

(An Exova Group Company)

"Mehta House", Ashok Silk Mills Line  
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## SALT SPRAY (FOG) TEST

### Test Method: ISO 9227:2017 – Neutral Salt Spray (NSS Test)

Test Solution	:	5% Sodium Chloride (NaCl)
Test Temperature	:	35 °C
Fog Collection Volume	:	1.5ml (in 1 hour)
Fog Collection pH	:	6.8 pH
Specific Gravity (Solution Concentration)	:	1.030 g/cm <sup>3</sup>
Test Exposure Time (As per Customer)	:	400 hours <b>The movement of hinges satisfactory after 400 hours</b>
Observation Interval	:	24 hours
Test Started on	:	19/04/2018 at 5:00 pm
Test Completed on	:	06/05/2018 at 1:00 pm
Observation	:	White rust observed after 24 hours Red rust observed after 144 hours <b>The movement of hinges satisfactory after 400 hours</b>

  
Evaluated by

  
Approved by

## TEST CERTIFICATE

LAB No: MH/1804384-1

Date: 25/05/2018

**Issued to** : M/s. D.P. GARG & CO. PVT. LTD., Noida, India.

Party's Ref : Mail, Dated. 17/04/2018

Nature of Sample : Hot Splatter Galvanized Sample

Sample Drawn By : Party

Name of Item : MS Butt Hinge (Code-1838)

Sample Received on : 18/04/2018

Attachment : Photographs of sample

Date of Completion : 14/05/2018

- 1. Scope of the Testing:** MS Butt Hinge (Hot splatter galvanized finish) sample was submitted by DP Garg, Noida. The test was performed in neutral salt solution in Q-fog™ to evaluate the performance of the subject hinge for corrosion resistance in the most severe conditions.
- 2. Reference Standards:**
  - BS EN 1670- Building hardware. Corrosion resistance. Requirements and test methods
  - ISO 9227- Corrosion tests in artificial atmospheres -- Salt spray tests
  - ISO 2081-Metallic and other inorganic coatings -- Electroplated coatings of zinc with supplementary treatments on iron or steel
  - ISO 4520-Chromate conversion coatings on electroplated zinc and cadmium coatings
  - ISO 4628-Paints and varnishes -- Evaluation of degradation of coatings -- Designation of quantity and size of defects, and of intensity of uniform changes in appearance -- Part 2: Assessment of degree of blistering
  - ISO 10289- Methods for corrosion testing of metallic and other inorganic coatings on metallic substrates. Rating of test specimens and manufactured articles subjected to corrosion tests
  - SOP-DPG-01 REV.1- Evaluation of Corrosion Resistance of Door Hinges for DP Garg
- 3. Test Procedure:** The salt spray test was performed on a Q-fog™ Salt Spray machine (Cyclic Corrosion Test chamber). The sample was cleaned thoroughly in running water and then in distilled water. The sample was further dried in air for 30 minutes. A solution of 10 litres of 5 %wt Sodium Chloride was prepared and filled in the tank. The initial pH of the solution was measured using a pH meter, the pH was adjusted to 6.5-7.2. Now the sample was loaded in the Q-fog™ chamber, held at angle of 20° to the vertical away from the spray nozzle and heating element. The temperature of the chamber was set at 35°C.  
The hinge was observed daily at an interval of 24 hours for initiation of corrosion either by white rust or red rust. The hinge had produced white rust after 24 hours of exposure to salt spray environment. Red rust was observed on the pin of the hinge after 144 hours. The test was continued for 600 Hrs and the functionality of the hinge was found to be satisfactory.

