Laboratory Test Methods for the Evaluation of Protective Coatings and Lining Materials on Metallic Substrates in Immersion Service

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Foreword

This standard test method was prepared to help manufacturers and users of protective coatings and linings in their selection of materials by providing standard test methods for the evaluation of protective coatings and linings for immersion service.

Scope

This standard provides two separate test methods for evaluating protective coatings on any metallic substrate, such as steel, copper, aluminum, etc., so that the factors of both chemical resistance and permeability can be considered. The results obtained should give a good indication of what would happen on exposure to similar service conditions.

Protective coatings, as referred to in this standard, may be applied in liquid form (solution, dispersion, etc.); or dry form (powders); using spray, dip, roller, brush, trowel, or other appropriate application techniques.

Rationale

This standard, TM0174-2022, has been revised to include detailed information on test methods description, test apparatus, detailed procedures, and test parameters.

In AMPP standards, the terms *shall* and *must* are used to state requirements and are considered mandatory. The term *should* is used to state something that is recommended, but is not considered mandatory. The term *may* is used to state something considered optional.

Referenced Standards and Other Consensus Documents

The latest edition, revision, or amendment of the referenced documents in effect shall govern unless otherwise dated.

AMPP/NACE/SSPC, www.ampp.org:

NACE SP0188	Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates
NACE SP0287	Field Measurement of Surface Profile of Abrasive Blast Cleaned Steel Surfaces Using a Replica Tape
SSPC-SP 5/NACE No.1	White Metal Blast Cleaning

ASTM International, www.astm.org:

ASTM D610	Evaluating Degree of Resistance to Rusting Obtained with Paint on Iron and Steel Surfaces
ASTM D714	Evaluating Degree of Blistering of Paints
ASTM D1474	Method of Test for Indentation Hardness of Organic Coatings
ASTM D1654	Standard Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
ASTM D2240	Standard Test Method for Rubber Property—Durometer Hardness
ASTM D2583	Indentation Hardness of Rigid Plastics by Means of a Barcol
ASTM D3363	Standard Test Method for Film Hardness by Pencil Test
ASTM D4541	Test Method for Pull-Off Strength of Coatings Using Portable Adhesion-Testers
ASTM D6677	Standard Test Method for Evaluating Adhesion by Knife
ASTM D7091	Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals

International Organization for Standardization (ISO), www.iso.org:

ISO 16773	Paints and varnishes — Electrochemical impedance spectroscopy (EIS) on high impedance coated samples"; Part 1: Terms and definitions; Part 2: Collection of data