

## SSPC: The Society for Protective Coatings

# PAINTING SYSTEM NO. 13.01

## Epoxy Polyamide Painting System

### 1. Scope

**1.1** This specification outlines a three-coat epoxy polyamide painting system for the protection of steel surfaces subject to industrial exposure, marine environments, and areas subject to chemical exposure such as acid and alkali.

**1.2** This system, when properly applied and cured, is capable of giving excellent protection to steel surfaces in Environmental Zones 2A (frequently wet by fresh water), 2B (frequently wet by salt water), 3A (chemical, acidic), 3B (chemical, neutral), and 3C (chemical, alkaline), but not in potable water tanks. Although the coating herein specified has exhibited good chemical protection, its resistance against specific chemicals should, in the absence of applicable case histories, be appropriately tested.

### 2. Description

**2.1** This painting system consists of surface preparation by SSPC-SP 6, "Commercial Blast Cleaning, and application of an epoxy polyamide primer, intermediate, and topcoat specified in SSPC-Paint 22, "Epoxy Polyamide Paints (Primer, Intermediate, and Topcoat)."

**2.2** Each coating of this system (primer, intermediate, and topcoat) is a two-part product consisting of a base component and a curing agent component. The base component contains an epoxy resin together with corrosion-resistant pigments, prime color pigments, mineral fillers, gellant, leveling agent, and volatile solvents as appropriate to meet the performance requirements. The curing agent component contains a liquid type polyamide resin and volatile solvents.

### 3. Referenced Standards

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

**3.2** If there is a conflict between the requirements of any of the cited referenced standards and this specification, the requirements of this specification shall prevail.

#### 3.3 SSPC STANDARDS AND JOINT STANDARDS:

|             |                                                |
|-------------|------------------------------------------------|
| <b>PA 1</b> | Shop, Field, and Maintenance Painting of Steel |
| <b>PA 2</b> | Measurement of Dry Coating                     |

#### PA Guide 4

#### Paint 22

#### SP 5/NACE No. 1

#### SP 6/NACE No. 3

#### SP 8

#### SP 10/NACE No. 2

Thickness With Magnetic Gages  
Guide to Maintenance Re-  
painting with Oil Base  
or Alkyd Painting Systems  
Epoxy Polyamide Paints (Primer,  
Intermediate, and Topcoat)  
White Metal Blast Cleaning  
Commercial Blast Cleaning  
Pickling  
Near-White Blast Cleaning

#### 3.4 AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARD:

|               |                                                                                                                                                                                                     |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>B 117</b>  | Standard Practice for Operating Salt Spray (Fog) Apparatus                                                                                                                                          |
| <b>D 714</b>  | Standard Test Method for Evaluating Degree of Blistering of Paints                                                                                                                                  |
| <b>D 1654</b> | Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments                                                                                              |
| <b>D 3925</b> | Standard Practice for Sampling Liquid Paints and Related Pigmented Coatings                                                                                                                         |
| <b>G 23</b>   | Practice for Operating Light-Exposure Apparatus (Carbon Arc Type) With and Without Water for Exposure of Non-Metallic Materials [Withdrawn 2000. Replaced with appropriate cycle of G 151 – G 155.] |

#### 3.5 FEDERAL STANDARDS AND SPECIFICATIONS:

|                      |                                                                                 |
|----------------------|---------------------------------------------------------------------------------|
| <b>MIL-DTL-24441</b> | Paint, Epoxy Polyamide, General Specification [Use 23236. Formerly MIL-P-24441] |
|----------------------|---------------------------------------------------------------------------------|

### 4. Surface Preparation

**4.1** SSPC-SP 6, "Commercial Blast Cleaning," or SSPC-SP 8, "Pickling." If specified in the procurement documents, better degrees of blast cleaning shall be substituted (SSPC-SP 5, "White Metal Blast Cleaning," or SSPC-SP 10, "Near-White Blast Cleaning").

### 5. Paints

**5.1 PRIMER:** SSPC-Paint 22, "Epoxy Polyamide Paints," primer.

**5.2 INTERMEDIATE (SECOND COAT):** SSPC-Paint 22,



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"Epoxy Polyamide Paints," intermediate.

