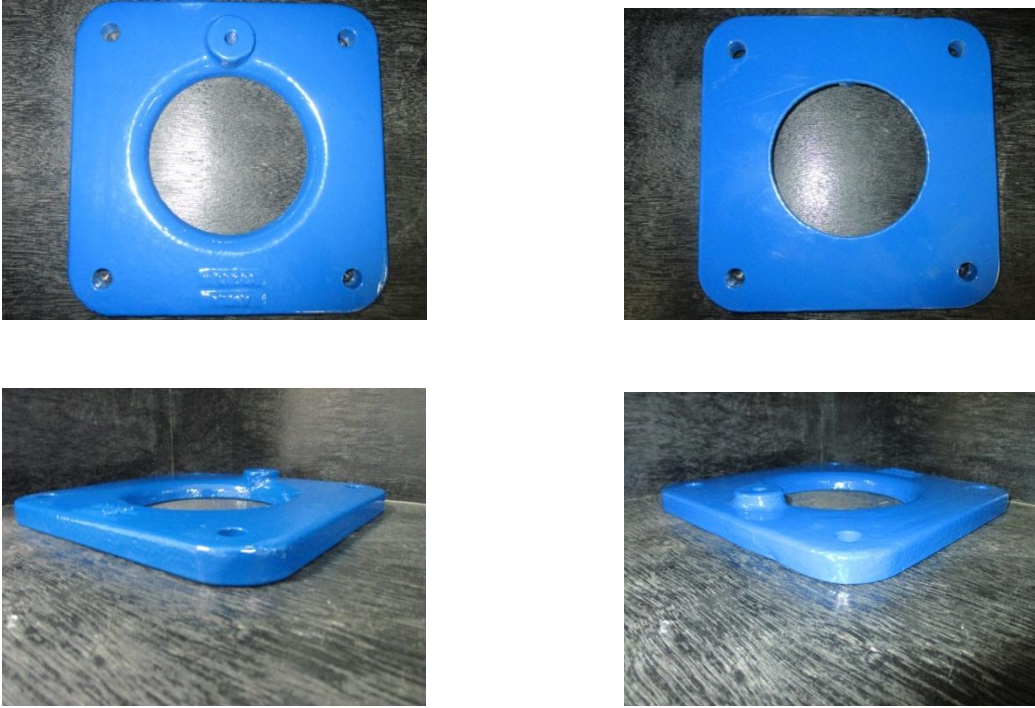


Fig 1: ISO Valve Cover (Before test)



Fig 2: ISO Valve Bonnet (Before test)

Signature

Salt Mist Test (96 Hours)

Test samples

Same sample module was used for evaluating the Salt Mist test.

Test configuration

The chamber for this test was constructed of such materials that would not influence the corrosive effects of the salt mist. The detailed construction of the chamber, including the method of producing the mist is as follows:

- The conditions in the chamber were within the limits specified.
- A sufficiently large volume with constant, homogeneous conditions (not affected by turbulence) is available
- No direct spray impinges upon the specimens under test.
- Drops of liquid accumulating on the ceiling, the walls or other parts did not drip on the specimens.
- The chamber was properly vented to prevent pressure build-up and allow uniform distribution of salt fog. The discharge end of the vent was protected from squalls which can cause strong air currents in the chamber.

Atomizer

The atomizer used was of such a design and construction as to produce a finely divided, wet, dense mist. The atomizer was made of material that is non-reactive to the salt solution.

Salt solution Concentration

The salt used for the test was high quality sodium chloride (NaCl) containing, when dry. The salt solution concentration shall be $5\% \pm 1\%$ by weight.

pH value

The pH value of the solution was 7.02, at a temperature of 25 ± 2 degree C.



Fig 3: Test Setup

Shawarun

Compliance Criteria –

- a) No mechanical deterioration or corrosion of module components which would significantly impair their function during their intended life.

Result –

No mechanical deterioration or corrosion of module components was observed.

