



Standard Practice for Xenon-Arc Exposure of Plastics Intended for Indoor Applications¹

This standard is issued under the fixed designation D 4459; 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 specific procedures and test conditions that are applicable for exposure of plastics in window glass-filtered xenon-arc devices in accordance with Practices G 151 and G 155 for evaluating the stability of plastics intended for use in indoor applications.

NOTE 1—Previous versions of this practice referenced xenon-arc devices described by Practice G 26. This practice described very specific equipment designs and is being replaced by Practices G 151 and G 155, which describe performance criteria for all xenon-arc devices. Practice G 26 will be balloted for withdrawal before December 2000.

1.2 *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 and health practices and determine the applicability of regulatory limitations prior to use.*

NOTE 2—This practice has no ISO equivalent.

2. Referenced Documents

2.1 ASTM Standards:

- D 1729 Practice for Visual Evaluation of Color Differences of Opaque Materials²
- D 2244 Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates²
- D 3980 Practice for Interlaboratory Testing of Paint and Related Materials²
- D 4674 Test Method for Accelerated Testing for Color Stability of Plastics Exposed to Indoor Fluorescent Lighting and Window-Filtered Daylight³
- D 5870 Practice for Calculating Property Retention Index of Plastics³
- E 691 Practice for Conducting an Interlaboratory Study to

Determine the Precision of a Test Method⁴

- G 26 Practice for Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials⁴
- G 113 Terminology Relating to Natural and Artificial Weathering Tests of Nonmetallic Materials⁴
- G 141 Guide for Addressing Variability in Exposure Testing on Nonmetallic Materials⁴
- G 147 Practice for Conditioning and Handling of Nonmetallic Materials for Natural and Artificial Weathering Tests⁴
- G 151 Practice for Exposing Nonmetallic Materials in Accelerated Test Devices That Use Laboratory Light Sources⁴
- G 155 Practice for Operating Xenon-Arc Light Apparatus for Exposure of Nonmetallic Materials

3. Terminology

3.1 The definitions in Terminology G 113 are applicable to this practice.

4. Significance and Use

4.1 This practice is intended to simulate the effects produced by exposure to solar radiation through glass. This practice uses exposure in a xenon-arc device equipped with window glass filters and operated in accordance with Practices G 151 and G 155.

NOTE 3—Practice D 4674 describes exposures in a device that uses a combination of fluorescent “cool white” and ultraviolet (UV) lamps to simulate the effects of exposures to indoor fluorescent light and window glass filtered daylight.

4.2 **Caution**—Variation in results may be expected when operating conditions are varied within the accepted limits of this practice. Therefore, all references to the use of this practice must be accompanied by a report prepared in accordance with Section 9 that describes the specific operating conditions used. Refer to Practice G 151 for detailed information on the caveats applicable to use of results obtained in accordance with this practice.

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² *Annual Book of ASTM Standards*, Vol 06.01.

³ *Annual Book of ASTM Standards*, Vol 08.03.

⁴ *Annual Book of ASTM Standards*, Vol 14.02.

*A Summary of Changes section appears at the end of this standard.