

SSPC: The Society for Protective Coatings

PAINT SPECIFICATION NO. 30

Weld-Through Inorganic Zinc Primer

1. Scope

1.1 This specification covers a group of inorganic zinc primers that can protect carbon steel during the fabrication process, permit welding to specification requirements, and be overcoated.

1.2 The major pigment component in this coating is zinc dust and the binder is inorganic.

1.3 This specification defines the minimum compositional and laboratory performance requirements for characterizing a group of zinc primers. It is to be used in conjunction with SSPC-PS Guide 22.00, SSPC-PS Guide 12.00, and other SSPC specifications covering surface preparation, application, thickness, inspection, and safety.

2. Description

2.1 GENERAL

2.1.1 The zinc primers described in this specification consist of zinc dust, an inorganic vehicle, and selected additives, as required.

2.1.2 This specification covers inorganic zinc primers that are used as weld-through preconstruction primers. Frequently, the primer is applied by an automatic process to steel plate. Once applied, the zinc primer need not be removed. It can be welded through, touched-up, and overcoated prior to being placed in service. If the resultant system will be exposed to acidic (<pH 5) or caustic (>pH 10) immersion, the primer should be removed.

2.2 PIGMENTATION

2.2.1 The major pigment component in these coatings is zinc dust of the type described in ASTM D 520 (see Note 12.1).

2.2.2 Other pigment components may include welding enhancers, curing aids, tinting colors, suspension agents, and pot-life control agents.

2.3 VEHICLE TYPES: The vehicle shall be an inorganic self-curing silicate, or other material, as described in Section 4.1 (see Note 12.2).

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 specification.

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:

Guide 13	Guide for the Identification and Use of Industrial Coating Systems in Computerized Product Databases
PA 2	Measurement of Dry Coating Thickness with Magnetic Gages
PS Guide 12.00	Guide to Zinc-Rich Coating Systems
PS Guide 22.00	Guide for Selecting One-Coat Preconstruction or Prefabrication Painting Systems
SP 1	Solvent Cleaning
SP 10/NACE No. 2	Near-White Blast Cleaning

3.4 ASTM INTERNATIONAL STANDARDS:¹

A 572	Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
* A 36	Standard Specification for Carbon Structural Steel
B 117	Standard Practice for Operating Salt Spray (Fog) Apparatus
D 185	Standard Test Methods for Coarse Particles in Pigments, Pastes, and Paints
D 520	Standard Specification for Zinc Dust Pigment
* D 562	Standard Test Method for Consistency of Paints Measuring Krebs Units (KU) Viscosity Using a Stormer-Type Viscometer

¹ ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

- D 823** Standard Practices for Producing Films of Uniform Thickness of Paint, Varnish, and Related Products on Test Panels
- D 1146** Standard Test Method for Blocking Point of Potentially Adhesive Layers
- * **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 1654** Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
- D 2369** Standard Test Method for Volatile Content of Coatings
- * **D 2371** Standard Test Method for Pigment Content of Solvent-Reducible Paints
- * **D 2621** Standard Test Method for Infrared Identification of Vehicle Solids from Solvent-Reducible Paints
- D 3278** Standard Test Methods for Flash Point of Liquids by Small Scale Closed Cup Apparatus
- D 3359** Standard Test Methods for Measuring Adhesion by Tape Test
- D 3925** Standard Practice for Sampling Liquid Paints and Related Pigmented Coatings
- D 4417** Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel
- * **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:²

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

3.6 FEDERAL SPECIFICATIONS AND STANDARDS:³

- * **FED-STD-141** Paint, Varnish, Lacquer and Related Materials: Methods of Inspection, Sampling and Testing
- Method 3011** Condition in Container

4. Composition Requirements

4.1 VEHICLE REQUIREMENT

4.1.1 The vehicle may consist of water-reducible self-curing vehicles, including water soluble alkali metal silicates, quaternary ammonium silicates, phosphates, and modifications thereof. These coatings dry by evaporation of water and cure by chemical reaction to yield water-insoluble films.

4.1.2 The vehicle may consist of solvent-reducible self-curing vehicles, including ethyl and other organic silicates, polymeric modifications of these silicates, and titanates. These systems are dependent upon moisture in the atmosphere to complete hydrolysis to yield an insoluble film.

4.1.3 Other organic vehicle components may be included but should constitute only a minor part of the total vehicle.

4.2 TOTAL SOLIDS: The total solids shall be a minimum 55% by weight when measured in accordance with ASTM D 2369.

4.3 ZINC REQUIREMENT: The zinc dust shall conform with the requirements of ASTM D 520, and shall constitute a minimum of 65% by weight of the total film solids (see Notes 12.1 and 12.3).

5. Standard Testing Conditions

5.1 TEST PANELS: The hot rolled steel test panels shall conform to ASTM A 572. Panel size shall be 100 x 150 x 3.2 mm (4 x 6 x 1/8 inches) or greater. Test panels shall be solvent cleaned in accordance with SSPC-SP 1 prior to blast cleaning. The test panels shall be blast cleaned in accordance with SSPC-SP 10 and have a nominal anchor profile of 25 to 50 micrometers (1.0 to 2.0 mils). The blast profile shall be measured in accordance with ASTM D 4417, Method C.

5.2 APPLICATION: The coating shall be spray-applied as a single coat in accordance with the manufacturer's written recommendations.

5.3 DRY FILM THICKNESS: The dry film thickness (DFT) shall be 15 to 25 micrometers (0.6 to 1.0 mils). The DFT shall be measured in accordance with the method described in SSPC-PA 2, Appendix 5.

5.4 CURE: Before any testing, the coating shall be dried and cured in accordance with the manufacturer's written recommendations.

² American National Standards Institute, 1819 L Street, NW, Suite 600, Washington, DC 20036. Standards downloadable from www.ansi.org.

³ FED STD 141 Available from USA Information Systems, Inc. 1092 Laskin Road, Suite 208, Virginia Beach, Va. 23451. This standard is available on-line from www.usainfo.com.