Sample	Temperature	Humidity	Starting Time & Date	End Time & Date
1893281	35	95	06/11/2014 15.30 PM	06/14/2014 15.30 PM
1893282	35	95	06/11/2014 15.30 PM	06/14/2014 15.30 PM

Visual inspection (After Salt Mist Test)

Test samples

The module which underwent the salt mist test were put under Visual Inspection test to determine any changes in the module which can significantly impair their function during their intended life.

Test conditions


Carefully inspect each sample for the following conditions:

1. No mechanical deterioration of components which would significantly impair their function during their intended life.

Compliance Criteria – The Visual inspection after Salt mist test should not exhibit any mechanical deterioration or corrosion on modules which would significantly impair their function during their intended life.

Result –

The Visual inspection after Salt mist test did not exhibit any mechanical deterioration or corrosion on solar modules.



After Test Images:

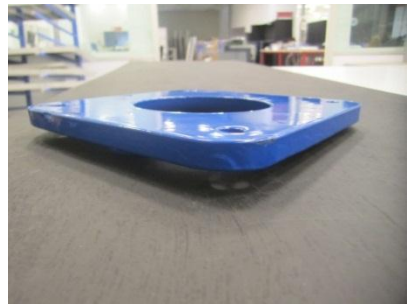
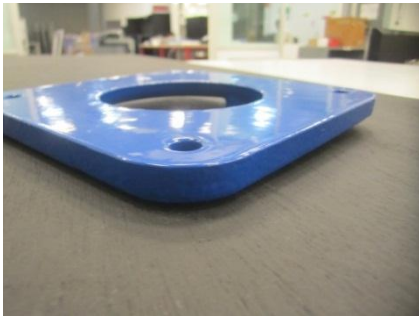
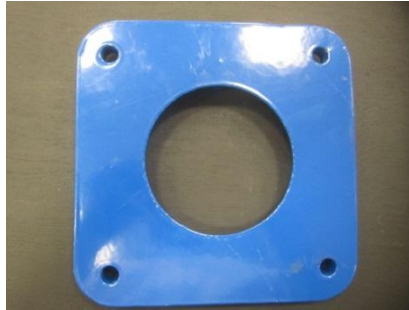


Fig 4: ISO Valve Cover (After test)

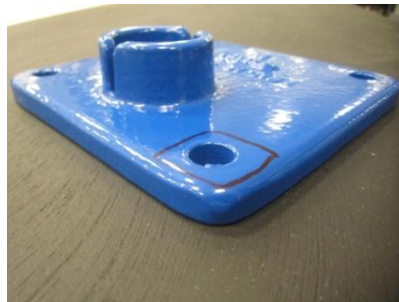
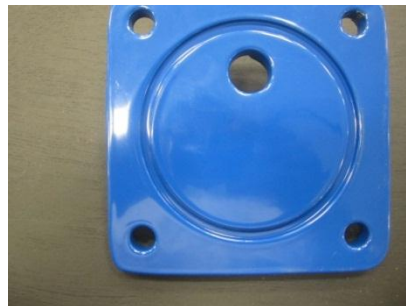


Fig 5: ISO Valve Bonnet (After test)

Signature

Equipment and Calibration details

Inst. ID No.	Instrument Type	Make	Function / Range	Last Cal. Date	Next Cal. Date
WPH01	Ph meter	METTLE-TOLEDO	0 -14	Support Equipment	
SSC01	SALT SPRAY CHAMBER (PV LAB)	ASCOTT	up to 2000litres	2014-03-01	2015-03-01

Test Results

Sample ID	Description	Test Parameter	Standard & Clause Number	Date of testing	Result
1893281	Powder Coated ISO Valve Cover	Salt Mist Test	ASTM B117	11 June 2014	P
1893282	Powder Coated ISO Valve Bonnet	Salt Mist Test	ASTM B117	11 June 2014	P

P: Meets the requirements F: Does not meet the requirement NA: Not applicable

*****End of Report*****

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