

SSPC: The Society for Protective Coatings

Coating Standard No. 46

ELASTOMERIC, WATER BASED, HIGH BUILD, FLAT, PERFORMANCE-BASED COATING FOR MASONRY AND CONCRETE

1. Scope

1.1 This standard sets requirements for three levels of performance for elastomeric exterior waterborne high-build coatings suitable for use on above-ground masonry or concrete substrates such as concrete masonry unit (CMU) block walls, precast or poured-in-place concrete masonry, concrete tilt-up construction, stucco, and fiber cement siding. The performance levels are based on results of material testing for weathering and chemical resistance properties, and testing for physical properties, such as tensile elongation and water vapor permeance.

2. Description

2.1 Coatings described by this standard are water-based resin formulations that dry to form elastomeric "flat" exterior waterborne high build coatings (see Note 8.1).¹

2.2 Coatings meeting the requirements of this standard are suitable for exposures in SSPC Environmental Zones 1B (exterior, normally dry), and 2A (frequently wet by fresh water, excluding continuous immersion), and in exposure zone C1 (very low corrosivity) as defined in ISO 12944-2.²

2.3 Depending upon formulation, these coatings are applied by airless spray, brush, or roller in one or multiple coats to meet the recommended dry film thickness (DFT).

3. Referenced Standards

3.1 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, which are not requirements of this standard.

3.2 SSPC STANDARDS

PA 9 Measurement of Dry Organic Coating Thickness on Cementitious Substrates Using Ultrasonic Gages

3.3 AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS:³

D522	Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings
D523	Standard Test Method for Specular Gloss
* D562	Standard Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer-Type Viscometer
D1005	Standard Test Method for Measurement of Dry-Film Thickness of Coatings Using Micrometers
D1308	Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes
* D1475	Standard Test Method For Density of Liquid Coatings, Inks, and Related Products
D1640	Standard Test Methods for Drying, Curing, or Film Formation of Organic Coatings at Room Temperature
D1653	Standard Test Method for Water Vapor Permeability of Organic Coating Film
D1734	Practice for Making Cementitious Panels for Testing Coatings
* D2369	Standard Test Method for Volatile Content of Coatings
D2370	Standard Test Method for Tensile Properties of Coatings
D3273	Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
D3274	Standard Test Method for Evaluating Degree of Surface Disfigurement of Paint Films by Fungal or Algal Growth, or Soil and Dirt Accumulation
* D3723	Standard Test Method for Pigment Content of Water-Emulsion Paints by Low-Temperature Ashing
D4587	Standard Practice for Fluorescent UV-Condensation Exposures of Paint and Related Coatings
D6132	Standard Test Method for Nondestructive Measurement of Dry Film Thickness of Applied Organic Coatings Using an Ultrasonic Gage

¹ In this standard, a "flat" coating is defined as a coating having maximum 60-degree gloss reading of 5 units, or a maximum 85-degree reading of 10 gloss units when evaluated in accordance with ASTM D523.

² International Organization for Standardization (ISO), Case Postale 56, Geneva CH-1211, Switzerland. In the United States, ISO standards may be obtained from the American National Standards Institute (ANSI) at <<http://www.ansi.org>>

³ ASTM International, 100 Barr Harbor Road, West Conshohocken, PA, 19380. Standards are available online at <<http://www.astm.org>>



Documents

Document Sharing Hub

- D6904-03** Standard Practice for Resistance to Wind-Driven Rain for Exterior Coatings Applied on Masonry
- D7072-04** Standard Practice for Evaluating Accelerated Efflorescence of Latex Coatings
- D7234** Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers

3.4 UNITED NATIONS STANDARD:⁴

- GHS (2013)** Globally Harmonized Standard of Classification and Labelling of Chemicals

3.5 INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO) STANDARD⁵

- 12944 (2007)** Paints and varnishes —Corrosion protection of steel structures by protective paint systems, Part 2: Classification of environments

4. Standard Testing Conditions

4.1 ACCELERATED TEST PANELS: The number of replicates for each test shall be in accordance with the referenced ASTM test method. If the number of replicates is not contained in the test method, triplicate panels shall be prepared. All test samples shall be free of pinholes. Document any observed coating irregularities such as bubbles and craters.

