



Designation: D5031 – 23

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

This standard is issued under the fixed designation D5031; 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.

1.2 This practice does not cover filtered open-flame carbon-arc exposures of paints and related coatings, which is described in Practice [D822](#). 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 in SI units are to be regarded as standard. The values given in parentheses are for information only and are not considered 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.*

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- [D358](#) Specification for Wood to Be Used as Panels in Weathering Tests of Coatings (Withdrawn 2014)³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](#) 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
- [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
- [D2244](#) Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates

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.

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