



Designation: D3794 – 22

Standard Guide for Testing Coil Coatings¹

This standard is issued under the fixed designation D3794; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This guide covers procedures for testing coil coatings. The test methods included are listed in Table 1. Where more than one test method is listed for the same characteristic, no attempt is made to indicate superiority of one method over another. Selection of test methods to be followed must be governed by the requirements in each individual case, together with agreement between the producer and user.

1.2 The values stated in SI units are to be regarded as standard. The values given in parentheses 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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

- B117 Practice for Operating Salt Spray (Fog) Apparatus
- B368 Test Method for Copper-Accelerated Acetic Acid-Salt Spray (Fog) Testing (CASS Test)
- C1371 Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emis-someters
- C1549 Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflec-tometer

¹ This guide is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.53 on Coil Coated Metal.

Current edition approved June 15, 2022. Published July 2022. Originally approved in 1979. Last previous edition approved in 2018 as D3794 – 18. DOI: 10.1520/D3794-22.

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.

- D522 Test Methods for Mandrel Bend Test of Attached Organic Coatings
- D523 Test Method for Specular Gloss
- D610 Practice for Evaluating Degree of Rusting on Painted Steel Surfaces
- D660 Test Method for Evaluating Degree of Checking of Exterior Paints
- D661 Test Method for Evaluating Degree of Cracking of Exterior Paints
- D714 Test Method for Evaluating Degree of Blistering of Paints
- D822 Practice for Filtered Open-Flame Carbon-Arc Expos-ures of Paint and Related Coatings
- D823 Practices for Producing Films of Uniform Thickness of Paint, Coatings and Related Products on Test Panels
- D870 Practice for Testing Water Resistance of Coatings Using Water Immersion
- D968 Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
- D1005 Test Method for Measurement of Dry-Film Thick-ness of Organic Coatings Using Micrometers
- D1014 Practice for Conducting Exterior Exposure Tests of Paints and Coatings on Metal Substrates
- D1193 Specification for Reagent Water
- D1200 Test Method for Viscosity by Ford Viscosity Cup
- D1210 Test Method for Fineness of Dispersion of Pigment-Vehicle Systems by Hegman-Type Gage
- D1212 Test Methods for Measurement of Wet Film Thick-ness of Organic Coatings
- D1308 Test Method for Effect of Household Chemicals on Clear and Pigmented Coating Systems
- D1474 Test Methods for Indentation Hardness of Organic Coatings
- D1475 Test Method for Density of Liquid Coatings, Inks, and Related Products
- D1654 Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
- D1729 Practice for Visual Appraisal of Colors and Color Differences of Diffusely-Illuminated Opaque Materials
- D1735 Practice for Testing Water Resistance of Coatings Using Water Fog Apparatus
- D1823 Test Method for Apparent Viscosity of Plastisols and Organosols at High Shear Rates by Extrusion Viscometer

