



Designation: D5031/D5031M – 13 (Reapproved 2018)

Standard Practice for Enclosed Carbon-Arc Exposure Tests of Paint and Related Coatings¹

This standard is issued under the fixed designation D5031/D5031M; 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 practice covers the selection of test conditions for accelerated exposure testing of coatings and related products in enclosed carbon arc devices operated according to Practices **G151** and **G153**. This practice also covers the preparation of test specimens, the test conditions suited for coatings, and the evaluation of test results. **Table 1** describes commonly used test conditions.

1.2 This practice does not cover filtered open-flame carbon-arc exposures of paints and related coatings, which is described in Practice **D822/D822M**. Another procedure for exposing these products is covered by Practice **D3361/D3361M**, in which the specimens are subjected to radiation from an unfiltered open-flame carbon arc that produces shorter wavelengths and higher levels of short wavelength radiation than filtered open flame or enclosed carbon arcs.

NOTE 1—Practice **D3361/D3361M** requires use of open-flame carbon-arc apparatus with automatic humidity control.

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.4 *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.*

1.5 *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.*

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 **D01.27** on Accelerated Testing.

Current edition approved Sept. 1, 2018. Published September 2018. Originally approved in 1989. Last previous edition approved in 2013 as D5031/D5031M – 13. DOI: 10.1520/D5031_D5031M-13R18.

2. Referenced Documents

2.1 *ASTM Standards:*²

D358 Specification for Wood to Be Used as Panels in Weathering Tests of Coatings (Withdrawn 2014)³

D523 Test Method for Specular Gloss

D609 Practice for Preparation of Cold-Rolled Steel Panels for Testing Paint, Varnish, Conversion Coatings, and Related Coating Products

D610 Practice for Evaluating Degree of Rusting on Painted Steel Surfaces

D659 Method for Evaluating Degree of Chalking of Exterior Paints (Withdrawn 1990)³

D660 Test Method for Evaluating Degree of Checking of Exterior Paints

D662 Test Method for Evaluating Degree of Erosion of Exterior Paints

D714 Test Method for Evaluating Degree of Blistering of Paints

D772 Test Method for Evaluating Degree of Flaking (Scaling) of Exterior Paints

D822/D822M Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings

D823 Practices for Producing Films of Uniform Thickness of Paint, Coatings and Related Products on Test Panels

D1005 Test Method for Measurement of Dry-Film Thickness of Organic Coatings Using Micrometers

D1186 Test Methods for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to a Ferrous Base (Withdrawn 2006)³

D1400 Test Method for Nondestructive Measurement of Dry Film Thickness of Nonconductive Coatings Applied to a Nonferrous Metal Base (Withdrawn 2006)³

D1729 Practice for Visual Appraisal of Colors and Color Differences of Diffusely-Illuminated Opaque Materials

D1730 Practices for Preparation of Aluminum and Aluminum-Alloy Surfaces for Painting

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