SSPC: The Society for Protective Coatings

# Coating Standard No. 36

## Two-Component Weatherable Aliphatic Polyurethane Topcoat, Performance-Based

### 1. Scope

This standard contains minimum performance requirements for the color and gloss retention properties of a high-performance, two-component, UV-stable polyurethane coating (ASTM D16, Type V polyurethane) to be used as the topcoat of a coating system for steel substrates.

### 2. Description

**2.1** Coatings meeting the requirements of this standard are typically based on the reaction of a hydroxyl-functional polyol resin with an aliphatic polyisocyanate co-reactant to form a polyurethane.

**2.2** Coatings meeting the requirements of this standard are generally suitable for exposures in SSPC environmental zones 1A (interior, normally dry), 1B (exterior, normally dry), 2A (frequently wet by fresh water, excluding immersion), 2B (frequently wet by salt water, excluding immersion), 3B (chemical exposure, neutral), and 3C (chemical exposure, alkaline).[1]

**2.3** The coating is applied by brush, spray, or roller, as recommended by the coating manufacturer.

**2.4 WEATHERING LEVELS:** This standard establishes four levels of performance requirements using accelerated (A) weathering data and four levels of performance requirements using natural outdoor weathering (N) performance data.

**2.5 UNITS OF MEASURE:** This standard includes measurements in both U.S. Custom and IEEE/ASTM[2] SI 10 International Standards (SI) units. The measurements are not exact equivalents; therefore, each system must be used independently of the other without combining in any way. In this document, U.S. Custom Units are considered the standard. The approximate S.I. measurements are provided only for information.

[1] SSPC Environmental Zones are defined in "Using SSPC Coating Material Standards" available online from <http://www.sspc.org>

[2] ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, phone int+1-610-832-9500. For referenced ASTM standards, visit the ASTM website <http://www.astm.org>

This standard was developed by the SSPC C.1.3.D, Polyurethane Coatings Committee and was originally issued in 2000. It was revised in 2006, 2012, and 2020.

### 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 or the Appendix, 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:**

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| SSPC-Guide 13 | Guide for the Identification and Use of Industrial Coating Materials in Computerized Product Databases |
| SSPC-PA 15 | Material and Preparation Requirements for Steel Test Panels Used to Evaluate the Performance of Industrial Coatings |

**3.4 ASTM INTERNATIONAL STANDARDS:**

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| * | ASTM D16 | Standard Terminology for Paint, Related Coatings, Materials, and Applications |
| | ASTM D523 | Standard Test Method for Specular Gloss |
| * | ASTM D562 | Standard Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer-Type Viscometer |
| | ASTM D1014 | Standard Practice for Conducting Exterior Exposure Tests of Paints and Coatings on Metal Substrates |
| * | ASTM D1296 | Standard Test Method for Odor of Volatile Solvents and Diluents |
| * | ASTM D1475 | Standard Test Method for Density of Liquid Coatings, Inks, and Related Products |
| * | ASTM D1535 | Standard Practice for Specifying Color by the Munsell System |

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| * | ASTM D1640 | Standard Test Methods for Drying, Curing, or Film Formation of Organic Coatings at Room Temperature |
| | ASTM D1849 | Standard Test Method for Package Stability of Paint |
| | ASTM D2244 | Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates |
| * | ASTM D2369 | Standard Test Method for Volatile Content of Coatings |
| * | ASTM D2371 | Standard Test Method for Pigment Content of Solvent-Reducible Paints |
| * | ASTM D2621 | Standard Test Method for Infrared Identification of Vehicle Solids from Solvent-Reducible Paints |
| * | ASTM D2697 | Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings |
| | ASTM D2794 | Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact) |
| | ASTM D4214 | Standard Test Methods for Evaluating Degree of Chalking of Exterior Paint Films |
| | ASTM D4541 | Standard Test Method for Pull-Off Adhesion Strength of Coatings Using Portable Adhesion Testers |
| | ASTM D4587 | Standard Practice for Fluorescent UV-Condensation Exposures of Paint and Related Coatings |
| | ASTM D5402 | Standard Practice for Assessing the Solvent Resistance of Organic Coatings Using Solvent Rubs |
| | ASTM G154 | Standard Practice for Operating Fluorescent Apparatus for UV Exposure of Non-Metallic Materials |

**3.5 AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) STANDARD:[3]**

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| * | AASHTO T339-10-UL | Standard Method of Test for Analysis of Structural Steel Coatings for Isocyanate Content |

[3] 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 from <http://www.transportation.org>.

**3.6 INTERNATIONAL STANDARDIZATION ORGANIZATION (ISO) STANDARD[4]**

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| ISO 2810 | Paints and Varnishes – Natural Weathering of Coatings – Exposure and assessment |

## 4. Composition Requirements

**4.1 RESIN REQUIREMENT:** The reactive components used in this two-component polyurethane coating shall be comprised primarily of aliphatic polyisocyanate with acrylic, polyester, or blends of these polyol resins.

**4.2 VOC CONTENT:** See Note 11.1.

**4.3 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. Requirements of Liquid Coating

**5.1 PACKAGE STABILITY:** Package stability shall be tested in accordance with ASTM D1849. Coating shall be stable when tested for 30 days at 126 ± 2 °F (52 ± 1 °C). A change in consistency of greater than 10 Krebs units or noncompliance with the application requirements shall be cause for rejection.

**5.2 APPLICATION PROPERTIES:** All guidance provided by the manufacturer regarding mixing of multicomponent products, thinning requirements, induction times, and special application requirements shall be followed. The coating shall be easily applied by brush, roller, or spray in accordance with the instructions on the manufacturer's product data sheet. The coating shall show no streaking, running, sagging, pinholing, or other defects during application or while drying (see Note 11.3).

## 6. Test Panel Preparation

Triplicate test panels shall be prepared for each required test in accordance with SSPC-PA 15, with the exception of requirements of SSPC-PA 15 Sections 4.2, 4.3, 5.2, and 6.

When preparing test panels for adhesion testing to determine recoatability, follow the instructions in Section 8.2 of this standard regarding dry film thickness and cure time. Panels prepared for testing to determine recoatability shall not be scribed.

[4] International Organization for Standardization, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva Switzerland. Standards are available online from <http://www.ansi.org> or <http://www.iso.org/store.html>.