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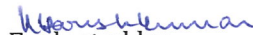
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Test Solution	:	5% Sodium Chloride (NaCl)
Test Temperature	:	35 °C
Fog Collection Volume	:	1.5ml (in 1 hour)
Fog Collection pH	:	6.8 pH
Specific Gravity (Solution Concentration)	:	1.030 g/cm <sup>3</sup>
Test Exposure Time (As per Customer)	:	600 hours <b>The movement of hinges satisfactory after 600 hours</b>
Observation Interval	:	24 hours
Test Started on	:	19/04/2018 at 5:00 pm
Test Completed on	:	14/05/2018 at 1:00 pm
Observation	:	White rust observed after 24 hours Red rust observed after 144 hours <b>The movement of hinges satisfactory after 600 hours</b>

  
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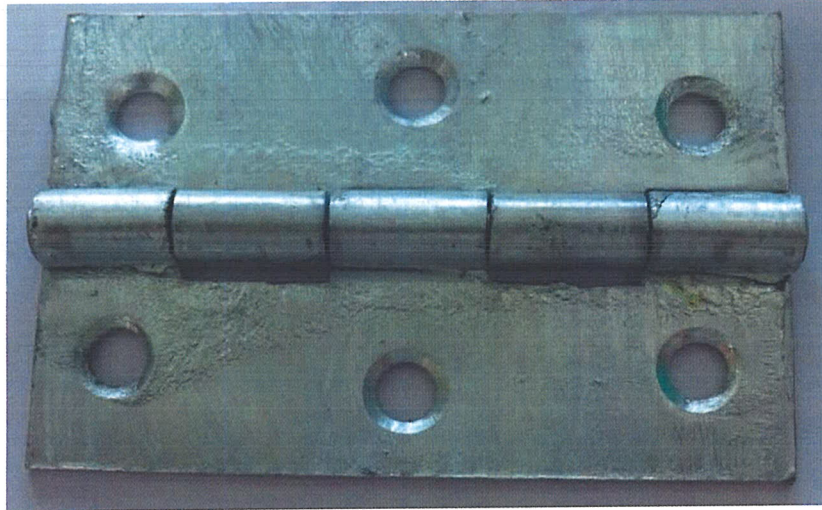
  
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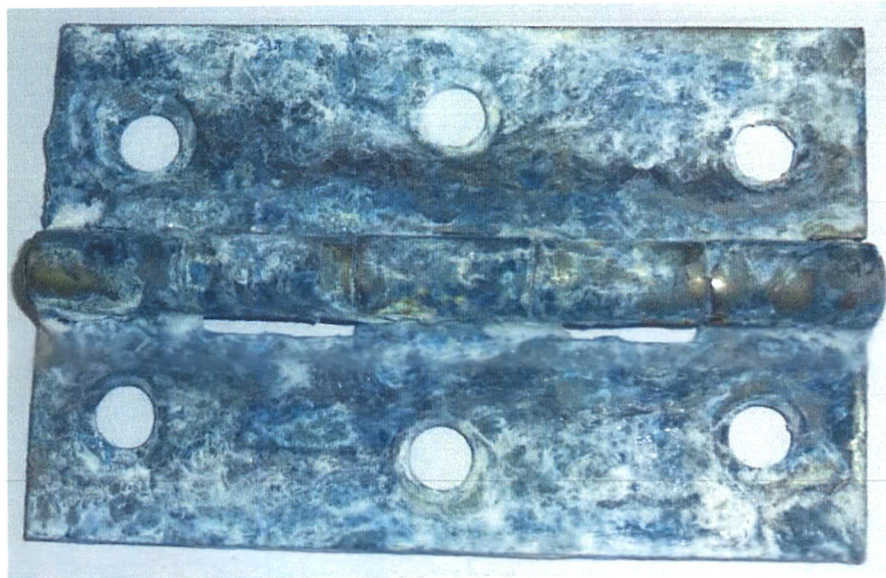


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Photograph of the Butt hinge as received condition



