



Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials¹

This standard is issued under the fixed designation G154; 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 is limited to the basic principles for operating a fluorescent UV lamp and water apparatus; on its own, it does not deliver a specific result.

1.2 It is intended to be used in conjunction with a practice or method that defines specific exposure conditions for an application along with a means to evaluate changes in material properties. This practice is 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 usage. This practice is limited to the procedures for obtaining, measuring, and controlling conditions of exposure.

NOTE 1—Practice **G151** describes general procedures to be used when exposing nonmetallic materials in accelerated test devices that use laboratory light sources.

NOTE 2—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.

1.3 Test specimens are exposed to fluorescent UV light under controlled environmental conditions. Different types of fluorescent UV lamp sources are described.

NOTE 3—In this standard, the terms *UV light* and *UV radiation* are used interchangeably.

1.4 Specimen preparation and evaluation of the results are covered in ASTM methods or specifications for specific materials. General guidance is given in Practice **G151** and ISO 4892-1.

NOTE 4—General information about methods for determining the change in properties after exposure and reporting these results is described in ISO 4582 and Practice **D5870**.

1.5 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.6 *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.*

1.7 This standard is technically similar to ISO 4892-3 and ISO 16474-3.

2. Referenced Documents

2.1 ASTM Standards:²

D5870 Practice for Calculating Property Retention Index of Plastics

D6631 Guide for Committee D01 for Conducting an Inter-laboratory Study for the Purpose of Determining the Precision of a Test Method

G113 Terminology Relating to Natural and Artificial Weathering Tests of Nonmetallic Materials

G151 Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources

G177 Tables for Reference Solar Ultraviolet Spectral Distributions: Hemispherical on 37° Tilted Surface

2.2 ISO Standards:³

ISO 4582 Plastics—Determination of the Changes of Colour and Variations in Properties After Exposure to Daylight Under Glass, Natural Weathering or Artificial Light

ISO 4892-1 Plastics—Methods of Exposure to Laboratory Light Sources—Part 1, Guidance

ISO 4892-3 Plastics—Methods of Exposure to Laboratory Light Sources—Part 3, Fluorescent UV lamps

ISO 16474-3 Paints and Varnishes—Methods of Exposure to Laboratory Light Sources—Part 3: Fluorescent UV Lamps

3. Terminology

3.1 *Definitions*—The definitions given in Terminology **G113** are applicable to this practice.

3.2 *Definitions of Terms Specific to This Standard*—As used

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.

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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 Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.