International Protective Coatings

ADHESION TEST REPORT

Project : PT PLMB Tangerang
Client : PT PLMB Tangerang
Contractor : PT PLMB Tangerang
Location : Tangerang

Date of Pull Test : November, 26th 2008
Paint Specification :
Item Name : Test Panel
Report No. : 01/AT/PLMB/XI/08
Page : 1 of 1

SURFACE PREPARATION

Blast Cleaning Method	: Blast to SA 2.5
Abrasive Type	: Silica Sand
Size (Mesh)	: 30/60
Anchor Profile	: 40 µm
Grade of Cleanliness	: -
Dust Level	: -

PAINTING APPLICATION

No.	Description	Painting Application			
		First Coat	Second Coat	Third Coat	Top Coat
1	Date of Application	20/11/2008 - 09.30			
2	Weather Condition	Sunny			
3	Ambient Temperature	31ºC			
4	Relative Humidity	70%			
5	Dew Point	25ºC			
6	Steel Temperature	35ºC			
7	Generic Type	Epoxy			
8	Brand of Paint	Intergard 251			
9	Paint Colour	Red Oxide			
10	Batch Number	JF 9684 RI/JF 2391 RI			
11	Thinner	GTA 220 JG 8734 RI			
12	DFT Average	90 µm			
13	Application Method	Air spray			

PULL TESTER TYPE : Mechanical Adhesion Tester (Elcometer Model F106 Serial SF - 2002)

ADHESIVE : Araldite Blue - Standard

Ø DOLLY : 20 mm

PULL TEST STANDARD : ASTM D 4541 - Minimum mechanical pull-off test value : 3 Mpa

PULL TEST RESULT : Acceptable

Dollies	DFT Average (µm)	Value (Mpa)	Adhesion Failure (%)	Cohesion Failure (%)	Glue Failure (%)	Location	Remarks
Dolly 1	97	> 7	-	-	-	Can't be pulled	
Dolly 2	95	6	-	100	-	1st Coat	
Dolly 3	93	> 7	5	-	-	Steel/1st Coat	
			-	95	-	1st Coat	

Prepared by,
PT. International Paint Ind.

Suyono Suwardi

Witnessed by,
PT. PLMB Tangerang

Witnessed by,
PT PLMB Tangerang

AKZO NOBEL


90°
> 7 MPa
6 MPa
> 7 MPa

International Protective Coatings

ADHESION TEST REPORT

Project : PT PLMB Tangerang
Client : PT PLMB Tangerang
Contractor : PT PLMB Tangerang
Location : Tangerang

Date of Pull Test : November, 26th 2008
Paint Specification :
Item Name : Test Panel
Report No. : 02/AT/PLMB/XI/08
Page : 1 of 1

SURFACE PREPARATION

Blast Cleaning Method : Chemical Treatment (Pickling)
Abrasive Type : --
Size (Mesh) : --
Anchor Profile : N/A
Grade of Cleanliness : -
Dust Level : -

PAINTING APPLICATION

No.	Description	Painting Application			
		First Coat	Second Coat	Third Coat	Top Coat
1	Date of Application	20/11/2008 - 09.30			
2	Weather Condition	Sunny			
3	Ambient Temperature	31ºC			
4	Relative Humidity	70%			
5	Dew Point	25ºC			
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11	Thinner	GTA 220 JG 8734 RI			
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PULL TESTER TYPE : Mechanical Adhesion Tester (Elcometer Model F106 Serial SF - 2002)

ADHESIVE : Araldite Blue - Standard

Ø DOLLY : 20 mm

PULL TEST STANDARD : ASTM D 4541 - Minimum mechanical pull-off test value : 3 Mpa

PULL TEST RESULT : Acceptable

Dollies	DFT Average (µm)	Value (Mpa)	Adhesion Failure (%)	Cohesion Failure (%)	Glue Failure (%)	Location	Remarks
Dolly 1	91	6.5	5	-	-	Steel/1st Coat	
				95		1st Coat	
Dolly 2	95	> 7	-	-	-	Can't be pulled	
Dolly 3	90	> 7	-	-	-	Can't be pulled	

Prepared by,
PT. International Paint Ind.

