

SSPC: The Society for Protective Coatings

PAINTING SPECIFICATION NO. 24.00

Latex Painting System for Industrial and Marine Atmospheres, Performance-Based

1. Scope

1.1 This specification covers a painting system for steel surfaces based on multiple coats of air-drying, single-component latex paints having a total dry film thickness of a minimum of six mils (152 micrometers).

1.2 A painting system is categorized according to its performance level over blast-cleaned steel, the intended substrate (See Note 11.1).

1.3 The system is suitable for exposure in Environmental Zones 1A (interior, normally dry), 1B (exterior, normally dry), 2A (frequently wet by fresh water), 2B (frequently wet by salt water), 3A (chemical exposure, acidic), 3B (chemical exposure, neutral), 3C (chemical exposure, alkaline) and 3D (chemical exposure, mild solvent).

1.4 The system is not intended for immersion service.

2. Description

2.1 SYSTEM COMPOSITION: The painting system is comprised of paints based on pigmented emulsion (latex) binders.

2.2 VOC CONTENT:

2.2.1 The painting system may or may not comply with all air pollution regulations. Consult applicable government regulations to determine maximum allowable VOC and proper VOC determination test method for a particular application. The manufacturer shall provide VOC information about the paints as supplied (in the container) and as applied in the field after recommended thinning (See Notes 11.2 and 11.3).

2.3 PERFORMANCE LEVELS

2.3.1 Painting systems shall be classified according performance achieved as follows:

Level 1: Accelerated Laboratory Testing
Level 2: Test Fence and Laboratory Evaluation
Level 3: Long-Term Exterior Exposure

2.3.2 If no performance level is specified, Level 2 is assumed.

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:

PA 1	Shop, Field, and Maintenance Painting of Steel
SP 5/NACE No. VIS 2	White Metal Blast Cleaning Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces

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

B 117	Standard Practice for Operating Salt Spray (Fog) Apparatus
D 523	Standard Test Method for Specular Gloss
D 562	Standard Test Method for Consistency of Paints Using the Stormer Viscometer
D 610	Standard Test Method for Evaluating Degree of Rusting on Painted Steel Surfaces
D 714	Standard Test Method for Evaluating Degree of Blistering of Paints
D 1200	Standard Test Method for Viscosity by Ford Viscosity Cup
D 1211	Standard Test Method for Temperature-Change Resistance of Clear Nitrocellulose Lacquer Films Applied to Wood
D 1475	Standard Test Method for Density of Liquid Coatings, Inks, and Related Products
D 1654	Standard Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environment
D 2369	Standard Test Method for Volatile Content of Coatings
D 3359	Standard Methods for Measuring Adhesion by Tape Test

- D 3925** Standard Practice for Sampling Liquid Paints and Related Pigmented Coatings
- D 3960** Standard Practice for Determining Volatile Organic Content (VOC) of Paints and Related Coatings
- D 4417** Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel
- D 4587** Standard Practice for Conducting Tests on Paint and Related Coatings and Materials Using a Fluorescent UV Condensation Light- and Water-Exposure Apparatus Operating Light- and Water-Exposure Apparatus (Fluorescent UV-Condensation Type) For Exposure of Non-Metallic Materials (Withdrawn 2000; Replaced with ASTM G 155.)
- G 92** Standard Practice for Characteristics of Atmospheric Test Sites
- G 151** Standard Practice for Exposing Non-Metallic Materials in Accelerated Test Devices that Use Laboratory Light Sources

3.6 AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) STANDARD:

- Z129.1** Hazardous Industrial Chemicals—Precautionary Labeling

3.7 FEDERAL STANDARDS:

EPA Method 24 Determination of Volatile Matter Content, Water Content, Density, Volume Solids and Weight Solids of Surface Coatings (40 CFR Ch1, Part 60, Appendix A)

4. Composition

4.1 VEHICLE: The vehicle for the paints in this painting system is based on a stable polymer emulsion in an aqueous medium.

4.2 PIGMENT: The primer may contain environmentally compliant corrosion-inhibiting pigments. This does not preclude use of a non-inhibitive pigment-containing primer as long as the requirements of this specification are met.

4.3 GENERAL: The manufacturer is given latitude in the selection of other compositional ingredients provided that the paint and the painting system meet the requirements of this specification.

5. Performance Requirements

5.1 ACCELERATED LABORATORY TESTING

(LEVEL 1): For Level 1 the painting system shall meet the requirements of Sections 6.2 through 6.4.

5.2 TEST FENCE AND LABORATORY EVALUATION

(LEVEL 2): For Level 2 the painting system shall meet the requirements of Sections 6.2, 6.3, and 6.5.

5.3 LONG-TERM EXTERIOR EXPOSURE (LEVEL 3):

For Level 3 the painting system shall meet the requirements of Sections 6.2, 6.3, and 6.6. (See Note 11.4.)

6. Testing Procedures

6.1 STANDARD LABORATORY TESTING CONDITIONS:

For purposes of this specification, standard temperature shall be $73.5 \pm 3.5^{\circ}\text{F}$ ($23 \pm 2^{\circ}\text{C}$) and standard relative humidity shall be $50\% \pm 5\%$. The standard substrate shall be 4 inch x 12 inch x 1/8 inch (10 cm x 31 cm x 3.2 mm) thick ASTM A 569 hot-rolled steel abrasive blasted in accordance with SSPC-SP 5 to a profile of 1.7 ± 0.5 mils (43 ± 13 micrometers). Measure blast profile in accordance with ASTM D 4417.

6.2 ADHESION: Apply the complete paint system to two panels according to the manufacturer's suggested finishing schedule. After drying for 14 days at standard conditions, adhesion of the system to the steel shall be determined using the ASTM D 3359 cross-hatch adhesion test. Each of the specimens shall have a minimum adhesion rating of 3A.

6.3 EARLY RUST RESISTANCE OF SYSTEM:

6.3.1 Prepare and equilibrate a refrigerator at 50°F (10°C) and approximately 75 to 80% relative humidity. Condition the paints to be applied and the panels in the refrigerator for at least 45 minutes.

6.3.2 Remove panels from refrigerator and apply one coat of primer, 1.4 to 1.8 mils (36 to 45 micrometers) dry above the profile, and return panels to the refrigerator. Dry for four hours or until film is dry to touch (See Notes 11.5 and 11.6.). Again remove panels and apply one coat of topcoat (preferably white) at 1.4 to 1.8 dry mils (36 to 46 micrometers) and return panels to the refrigerator. Dry until film is dry to touch.

6.3.3 Expose panels under continuous wet or condensing conditions at ambient temperature for approximately 16 hours (See Note 11.7). At the end of 16 hours, immediately examine for rusting and blistering. The rusting shall not exceed 9 as judged by SSPC-VIS 2, and blistering shall not exceed 8F according to ASTM D 714.