

SSPC: The Society for Protective Coatings

Coating Standard No. 23

Latex Primer for Steel Surfaces, Performance-Based

1. Scope

This standard covers performance requirements for an air drying, ready-mixed, latex primer for blast cleaned steel. It is intended for use as the prime coat of a coating system consisting of one or two coats of this primer and one or two coats of a compatible topcoat. Individual products meeting minimum performance requirements of this standard may vary in formulation, raw materials, and application characteristics.

2. Description

2.1 This primer is based on a latex vehicle produced by emulsion polymerization and appropriate pigments.

2.2 This primer is suitable for exposures in SSPC Environmental Zones 1A (interior, normally dry) and 1B (exterior, normally dry)¹, and is intended for brush, spray, or roller application over steel surfaces with a minimum surface cleanliness of SSPC-SP 6. It is suitable as a shop primer, field primer, maintenance primer, or intermediate coat and is to be applied in accordance with SSPC-PA 1.

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. Standards marked with an asterisk (*) are referenced only in the Notes, which are not requirements of this standard.

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

3.3 SSPC STANDARDS AND JOINT STANDARDS:

Guide 13	Guide for the Identification and Use of Industrial Coating Materials in Computerized Product Databases
PA 1	Shop, Field, and Maintenance Painting of Steel
PA 2	Determining Compliance with Dry Coating Thickness Requirements
PA 15	Material and Preparation Requirements for Steel Test Panels Used to Evaluate the Performance of Industrial Coatings

PA 16 Method for Evaluating Scribe Undercutting of Exposed Test Panels

3.4 ASTM STANDARDS:²

D 522	Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings
* D 523	Standard Test Method for Specular Gloss
* D 562	Standard Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer-Type Viscometer
D 609	Standard Practice for Preparation of Cold-Rolled Steel Panels for Testing Paint, Varnish, Conversion Coatings, and Related Coating Products
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 1296	Standard Test Method for Odor of Volatile Solvents and Diluents
* D 1475	Standard Test Method for Density of Liquid Coatings, Inks, and Related Products
* D 1535	Standard Practice for Specifying Color by the Munsell System
D 1640	Standard Test Methods for Drying, Curing, or Film Formation of Organic Coatings at Room Temperature
D 1849	Standard Test Method for Package Stability of Paint
* D 2369	Standard Test Method for Volatile Content of Coatings
* D 2371	Standard Test Method for Pigment Content of Solvent Reducible Paints
D 2574	Test Method for Resistance of Emulsion Paints in the Container to Attack by Microorganisms
* D 2621	Standard Test Method for Infrared Identification of Vehicle Solids From Solvent-Reducible Paints

¹ "About SSPC Standards, Specifications, and Guides," contains descriptions of environmental zones used in SSPC standards. This document is available from www.sspc.org.

² ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959. For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For Annual Book of ASTM Standards volume information, refer to the standard's Document Summary page on the ASTM website.

D 2794	Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
D 4060	Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
D 4400	Standard Test Method for Sag Resistance of Paints Using a Multinotch Applicator
D 4541	Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
D 4585	Standard Practice for Testing Water Resistance of Coatings Using Controlled Condensation
D 5894	Standard Practice for Cyclic Salt Fog/UV Exposure of Painted Metal, (Alternating Exposures in a Fog/Dry Cabinet and a UV/Condensation Cabinet)

3.5 AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) STANDARD:³

Z129.1	Hazardous Industrial Chemicals— Precautionary Labeling
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4. Composition Requirements

4.1 VEHICLE REQUIREMENT: The vehicle shall be a stable aqueous dispersion of synthetic resin particles (latex) prepared by emulsion polymerization, together with the necessary additives such as pigment dispersant, antifoamer, preservatives, and coalescing solvents in order to produce a primer conforming to this standard. A suitable film and package preservative shall be used (see Note 11.1).

4.2 ANALYTICAL TEST DATA: If required, the coating manufacturer shall provide certificates of analysis for coating batches qualified by independent testing to meet this standard for use in verifying batch-to-batch consistency of material (see Note 11.2 and subsections).

5. Standard Testing Conditions

5.1 TEST PANELS: Steel test panels shall be prepared in accordance with SSPC-PA 15, except that the surface profile of the cleaned test panels shall be 44 to 57 micrometers (1.75 to 2.25 mils). Surface profile measurements shall be performed and documented for a minimum of 10% of the number of prepared test panels. The surface profile shall be clean, sharp and free of embedded friable material.

5.2 DRY FILM THICKNESS: The dry film thickness (DFT) of the applied primer shall meet the manufacturer's written recommended minimum but shall not exceed it by more than 25 micrometers (1 mil). If there is no recommended film

thickness, then the thickness shall be 60 to 90 micrometers (2.5 to 3.5 mils). The DFT shall be measured in accordance with the procedures in Sections A5.3 through A5.5 of SSPC-PA 2 Appendix 5.

6. Requirements of Liquid Coating

6.1 The liquid coating shall meet the performance requirements of Table 1 and Section 6.

6.2 CONDITION IN CONTAINER: The liquid coating as received shall show no evidence of livering, skinning, or hard settling of the pigment. The inside of the container shall not be corroded. The material shall be easily dispersed in the liquid portion by hand stirring to form a smooth homogeneous paint. The coating shall show a minimum of foaming and be free of grit, seeds, lumps, or livering.

6.3 RESISTANCE TO MICROORGANISM ATTACK: The coating shall be resistant to attack by microorganisms when tested according to ASTM D 2574.

6.4 ODOR: The odor shall be normal for the materials permitted (ASTM D 1296). In a freshly opened container, there shall be no offensive, disagreeable, or putrid odor.

6.5 MIXING: The coating shall be mixed and dispersed according to the manufacturer's recommendations to produce a product that is uniform, stable, free from grit, and in conformance with the requirements of this standard.

6.6 PACKAGE STABILITY: Perform the following tests in accordance with ASTM D 1849. When stored for one month at 50 °C (122 °F), the maximum allowable increase or decrease in viscosity shall not exceed 10 Krebs units. After brushing, the film shall be free from grains, lumps, or streaks.

6.7 WORKING PROPERTIES: The coating shall achieve the minimum dry film thickness outlined in this standard when applied in accordance with the manufacturer's written requirements. When spray-applied as a single coat, the coating shall show no streaking, running, sagging, or other defects during application. There shall be no runs, sags, streaks, flashes, laps, pinholes, fish eyes, or craters in the dried film. At the minimum recoat time as stated by the manufacturer's data sheet, apply a second coat in the same manner as the first. There shall be no picking-up or rolling-up of the first coat during applications. After 24 hours, the film shall be smooth and uniform.

7. Laboratory Physical Tests of Applied Films

7.1 PRIMER ADHESION TO SUBSTRATE: Prepare panels for testing in accordance with SSPC-PA 15. Sections 5.1 and 5.2 of this standard take precedence over PA 15 requirements for profile and dry film thickness.

7.2 PULL-OFF ADHESION: Test adhesion according to ASTM D 4541, using Method E (Type V tester). Perform three

³ American National Standards Institute, 1819 L Street, NW, Suite 600, Washington, DC 20036. Standards available from <<http://www.ansi.org>>