



Designation: G 155 – 00

Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials¹

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1. Scope

1.1 This practice covers the basic principles and operating procedures for using xenon arc light and water apparatus intended to reproduce the weathering effects that occur when materials are exposed to sunlight (either direct or through window glass) and moisture as rain or dew in actual use. This practice is limited to the procedures for obtaining, measuring, and controlling conditions of exposure. A number of exposure procedures are listed in an appendix; however, this practice does not specify the exposure conditions best suited for the material to be tested.

NOTE 1—Practice G 151 describes performance criteria for all exposure devices that use laboratory light sources. This practice replaces Practice G 26, which describes very specific designs for devices used for xenon-arc exposures. The apparatus described in Practice G 26 is covered by this practice.

1.2 Test specimens are exposed to filtered xenon arc light under controlled environmental conditions. Different types of xenon arc light sources and different filter combinations are described.

1.3 Specimen preparation and evaluation of the results are covered in ASTM methods or specifications for specific materials. General guidance is given in Practice G 151 and ISO 4892-1. More specific information about methods for determining the change in properties after exposure and reporting these results is described in ISO 4582.

1.4 The values stated in SI units are to be regarded as the standard.

1.5 *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.*

1.5.1 *Should any ozone be generated from the operation of the lamp(s), it shall be carried away from the test specimens and operating personnel by an exhaust system.*

1.6 This practice is technically similar to the following ISO documents: ISO 4892-2, ISO 1134, ISO 105 B02, ISO 105 B04, ISO 105 B05, and ISO 105 B06.

2. Referenced Documents

2.1 ASTM Standards:

D 3980 Practice for Interlaboratory Testing of Paint and Related Materials²

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method³

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 for Nonmetallic Materials⁴

G 151 Practice for Exposing Nonmetallic Materials in Accelerated Test Devices That Use Laboratory Light Sources⁴

2.2 CIE Standards:

CIE-Publ. No. 85: Recommendations for the Integrated Irradiance and the Spectral Distribution of Simulated Solar Radiation for Testing Purposes⁵

2.3 International Standards Organization Standards:

ISO 1134, Paint and Varnishes—Artificial Weathering Exposure to Artificial Radiation to Filtered Xenon Arc Radiation⁶

ISO 105 B02, Textiles—Tests for Colorfastness—Part B02 Colorfastness to Artificial Light: Xenon Arc Fading Lamp Test⁶

ISO 105 B04, Textiles—Tests for Colorfastness—Part B04 Colorfastness to Artificial Weathering: Xenon Arc Fading Lamp Test⁶

ISO 105 B05, Textiles—Tests for Colorfastness—Part B05 Detection and Assessment of Photochromism⁶

ISO 105 B06, Textiles—Tests for Colorfastness—Part B06

² Discontinued 1998. See 1998 Annual Book of ASTM Standards, Vol 06.01.

³ Annual Book of ASTM Standards, Vol 14.02.

⁴ Annual Book of ASTM Standards, Vol 14.04.

⁵ Available from Secretary, U.S. National Committee, CIE, National Institute of Standards and Technology, Gaithersburg, MD 20899.

⁶ Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

¹ This practice is under the jurisdiction of ASTM Committee G-3 on Weathering and Durability and is the direct responsibility of Subcommittee G03.03 on Simulated and Controlled Exposure Tests.

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