Photograph of Butt hinge after 24 hours

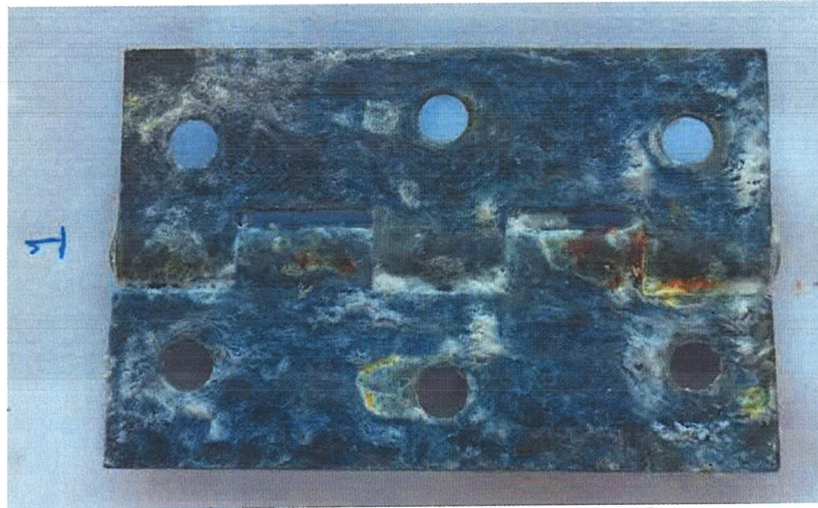
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Photograph of Butt hinge after 144 hours

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Date: 25/05/2018

**Issued to** : M/s. D.P. GARG & CO. PVT. LTD., Noida, India.

Party's Ref : Mail, Dated. 17/04/2018

Nature of Sample : Hot Splatter Galvanized Sample

Name of Item : MS Butt Hinge (Code-1838)

Attachment : Photographs of sample

Sample Drawn By : Party

Sample Received on : 18/04/2018

Date of Completion : 24/05/2018

- 1. Scope of the Testing:** MS Butt Hinge (Hot splatter galvanized finish) sample was submitted by DP Garg, Noida. The test was performed in neutral salt solution in Q-fog™ to evaluate the performance of the subject hinge for corrosion resistance in the most severe conditions.
- 2. Reference Standards:**
  - BS EN 1670- Building hardware. Corrosion resistance. Requirements and test methods
  - ISO 9227- Corrosion tests in artificial atmospheres -- Salt spray tests
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The hinge was observed daily at an interval of 24 hours for initiation of corrosion either by white rust or red rust. The hinge had produced white rust after 24 hours of exposure to salt spray environment. Red rust was observed on the pin of the hinge after 144 hours. The test was continued for 840 Hrs and the functionality of the hinge was found to be satisfactory.

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Test Solution	:	5% Sodium Chloride (NaCl)
Test Temperature	:	35 °C
Fog Collection Volume	:	1.5ml (in 1 hour)
Fog Collection pH	:	6.8 pH
Specific Gravity (Solution Concentration)	:	1.030 g/cm <sup>3</sup>
Test Exposure Time (As per Customer)	:	840 hours <b>The movement of hinges satisfactory after 840 hours</b>
Observation Interval	:	24 hours
Test Started on	:	19/04/2018 at 5:00 pm
Test Completed on	:	24/05/2018 at 1:00 pm
Observation	:	White rust observed after 24 hours Red rust observed after 144 hours <b>The movement of hinges satisfactory after 840 hours</b>

  
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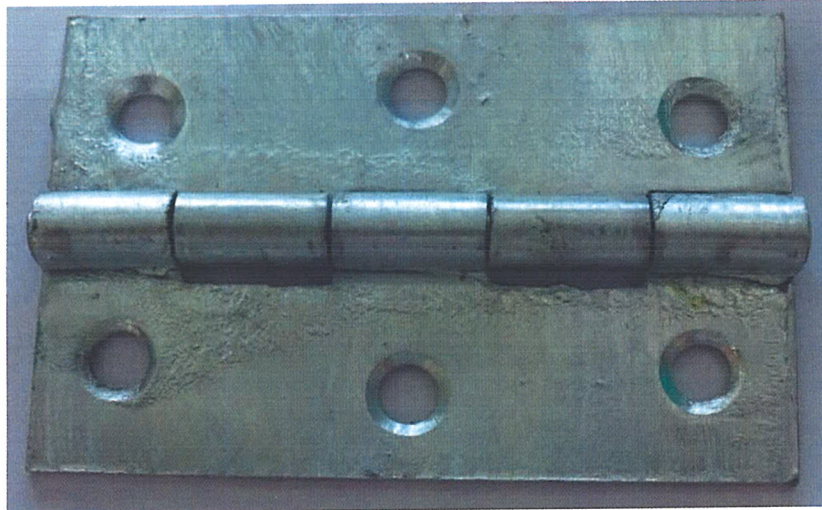
  