4.2 CONCRETE TEST PANELS: Concrete test panels shall meet requirements of ASTM D1734. Panel size shall be 75 x 150 x 15 mm (or 3 x 6 x 9/16 inches) or greater unless otherwise specified. If priming is required by the coating manufacturer, all test panels shall be coated with primer in accordance with manufacturer's instructions.

4.3 FREE FILM TEST SPECIMENS: Prepare free film specimens for testing in accordance with ASTM D2370. In order to create the manufacturer-recommended sample thickness, test coatings shall be applied to a release-paper surface by a drawdown blade to attain a dry film thickness of the manufacturer's recommended thickness for the intended service $\pm 5\%$. The film shall be allowed to dry 24 hours in an environment with a relative humidity of 50 ± 10 percent and an ambient temperature of 25 ± 2 degrees C (77 ± 5 degrees F). This film shall dry on one side for a minimum of 7 days or as recommended by the manufacturer. The film shall then be

removed from the release paper, turned over and allowed to dry on the reverse side for an additional minimum of 7 days or as recommended by the manufacturer. The DFT on free film test panels shall be measured in accordance with ASTM D1005.

4.4 DRY FILM THICKNESS ON TEST PANELS: Take one spot measurement in accordance with SSPC-PA 9. The dry film thickness (DFT) of the test panels shall meet the manufacturer's written recommended minimum thickness and shall not exceed the manufacturer's stated minimum by more than 381 micrometers (μm) [15 mils]). If there is no recommended film thickness, then the DFT of the tested samples shall be 457 to 559 μm (18-22 mils) DFT (see Note 8.3). The DFT of free film test specimens shall be measured in accordance with ASTM D1005.

5. Material Requirements

5.1 The coating shall be suitable to be applied to the substrate using roller, brush, or airless spray in order to achieve the recommended minimum wet film thickness per coat. If multiple coats are required to meet specified dry film thickness, adequate time shall be allotted between applications to allow drying of the coating as prescribed by the manufacturer. The coating shall not foam during application and the drying process.

5.2 Three performance levels differentiate the coatings in this guide. A coating material or system shall meet all minimum requirements for physical property, weathering, and chemical resistance for a particular level to be considered that level of coating or system (see Note 8.2)

5.3 PHYSICAL PROPERTY REQUIREMENTS: Cure according to requirements of ASTM D1640 for a minimum of 14 days. Table 1 provides a summary of physical property requirements.

5.3.1 In addition to selecting the performance level, the desired water vapor permeance of the material shall be specified. If a barrier coating is desired, specify less than 1 perm, unless the regional code stipulates a lower number such as 0.1 perm. If a vapor retarder is desired, specify 1 to 10 perms. If a permeable coating is desired, specify greater than 10 perms. Increasing perm values indicate increasing water vapor permeance. Elastomeric coatings are typically not available at greater than 40 perms.

5.4 WEATHERING REQUIREMENTS: Prepare test specimens for color evaluation as outlined in ASTM D1734, and cure according to requirements of ASTM D1640 for a minimum of 14 days prior to testing in accordance with ASTM D4587, Cycle 2. The test panels for evaluation of embrittlement shall be thin-gauge aluminum panels approximately 0.6 mm (0.025 inches) in thickness.⁶ The test for embrittlement shall

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/Details.aspx?pid=23481>>

⁵ International Organization for Standardization (ISO), Case Postale 56, Geneva CH-1211, Switzerland. In the United States, ISO standards may be obtained from the American National Standards Institute (ANSI) at <<http://www.ansi.org>>

⁶ Aluminum panels meeting requirements of ASTM A46 or equivalent will satisfy this requirement.