Suyono Suwardi

Witnessed by,
PT. PLMB Tangerang

Witnessed by,
PT PLMB Tangerang

AKZO NOBEL


PICKLING
90 µm
6,5 MPa
>7 MPa
>7 MPa

ADHESION TEST REPORT

DATE : 26 November 2008
PROJECT : LPG Tank
LOCATION : PT. PLMB Tangerang
CONTRACTOR : PT. PLMB Tangerang

PAINT SPECIFICATION : Intergard 251 (Single coat) on blasted steel

No	THICKNESS/ MICRON	DOLLY	PSI	REMARKS
1	97	D 1	> 1000	Panel No. 1
2	95	D 2	850	Panel No. 1
3	93	D 3	> 1000	Panel No. 1

PAINT SPECIFICATION : Intergard 251 (Sigle coat) on pickling steel

No	THICKNESS/ MICRON	DOLLY	PSI	REMARKS
1	91	D 1	920	Panel No. 2
2	95	D 2	> 1000	Panel No. 2
3	90	D 3	> 1000	Panel No. 2

PAINT SPECIFICATION :

No	THICKNESS/ MICRON	DOLLY	PSI	REMARKS
1				
2				
3				

PAINT SPECIFICATION :

No	THICKNESS/ MICRON	DOLLY	PSI	REMARKS
1				
2				
3				

PAINT SPECIFICATION :

No	THICKNESS/ MICRON	DOLLY	PSI	REMARKS
1				
2				
3				

PREPARED BY, WITNESSED BY, AKNOWLEDGE BY,

Suyono Suwardi
PT. International Paint

_____
PT PLMB Tangerang

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PT PLMB Tangerang

AKZO NOBEL

SSPC-Paint 22
November 1, 1982
Editorial Changes August 1, 1991

Steel Structures Painting Council

PAINT SPECIFICATION NO. 22

Epoxy-Polyamide Paints
(Primer, Intermediate, and Topcoat)

Scope

.1 This specification covers three types of two-compo- poxy-polyamide coatings—prime', intermediate, and top- for use on steel surfaces. The information described shall be used as a control for evaluation of proposed g systems. See SSPC-PS 13.01, "Epoxy-Polyamide ng System," for specifications covering system require- , including surface preparation, application, and thick-

.2 These coatings, when applied over properly prepared surfaces, are suitable for exposures in environmental 2A (frequently wet by fresh water), 2B (frequently wet by ater), 3A (chemical, acidic), 3B (chemical, neutral), 3C ical, alkaline), 3D (chemical, solvents); but not for pota- ater tanks. They are intended for brush or spray applica- ver steel prepared in accordance with SSPC-SP 6, "Com- al Blast Cleaning," or SSPC-SP 8, "Pickling." The mance will be improved by a better degree of surface ration. They are suitable for shop, field, or maintenance gs and are to be applied in accordance with SSPC-PA 1, , Field, and Maintenance Painting." If the primed part of ucture is to be exposed to the weather, it should be top- as soon as practical

Description

.1 The coatings supplied under this specification are rt products composed of a base component and a curing component. When the two components are mixed in the proportions the coatings are capable of curing at tem- res as low as 50°F (10°C) and be fully cured in seven

.2 The primer contains approximately 55% by volume of table film-forming solids (pigment and binder). The theo- spreading rate for a 2.5 mil (63 microns) dry film thick- 420 square feet/U.S. gallon (10.2 square meters/liter).

.3 The intermediate contains approximately 69% by vol f nonvolatile film-forming solids (pigment and binder). The oretical spreading rate for a 2.5 mil (64 microns) dry film ess is 429 square feet/U.S. gallon (10.2 square meters/li-

2.4 The topcoat contains approximately 60% by volume of nonvolatile film-forming solids (pigment and binder). The theoretical spreading rate for 2.5 mil (63 microns) dry film thickness is 380 square feet/U.S. gallon (9.5 square meters/liter).

3. Reference Standards

3.1 The standards referenced in this specification are listed in Sections 3.4 through 3.7 and form a part of this specification.

3.2 The latest issue, revision, or amendment of the referenced standards in effect on the date of invitation to bid shall govern unless otherwise specified.

3.3 If there is a conflict between the requirements of any of the cited reference standards and this specification, the requirements of this specification shall prevail.

