

SSPC: The Society for Protective Coatings

Coating Specification No. 29

Zinc Dust Pigmented Primer, Performance-Based

1. Scope

1.1 This specification covers highly pigmented primers that contain zinc dust as the major pigment component (minimum 65% by weight in the dry film) and are defined by their ability to protect ferrous substrates. Individual products meeting minimum performance requirements of this standard may vary in formulation, raw materials, and application characteristics. SSPC-Paint 20 is a performance standard for inorganic or organic zinc-rich coatings that includes options for specifying higher zinc loading levels in the dry coating film.

1.2 This specification does not cover weldable preconstruction primers such as SSPC-Paint 30.

1.3 This coating is intended for application by spray for use by itself or as a primer in a multi-coat system.

2. Description

2.1 Zinc-rich coatings, both topcoated and untopcoated, have been used successfully in a wide variety of environmental zones. For a detailed breakdown of applicability of various types of zinc-rich coatings in different environmental zones, refer to Table 1 of SSPC-PS Guide 12.00. Consult the coating manufacturer for specific exposure recommendations (see Note 12.1).

2.2 Zinc-rich coatings are classified by vehicle type as follows:

Type IA	Inorganic – post-cured, water-borne, alkali silicates
Type IB	Inorganic – self-cured, solvent-borne, alkyl silicates
Type 1C	Inorganic – self-cured, solvent-borne alkyl silicates
Type IIA	Organic - thermoplastic binders
Type IIB	Organic - thermoset binders

SSPC PS 12.00 contains more information on the above classifications.

2.3 If no vehicle type is specified, either Type I – Inorganic (IOZ), or Type II – Organic (OZ) is acceptable.

2.4 COMPONENTS: These zinc dust primers may consist of one, two, or three components.

3. Referenced Standards

3.1 The latest issue, revision, or amendment of the referenced documents in effect on the date of invitation to bid shall govern unless otherwise specified. Those documents marked with an asterisk (*) are referenced only in the Notes or the Appendix, which are not requirements of this specification.

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

3.3 SSPC STANDARDS AND JOINT STANDARDS:

SSPC-Guide 13	Guide for the Identification and Use of Industrial Coating Material in Computerized Product Databases
SSPC-PA 2	Procedure for Determining Compliance with Coating Thickness Requirements
SSPC-PA 15	Material and Preparation Requirements for Steel Test Panels Used to Evaluate the Performance of Industrial Coatings
SSPC-PA 16	Method for Evaluating Scribe Undercutting on Coated Steel Test Panels Following Corrosion Testing
* SSPC-Paint 20	Zinc-Rich Coating, Type I – Inorganic and Type II – Organic
* SSPC-Paint 30	Weld-Through Inorganic Zinc Primer
SSPC-PS Guide 12.00	Guide to Zinc-Rich Coating Systems
SSPC-SP 1	Solvent Cleaning
SSPC-SP 5/NACE No. 1	White Metal Blast Cleaning
SSPC-VIS 2	Guide and Visual Reference Photographs for Evaluating Degree of Rusting on Painted Steel Surfaces

3.4 ASTM INTERNATIONAL STANDARDS:¹

ASTM D185	Test Methods for Coarse Particles in Pigments, Pastes, and Paints
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¹ ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19380-1539. For referenced ASTM standards, visit the ASTM website (<http://www.astm.org>), or contact ASTM Customer Service at service@astm.org. For a complete list of ASTM Standards volume information, refer to the standard's Document Summary page on the ASTM website.

ASTM D520	Specification for Zinc Dust Pigment
ASTM D521	Test Methods for Chemical Analysis of Zinc Dust (Metallic Zinc Powder)
* ASTM D562	Test Method for Consistency Measuring Krebs Unit (KU) Viscosity of Paints Using a Stormer-type Viscometer
ASTM D714	Test Method for Evaluating Degree of Blistering of Paints
ASTM D823	Standard Practices for Producing Films of Uniform Thickness of Paint, Varnish, and Related Products on Test Panels (Method D)
ASTM D1141	Standard Practices for Substitute Ocean Water
* ASTM D1475	Test Method for Density of Liquid Coatings, Inks, and Related Products
* ASTM D1535	Practice for Specifying Color by the Munsell System
ASTM D1640	Test Methods for Drying, Curing, or Film Formation of Organic Coatings at Room Temperature
ASTM D1654	Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
* ASTM D2369	Test Method for Volatile Content of Coatings
* ASTM D2621	Test Method for Infrared Identification of Vehicle Solids from Solvent-Reducible Paints
* ASTM D4541	Standard Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
ASTM D5894	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 ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) STANDARD:²

* **AASHTO M300** Inorganic Zinc Rich Primer

3.6 AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) STANDARDS:³

ANSI/ASME B94.50 Basic Nomenclature and Definitions for Single-Point Cutting Tools

3.7 UNITED NATIONS STANDARD⁴

GHS Globally Harmonized System of Classification and Labelling of Chemicals (GHS), 4th Revised Edition.

4. Composition Requirements

4.1 PIGMENTATION

4.1.1 The major pigment component in these coatings is zinc dust of the type described in ASTM D520 (see Note 12.3) and determined in accordance with ASTM D521. The paint shall contain a minimum of 65% zinc dust pigment by weight in the dry film.

4.1.2 Other pigment components may include extenders, curing aids, tinting colors, and suspension and pot-life control agents.

4.2 ANALYTICAL TEST DATA: If mutually agreed upon by purchaser and supplier, the coating manufacturer shall provide records of chemical and physical analysis of coating batches qualified by independent testing to meet this standard, including ASTM D520 Type, and percentage of metallic zinc loading (see Note 12.3).

5. Standard Testing Conditions

5.1 TEST PANELS: The hot rolled steel test panels shall conform to requirements of SSPC-PA 15, with the exception of SSPC-PA 15, Section 4.3 (Cure). Unless otherwise specified, the minimum cure time for organic zinc rich coatings prior to testing shall be 7 days, and the minimum cure time for inorganic zinc coatings shall be 30 days.

5.2 DRY FILM THICKNESS: The dry film thickness (DFT) of the coating on the test panels shall meet the manufacturer's written recommended minimum and shall not exceed the manufacturer's stated minimum by more than 25 micrometers (1 mil). The DFT shall be measured in accordance with Sections A5.3 through A5.5 of Appendix 5 of SSPC-PA 2.

6. Requirements of Liquid Coating

The coating shall not have exceeded the manufacturer's stated shelf life prior to testing.

6.1 MIXING: The liquid portion of a multi-component coating shall be mixed and dispersed to produce a product that is uniform, stable, free from grit, and in conformance with the requirements of this specification.

6.1.1 The pigment portion of a multi-component coating (if supplied as a dust) shall be dry and loosely packed prior to mixing.

6.1.2 The ready-mixed coating shall be capable of being dispersed under mechanical agitation to a smooth, uniform consistency and shall not show any objectionable properties in the mix.

6.1.3 After mixing, all types of coarse particles and skins as residue retained on a standard 60 mesh screen shall be no more than 0.5% by weight of the total coating, regardless of type, in accordance with ASTM D1155.

² American Association of State Highway and Transportation Officials, 444 North Capitol Street, NW, Suite 249, Washington DC 20001, 202-624-5800. Standards are available online at <<https://bookstore.transportation.org>>

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

⁴ United Nations Economic Commission for Europe, Transport Division, Palais des Nations, CH - 1211 Geneva 10, Switzerland. Copies of this standard may be obtained from the United Nations Publications Customer Service, National Book Network, 15200, 15200 NBN Way, Ridge Summit PA 17124 <<https://unp.un.org>>