**5.3 FINISH COAT:** SSPC-Paint 22, "Epoxy Polyamide Paints," topcoat.

## 6. System Requirements

**6.1 TEST PANELS:** Test panels shall be carbon steel, minimum size of 10 x 20 x 0.3 cm (4 x 8 x 1/8 inch) unless otherwise specified. They shall be blast cleaned in accordance with SSPC-SP 10, "Near-White Blast Cleaning." The coating system shall be spray applied and air dried. Air drying and test conditions shall be 23 to 27°C (74 to 80°F) and 40 to 50 percent relative humidity. Final dry film thickness shall be between 175 and 225 micrometers (7 and 9 mils).

**6.2 ADHESION:** Prepare four panels as in Section 6.1. Scribe an "X" as per ASTM D 1654, in the lower half of each panel down to the bare metal, and coat the back and edges of the panels with a fast-dry paint. Then place the panels in a distilled water bath at 23 to 27°C (74 to 80°F) so that the "X" scribe is completely submerged. After five days in immersion, remove the panel, allow four hours recovery time, and test the adhesion by attempting to separate the coats with the knife. Any delamination shall constitute failure.

**6.3 SALT SPRAY RESISTANCE:** Prepare at least two test panels as in Section 6.1. Protect the backs and edges. Expose for 1000 hours to 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 there shall be no blistering or underfilm corrosion.

**6.4 ACCELERATED WEATHERING:** Prepare two 7.6 x 15 cm (3 x 6 inch) steel panels as in Section 6.1. Expose to accelerated weathering for 500 hours in accordance with ASTM G 23. At the end of the test period the coating system shall show no cracking, checking, or film failure other than chalking or loss of gloss.

**6.5 CHEMICAL RESISTANCE:** Prepare a test panel as in Section 6.1 except allow to cure for 14 days at room temperature prior to conducting spot test. Place a small piece of absorbent cotton or filter paper on the test panel. Apply two to six drops of test solution and cover with a 2.5 cm (1 inch) watch glass. Allow to stand 24 hours. Wash panel with water and examine immediately, and after an eight-hour recovery. Staining may occur with certain colored topcoats. Typical performance is as follows:

5% by weight, sodium hydroxide—no effect  
5% by weight, sulfuric acid—stain  
5% by weight, phosphoric acid—no effect  
5% by weight, ammonium hydroxide—no effect  
5% by weight, acetic acid—slight blister (8F max, ASTM D 714)

5% by weight, hydrochloric acid—slight stain

## 7. Paint Application

**7.1 PAINT APPLICATION:** Follow the requirements of SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel."

**7.2 RECOATING:** Each coat shall be air dried a minimum of four hours at 25°C (77°F) prior to recoating. Longer recoat times will be required at lower temperatures. Normal recoat time is within 72 hours. Longer recoat times may require special surface preparation. These coatings shall not be applied at temperatures below 10°C (50°F).

**7.3 MAINTENANCE PAINTING:** The provisions of SSPC-PA Guide 4, "Guide to Maintenance Repainting with Oil Base and Alkyd Painting Systems" should be followed.

**7.4 NUMBER OF COATS:** Minimum of three.

**7.5 DRY FILM THICKNESS OF PAINT SYSTEM:** Not less than the following as measured in accordance with SSPC-PA 2, "Measurements of Dry Coating Thickness with Magnetic Gages"—primer 64 micrometers (2.5 mils); intermediate coat 64 micrometers (2.5 mils); finish coat 50 micrometers (2.0 mils); for the three-coat paint system 175 micrometers (7.0 mils). The dry film thickness of the three-coat system shall not exceed 380 micrometers (15 mils).

## 8. Inspection

**8.1** All work and materials supplied under this specification are subject to timely inspection by the purchaser or his authorized representative. The contractor shall correct such work or replace such material as is found defective under this specification (See Note 10.1.). In case of dispute, unless otherwise specified, the arbitration or settlement procedure established in the procurement documents shall be followed. If no arbitration or settlement procedure is established, then a procedure mutually agreeable to purchaser, material supplier, and contractor shall be used.

**8.2** Samples of paints under this painting system may be requested by the purchaser and shall be supplied upon request along with the manufacturer's name and identification for the materials. Samples may be requested at the time the purchase order is placed, or may be taken from unopened containers at the job site.

**8.3** Unless otherwise specified, the sampling shall be in accordance with ASTM D 3925.