



Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources¹

This standard is issued under the fixed designation G151; 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 provides general procedures to be used when exposing nonmetallic materials in accelerated test devices that use laboratory light sources. Detailed information regarding procedures to be used for specific devices are found in standards describing the particular device being used. For example, detailed information covering exposures in devices that use open flame carbon arc, enclosed carbon arc, xenon arc and fluorescent UV light source are found in Practices [G152](#), [G153](#), [G154](#), and [G155](#) respectively.

NOTE 1—Carbon-arc, xenon arc, and fluorescent UV exposures were also described in Practices [G23](#), [G26](#), and [G53](#) which referred to very specific equipment designs. Practices [G152](#), [G153](#), and [G154](#), and [G155](#) are performance based standards that replace Practices [G23](#), [G26](#), and [G53](#).

1.2 This practice also describes general performance requirements for devices used for exposing nonmetallic materials to laboratory light sources. This information is intended primarily for producers of laboratory accelerated exposure devices.

1.3 This practice provides information on the use and interpretation of data from accelerated exposure tests. Specific information about methods for determining the property of a nonmetallic material before and after exposure are found in standards describing the method used to measure each property. Information regarding the reporting of results from exposure testing of plastic materials is described in Practice [D5870](#).

NOTE 2—Guide [G141](#) provides information for addressing variability in exposure testing of nonmetallic materials. Guide [G169](#) provides information for application of statistics to exposure test results

NOTE 3—This standard is technically equivalent to ISO 4892, Part 1.

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 appro-*

priate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 ASTM Standards:²

- [D618 Practice for Conditioning Plastics for Testing](#)
- [D3924 Specification for Environment for Conditioning and Testing Paint, Varnish, Lacquer, and Related Materials](#)
- [D5870 Practice for Calculating Property Retention Index of Plastics](#)
- [E41 Terminology Relating To Conditioning](#)
- [E171 Practice for Conditioning and Testing Flexible Barrier Packaging](#)
- [E644 Test Methods for Testing Industrial Resistance Thermometers](#)
- [E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method](#)
- [E772 Terminology of Solar Energy Conversion](#)
- [E839 Test Methods for Sheathed Thermocouples and Sheathed Thermocouple Cable](#)
- [G23 Practice for Operating Light-Exposure Apparatus \(Carbon-Arc Type\) With and Without Water for Exposure of Nonmetallic Materials \(Withdrawn 2000\)³](#)
- [G26 Practice for Operating Light-Exposure Apparatus \(Xenon-Arc Type\) With and Without Water for Exposure of Nonmetallic Materials \(Discontinued 2001\) \(Withdrawn 2000\)³](#)
- [G53 Practice for Operating Light-and Water-Exposure Apparatus \(Fluorescent UV-Condensation Type\) for Exposure of Nonmetallic Materials \(Withdrawn 2000\)³](#)
- [G113 Terminology Relating to Natural and Artificial Weathering Tests of Nonmetallic Materials](#)
- [G130 Test Method for Calibration of Narrow- and Broad-Band Ultraviolet Radiometers Using a Spectroradiometer](#)
- [G141 Guide for Addressing Variability in Exposure Testing of Nonmetallic Materials](#)

¹ This practice is under the jurisdiction of ASTM Committee [G03](#) on Weathering and Durability and is the direct responsibility of Subcommittee [G03.03](#) on Simulated and Controlled Exposure Tests.

Current edition approved April 1, 2010. Published May 2010. Originally approved in 1997. Last previous edition approved in 2009 as G151 – 09. DOI: 10.1520/G0151-10.

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.