



Test Report

No.: SHHG1405015021HA

Date: JUN. 05, 2014

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HUABANG (ZHENJIANG) ALUMINIUM INDUSTRIAL CO., LTD
SHANGHUI XUECUN INDUSTRIAL AREA, SHANGDANG TOWN, DANTU DISTRICT, ZHENJIANG,
JIANGSU, CHINA

The following sample(s) was/were submitted and identified by the client as:

Sample Description : EPOXY ALUMINUM FOIL; COPPER FOIL
Manufacturer : HUABANG
Supplier : HUABANG
Sample Receiving Date : MAY 14,2014
Testing Period : MAY 14, 2014 TO JUN. 05, 2014
Test Performed : SELECTED TEST(S) AS REQUESTED BY APPLICANT
Test Requested : ASTM G85-2011 & ASTM D1654-2008
Test Result(s) : FOR FURTHER DETAILS, PLEASE REFER TO THE
FOLLOWING PAGE(S)
Conclusion : THE TEST DATA WERE PROVIDED TO CLIENT FOR
THEIR OWN ANALYSIS.

Signed for and on behalf of
SGS-CSTC Ltd.

Yomoro Gu
Supervisor

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Test Conducted :

1. Preliminary Treatment of Test Specimens

Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments (ASTM D1654-2008)

Type of preliminary treatment: Unscribed specimens

2. Test Method and Requirement:

Standard Practice for Modified Salt Spray (Fog) Testing (ASTM G85-2011)

Annex A1: Acetic Acid-Salt Spray Test, Continuous

Number of tested samples	2 PCS	
Protection of test sample	None	
Base metal and coating	Sample 1: Base metal: Aluminum Coating: Epoxy novolac	Sample 2: Base metal: Copper Coating: None
Method of cleaning specimens(before test)	Washed by clean, running water	
Method of cleaning specimens(after test)	Specimens may be gently washed or dipped in clean running water no warmer than 38 °C (100 °F) to remove salt deposits from their surface, and then immediately dried. Dry with a stream of clean, compressed air.	
Method of supporting or suspending	Supported by plastic rack	
The duration of the test	500 hours	
Cause and length of time of interruptions in the test	None	
Inspection interval	None	
Inspection result	None	
Type of salt and water used in preparing the salt solution	Sodium chloride: analytical grade Water: deionized water	
Salt solution	Dissolving 5±1 parts by weight of salt in 95 parts of water	
	Requirement	Result
Angle of the tested surface were inclined	6~45 ° from the vertical	30 °
Test Temperature	35 °C±2 °C.	35 °C.
Volume of collected solution	1.0~2.0 (mL/h)/80cm ²	1.3 (mL/h)/80cm ²
pH of collected solution at 23±3 °C	3.1~3.3	3.1
Concentration or specific gravity at 25 °C of solution collected	5±1 mass% , or specific gravity (Follow table 2)	1.033

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3. Rating Result:

Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments (ASTM D1654-2008)

a) Procedure B- Evaluation of Unscribed Areas

Use photographic blister standards given in Practice D714 to describe the results of the exposure test with respect to blisters, and Practice D610 to describe the results of the exposure with respect to rusting.

Standard Practice for Evaluating Degree of Rusting on Painted Steel Surfaces (ASTM D 610-08(R12))

Sample No.	Rating (According to table 1)	Type of deterioration (According to table 1)
1	Grade 6	S (Oxidation was found)

Table 1

Rust grade	Percent of surface rusted
10	Less than or equal to 0.01
9	Greater than 0.01 percent and up to 0.03
8	Greater than 0.03 percent and up to 0.1
7	Greater than 0.1 percent and up to 0.3
6	Greater than 0.3 percent and up to 1.0
5	Greater than 1.0 percent and up to 3.0
4	Greater than 3.0 percent and up to 10.0
3	Greater than 10.0 percent and up to 16.0
2	Greater than 16.0 percent and up to 33.0
1	Greater than 33.0 percent and up to 50.0
0	Greater than 50 percent
Type of deterioration:	S: Spot Corrosion G: General Corrosion P: Pinpoint Corrosion H: Hybrid Corrosion

4. Result

Test sample	Result
2	Verdigris was found

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Annex:

TABLE 2 Temperature versus Density Data

Temperature, °C (°F)	Density, g/cm ³		
	4% Salt Concentration	5% Salt Concentration	6% Salt Concentration
20 (68)	1.025758	1.032360	1.038867
21 (69.8)	1.025480	1.032067	1.038560
22 (71.6)	1.025193	1.031766	1.038245
23 (73.4)	1.024899	1.031458	1.037924
24 (75.2)	1.024596	1.031142	1.037596
25 (77)	1.024286	1.030819	1.037261
26 (78.8)	1.023969	1.030489	1.036919
27 (80.6)	1.023643	1.030152	1.036570
28 (82.4)	1.023311	1.029808	1.036215
29 (84.2)	1.022971	1.029457	1.035853
30 (86)	1.022624	1.029099	1.035485
31 (87.8)	1.022270	1.028735	1.035110
32 (89.6)	1.021910	1.028364	1.034729
33 (91.4)	1.021542	1.027986	1.034343
34 (93.2)	1.021168	1.027602	1.033950
35 (95)	1.020787	1.027212	1.033551
36 (96.8)	1.020399	1.026816	1.033146
37 (98.6)	1.020006	1.026413	1.032735
38 (100.4)	1.019605	1.026005	1.032319
39 (102.2)	1.019199	1.025590	1.031897
40 (104)	1.018786	1.025170	1.031469

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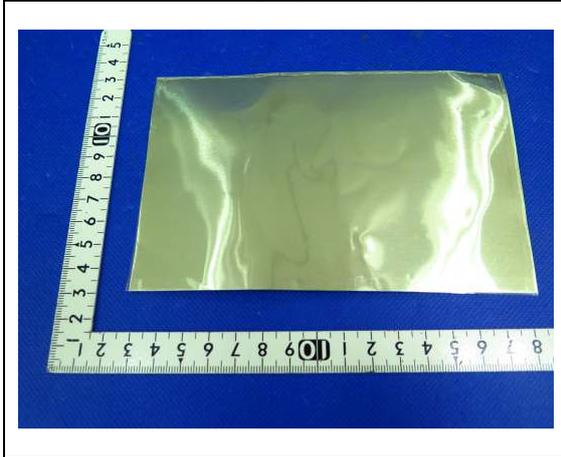
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Sample Photo:

Test sample (Sample 1)



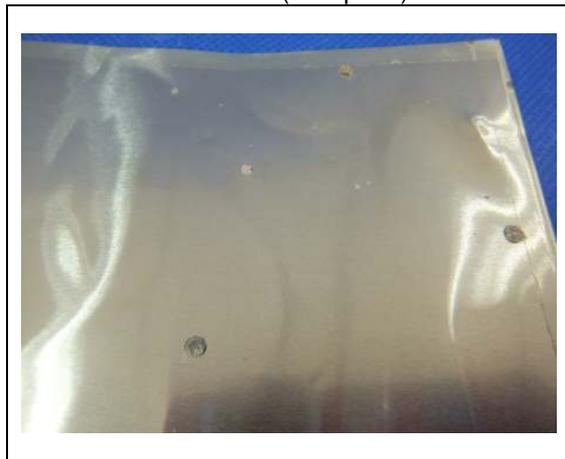
After test (Sample 1)



After test (Sample 1)



After test (Sample 1)



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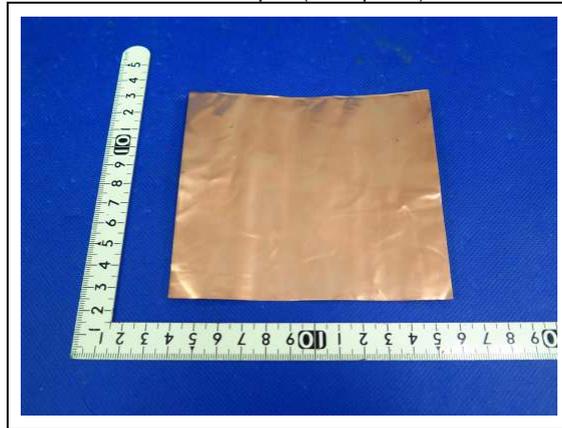


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Test sample (Sample 2)



After test (Sample 2)



End of Report

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