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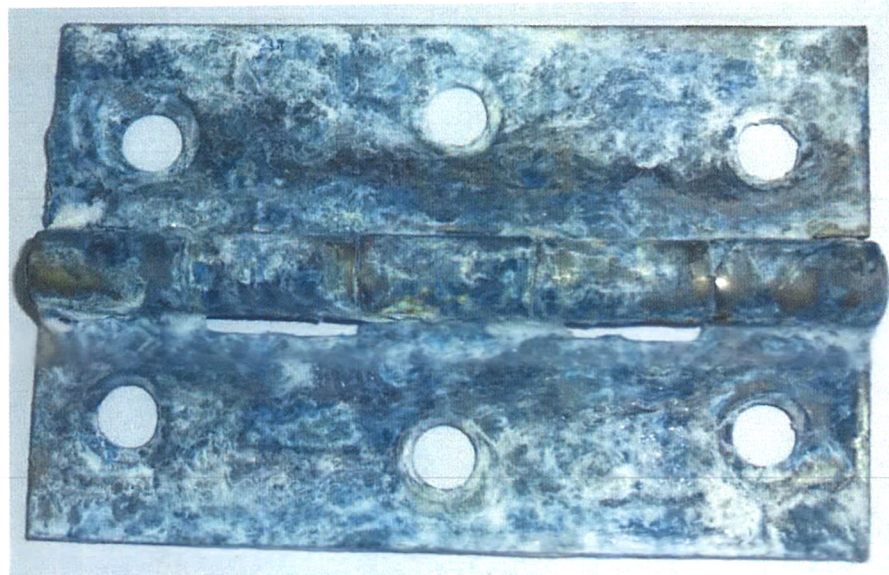


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Photograph of the Butt hinge as received condition



Photograph of Butt hinge after 24 hours

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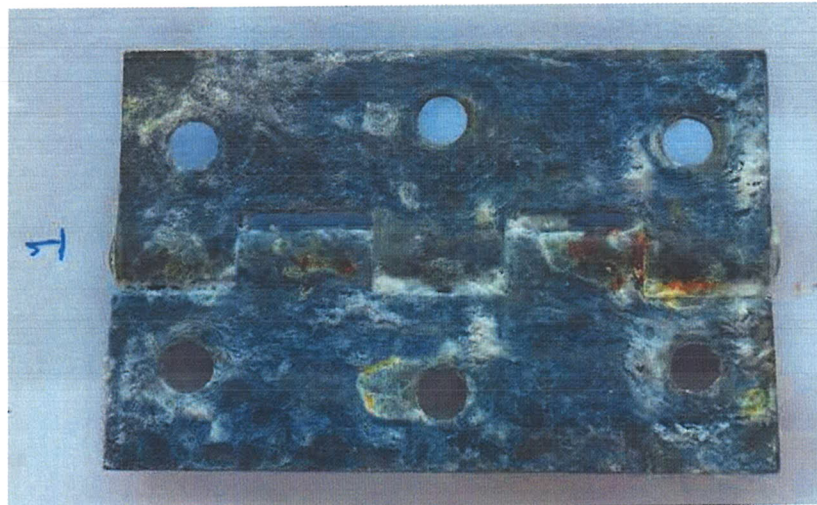
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Photograph of Butt hinge after 144 hours



Photograph of Butt hinge after 840 hours

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