



Standard Practice for Immersion Testing of Industrial Protective Coatings¹

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1. Scope

1.1 This practice establishes procedures for the evaluation of the resistance of industrial protective coatings to immersion in chemicals.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parenthesis are for information only.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

- C 868 Test Method for Chemical Resistance of Protective Linings
- D 16 Terminology for Paint, Related Coatings, Materials and Applications
- D 610 Test Method for Evaluating Degree of Rusting on Paints Steel Surfaces
- D 714 Test Method for Evaluating Degree of Blistering of Paints
- D 1186 Test Methods for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to a Ferrous Base
- D 1400 Test Method for Nondestructive Measurement of Dry Film Thickness of Nonconductive Coatings Applied to a Nonferrous
- D 2200 Pictorial Surface Preparation Standards for Painting Steel Surfaces
- D 3359 Test Methods for Measuring Adhesion by Tape Test
- D 3363 Test Method for Film Hardness by Pencil Test
- D 4138 Test Methods for Measurement of Dry Film Thickness of Protective Coatings by Destructive Means
- D 4417 Test Methods for Field Measurement of Surface

Profile of Blast Cleaned Steel

- D 4541 Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
 - D 5162 Practice for Discontinuity (Holiday) Testing of Nonconductive Protective Coating on Metallic Substrates
 - D 6132 Test Method for Nondestructive Measurement of Dry Film Thickness of Applied Organic Coatings Over Concrete with an Ultrasonic Gage
 - D 6577 Guide for Testing Industrial Protective Coatings
 - D 6677 Test Method for Evaluating Adhesion by Knife
 - G 113 Terminology Relating to Natural and Artificial Weathering Tests of Nonmetallic Materials
 - ASTM Manual MNL8 ASTM Manual on Maintenance Coatings for Nuclear Power Plants
- #### 2.2 NACE Standard:³
- TM 0174-2002 Laboratory Methods for the Evaluation of Protective Coatings and Lining Materials on Metallic Substrates in Immersion Service
- #### 2.3 SSPC/NACE Joint Standards:⁴
- SSPC-SP5/NACE 1 White Metal Blast Cleaning
 - SSPC-SP10/NACE 2 Near White Blast Cleaning
 - SSPC-SP13/NACE 6 Surface Preparation of Concrete

3. Terminology

3.1 The definitions given in Terminologies G 113 and D 16 are applicable to this practice.

4. Significance and Use

4.1 Protective coatings are used on metallic and concrete storage and processing vessels, shipping containers, dams and rail cars to protect the substrate from corrosive attack and to protect stored materials (cargo) from contamination. This method provides a means to assess the ability of a protective coating to resist degradation by chemicals and to protect the liquid cargo from contamination by either the substrate or coating, based on visual observations. Other measures of degradation, such as changes in weight or dimensions of the coating material, or chemical changes to the cargo, may be used to assess this protective ability as mutually agreed upon between contracting parties.

¹ This practice is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials and Applications and is the direct responsibility of Subcommittee D01.46 on Industrial Protective Coatings.

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² 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.

³ Available from National Association of Corrosion Engineers (NACE), 1440 South Creek Dr., Houston, TX 77084-4906.

⁴ Available from The Society for Protective Coatings (SSPC), 40 24th St., 6th Floor, Pittsburgh, PA 15222-4656.