- D1824** Test Method for Apparent Viscosity of Plastisols and Organosols at Low Shear Rates
- D2092** Guide for Preparation of Zinc-Coated (Galvanized) Steel Surfaces for Painting (Withdrawn 2008)³
- D2196** Test Methods for Rheological Properties of Non-Newtonian Materials by Rotational Viscometer
- D2197** Test Method for Adhesion of Organic Coatings by Scrape Adhesion
- D2244** Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
- D2247** Practice for Testing Water Resistance of Coatings in 100 % Relative Humidity
- D2248** Practice for Detergent Resistance of Organic Finishes
- D2369** Test Method for Volatile Content of Coatings
- D2454** Practice for Determining the Effect of Overbaking on Organic Coatings
- D2697** Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings
- D2794** Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
- D2803** Guide for Testing Filiform Corrosion Resistance of Organic Coatings on Metal
- D3003** Test Method for Pressure Mottling and Blocking Resistance of Organic Coatings on Metal Substrates
- D3134** Practice for Establishing Color and Gloss Tolerances
- D3170** Test Method for Chipping Resistance of Coatings
- D3278** Test Methods for Flash Point of Liquids by Small Scale Closed-Cup Apparatus
- D3359** Test Methods for Rating Adhesion by Tape Test
- D3361** Practice for Unfiltered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings
- D3363** Test Method for Film Hardness by Pencil Test
- D3960** Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings
- D4060** Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
- D4138** Practices for Measurement of Dry Film Thickness of Protective Coating Systems by Destructive, Cross-Sectioning Means
- D4141** Practice for Conducting Black Box and Solar Concentrating Exposures of Coatings
- D4145** Test Method for Coating Flexibility of Prepainted Sheet
- D4146** Test Method for Formability of Zinc-Rich Primer/Chromate Complex Coatings on Steel
- D4147** Practice for Applying Coil Coatings Using Wire-Wound Drawdown Bars
- D4212** Test Method for Viscosity by Dip-Type Viscosity Cups
- D4214** Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films
- D4287** Test Method for High-Shear Viscosity Using a Cone/Plate Viscometer
- D4518** Test Methods for Measuring Static Friction of Coating Surfaces (Withdrawn 2000)³
- D4585** Practice for Testing Water Resistance of Coatings Using Controlled Condensation
- D4587** Practice for Fluorescent UV-Condensation Exposures of Paint and Related Coatings
- D5031** Practice for Enclosed Carbon-Arc Exposure Tests of Paint and Related Coatings
- D5178** Test Method for Mar Resistance of Organic Coatings
- D5402** Practice for Assessing the Solvent Resistance of Organic Coatings Using Solvent Rubs
- D5531** Guide for Preparation, Maintenance, and Distribution of Physical Product Standards for Color and Geometric Appearance of Coatings
- D5723** Practice for Determination of Chromium Treatment Weight on Metal Substrates by X-Ray Fluorescence
- D5796** Test Method for Measurement of Dry Film Thickness of Thin-Film Coil-Coated Systems by Destructive Means Using a Boring Device
- D5894** Practice for Cyclic Salt Fog/UV Exposure of Painted Metal, (Alternating Exposures in a Fog/Dry Cabinet and a UV/Condensation Cabinet)
- D6093** Test Method for Percent Volume Nonvolatile Matter in Clear or Pigmented Coatings Using a Helium Gas Pycnometer
- D6491** Practice for Evaluation of Aging Resistance of Prestressed Prepainted Metal In a Dry Heat Test
- D6492** Practice for Detection of Hexavalent Chromium On Zinc and Zinc/Aluminum Alloy Coated Steel
- D6578** Practice for Determination of Graffiti Resistance
- D6665** Practice for Evaluation of Aging Resistance of Prestressed Prepainted Metal in a Boiling Water Test
- D6695** Practice for Xenon-Arc Exposures of Paint and Related Coatings
- D6906** Test Method for Determination of Titanium Treatment Weight on Metal Substrates by Wavelength Dispersive X-Ray Fluorescence
- D6944** Practice for Determining the Resistance of Cured Coatings to Thermal Cycling
- D7091** Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals
- D7093** Test Method for Formability of Thin Film Organic Coatings on Steel Over a Biaxially Stretched Dome
- D7376** Practice for Outdoor Evaluation of Wet Stack Storage Conditions on Coil-Coated Metals
- D7639** Test Method for Determination of Zirconium Treatment Weight or Thickness on Metal Substrates by X-Ray Fluorescence
- D7835** Test Method for Determining the Solvent Resistance of an Organic Coating Using a Mechanical Rubbing Machine
- D7893** Guide for Corrosion Test Panel Preparation, Testing, and Rating of Coil-Coated Building Products
- D7869** Practice for Xenon Arc Exposure Test with Enhanced Light and Water Exposure for Transportation Coatings

³ The last approved version of this historical standard is referenced on www.astm.org.