3.4 STEEL STRUCTURES PAINTING COUNCIL (SSPC) SPECIFICATIONS:

PA 1	Shop, Field, and Maintenance Painting
PA 2	Measurement of Dry Paint Thickness with Magnetic Gages
PA Guide 3	A Guide to Safety in Paint Application
SP 6	Commercial Blast Cleaning
SP 8	Pickling
SP 10	Near-White Blast Cleaning
PS 13.01	Epoxy-Polyamide Painting System
Vis 2	Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces

3.5 AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS:

3.5.1 SPECIFICATION FOR INGREDIENTS

D 209	Lampblack
D 263	Chromic Oxide Green
D 331	2-Ethoxy Ethanol
D 364*	Industrial Grade Xylene
D 476	Titanium Dioxide Pigments
D 605	Magnesium Silicate Pigments
D 607	Wet Ground Mica Pigment
D 1153	Methyl Isobutyl Ketone
D 1648	Basic Lead Silico Chromate
D 3722	Natural Red and Brown Iron Oxides

TABLE 4
POLYAMIDE RESIN ANALYSIS

CHARACTERISTICS	REQUIREMENTS Min.	Max.	ASTM METHOD
Amine Value[1]	230	250	—
Color, Gardner	—	8	D 1544
Specific Gravity	0.96	0.98	D 1475
Viscosity, Brookfield, at 75 ° C, poises	31	37	—

1 Perchloric acid titration

TABLE 5
PROPERTIES

CHARACTERISTICS	PRIMER Min.	Max.	INTERMEDIATE Min.	Max.	TOPCOAT Min.	Max.	STANDARDS ASTM
Viscosity shear rate 200 rpm Kreb Units	65	85	60	80	60	80	D 562
Weight per U.S. Gallon, pounds	11.7 (1.4 kg/L)	12.7 (1.5 kg/L)	11.0 (1.3 kg/L)	12.0 (1.4 kg/L)	9.7 (1.2 kg/L)	10.7 (1.3 kg/L)	D 1475
Fineness of grind, Hegman units	3.0	—	3.0	—	3.0	—	D 1210
Drying time (75 °F [25 °C], 45% R.H.):							
Tack-free, hours	—	2	—	2	—	2	
Dry Hard, hours	—	5	—	5	—	5	
Dry Through, hours	—	8	—	8	—	8	
Flash Point, ° F	81	—	81	—	81	—	D 1310

Intermediate	Primer	72 hours for primer 72 hours for intermediate
Topcoat	Primer and Intermediate	72 hours for primer 72 hours for intermediate Five days for topcoat

The adhesion of the prime coat to the substrate, intercoat adhesion, or cohesion of any coat of the painting system shall be determined by the adhesion tester (1,000 pounds, 156 kg). Prepare test panels as described above. Lightly sand the coating surface and aluminum dolly, and apply a quick set adhesive containing Alpha Cyanoacrylate. Allow the adhesive to cure overnight. Scribe the coating and adhesive around the dolly prior to testing. Make a minimum of three trials and report the average. An average of 400 pounds per square inch (280,000 kg/square meter) is considered acceptable.

5.9 SALT SPRAY RESISTANCE (PRIMER ONLY): Prepare at least two test panels as in Section 5.7 and apply one prime coat at 2.5-3.0 mils (64-76) microns) dry film thickness. Air dry five days. Protect the backs and edges. Scribe the panels as per ASTM D 1654 to base metal and exposure for 500 hours at five percent salt spray in accordance with ASTM B 117. During the test, the panels shall be inclined at an angle of 15 degrees off the vertical. At the end of the test period, the primer shall have a minimum rust grade rating of "8." Blistering shall be no more than Blister Size No. 4, few. Photographic standards SSPC-Vis 2, "Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces," or ASTM D 610 may be used for rusting, and ASTM D 714 may be used for blistering.

6. Labeling

6.1 Refer to ANSI Standard Z129.1, "Precautionary Labeling of Hazardous Industrial Chemicals." Other guidelines can be found in the National Paint and Coating Association (NPCA) "Paint Industry Labeling Guide."

6.2 MARKING OF CONTAINERS: Each container of each component shall be legibly marked with the following information:

Name: Epoxy-Polyamide Coating (Specify Which: Primer, Intermediate, or Topcoat)
Specification: SSPC-Paint 22
Component: _____

Color: _____
Lot Number: _____
Stock Number: _____
Date of Manufacture: _____
Quantity of Paint in Container: _____
Information and Warnings as may be required by
Federal and State Laws: _____
Manufacturer's Name and Address: _____

6.3 DIRECTIONS FOR USE: The manufacturer shall supply complete instructions covering uses, surface preparation, mixing, thinning, application method, application conditions, pot life, wet and dry film thicknesses, temperature and humidity limitations, drying time, etc., with each container of paint.

6.4 The following are guidelines for the instructions required:

- Mixing and Thinning: Each coating component should be stirred to a smooth homogenous mixture. Then the proper amount of base and curing agent components, as recommended by the manufacturer, should be added together and mixed thoroughly. After allowing to stand for 30 minutes at 77 ± 3 °F (25 ± 2 °C), the coating may be thinned up to 12% by volume of the total coating for spraying. The coating should be applied within the manufacturer's pot life limitations.
- Coating Thickness: The coatings are usually applied by spray to a dry film thickness of two to three mils (51-76 microns) per coat (total dry thickness seven to nine mils (178-229 microns), as measured in accordance with SSPC-PA 2, "Measurement of Dry Paint Thickness with Magnetic Gages."
- Cure Time Between Coats: Under normal conditions, each coat should be air dried a minimum of four hours, but no more than 72 hours between application coats. In very hot weather with surfaces exposed to direct sunlight, it may be necessary to limit the intercoat drying period to 24 hours or less. Long drying time between coats may cause poor intercoat adhesion. These coatings shall not be applied at temperatures below 50 °F (10 °C).

7. Inspection

7.1 All materials supplied under this specification shall be subject to timely inspection by the purchaser or his authorized representative. The purchaser shall have the right to reject any material(s) supplied which is (are) found to be defective under this specification. In case of dispute, the arbitration or settlement procedure, if any, established in the procurement documents shall be followed. If no arbitration procedure is established, the procedure specified by the American Arbitration Association shall be used.

7.2 Samples of any or all ingredients used in the manufacture of this paint may be requested by the purchaser and shall be supplied upon request, along with the supplier's name and identification for the material.

7.3 Unless otherwise specified, the methods of sampling and testing should be in accordance with Federal Test Method Standard No. 141, or applicable methods of the American Society for Testing and Materials.

7.4 The procurement documents should establish the responsibility for samples, testing, and any required affidavit certifying full compliance with the specification.

8. Safety

8.1 All safety requirements stated in this specification apply in addition to any applicable federal, state, and local rules and requirements. They also shall be in accord with instructions of the paint manufacturer and requirements of insurance underwriters.

8.2 Paints are hazardous because of their flammability and potential toxicity. Proper safety precautions shall be observed to protect against these recognized hazards. Safe handling practices are required and should include, but not be limited to, the provisions of SSPC-PA Guide 3, "A Guide to Safety in Paint Application" and to the following:

8.2.1 Keep paints away from heat, sparks, and open flame during storage, mixing, and application. Provide sufficient ventilation to maintain vapor concentration at less than 25% of the lower explosive limit.

8.2.2 Avoid prolonged or repeated breathing of vapors or spray mists, and prevent contact of the paint with the eyes or skin.

8.2.3 Clean hands thoroughly after handling paints and before eating or smoking.

8.2.4 Provide sufficient ventilation to insure that vapor concentrations do not exceed the published permissible exposure limits. When necessary, supply appropriate personal protective equipment and enforce its use.

8.3 This paint may not comply with some air pollution regulations because of its hydrocarbon solvent content.

8.4 Ingredients in this paint, if so formulated, and which may pose a hazard include lead and chromate-containing pigments, hydrocarbon solvents, and plasticizers. Applicable regulations governing safe handling practices shall apply to the use of this paint.

9. Notes***

9.1 While every precaution is taken to insure that all information furnished in SSPC specifications is as accurate, complete, and useful as possible, the SSPC cannot assume responsibility or incur any obligation resulting from the use of any materials, paints, or methods specified therein, or of the specification itself.