



Designation: G 23 – 90

AMERICAN SOCIETY FOR TESTING AND MATERIALS
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Standard Practice for Operating Light-Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials¹

This standard is issued under the fixed designation G 23; 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.

This standard has been approved for use by agencies of the Department of Defense. Consult the DoD Index of Specifications and Standards for the specific year of issue which has been adopted by the Department of Defense.

1. Scope

1.1 This practice covers the basic principles and operating procedures for light-exposure apparatus with and without water spray employing a carbon-arc light source.

1.2 This practice does not specify the exposure conditions best suited for the material to be tested. It is limited to the method of obtaining, measuring, and controlling the conditions and procedures of the exposure. Sample preparation, test conditions, and evaluation of results are covered in ASTM test methods or specifications for specific materials.

NOTE 1—Attention is called to the following test methods and practices for more information on use of this practice for specific materials:

Practices D 529, D 822, D 904, D 1499, D 3361, D 3815, E 765 and Test Methods C 732, C 734, C 741, D 750, D 3424 and D 3583.

1.3 This practice includes four procedures:

1.3.1 *Method 1*—Continuous exposure to light and intermittent exposure to water spray.

1.3.2 *Method 2*—Alternate exposure to light and darkness and intermittent exposure to water spray.

1.3.3 *Method 3*—Continuous exposure to light without water spray. Specific exposure conditions for testing fabric are found in AATCC Test Method 16A.

1.3.4 *Method 4*—Alternate exposure to light and darkness without water spray.

1.4 The values stated in SI units are to be regarded as the standard. The inch-pound unit equivalents of the SI units may be approximate.

1.5 *This standard does not purport to address the safety problems 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.*

2. Referenced Documents

2.1 ASTM Standards:

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

Current edition approved Oct. 26, 1990. Published December 1990. Originally published as E 42 – 42 T. Last previous edition G 23 – 89. Replaces E 42 – 69 and combines G 23 – 69 (1975) and G 25 – 81.

Practice G 25, Standard Recommended Practice for Operating Enclosed Carbon Arc Type Apparatus for Light Exposure of Nonmetallic Materials, is to be discontinued since it now is covered in this edition of G 23 and its Methods 3 and 4.

C 732 Test Method for Aging Effects of Artificial Weathering on Latex Sealants²

C 734 Test Method for Low-Temperature Flexibility of Latex Sealants After Artificial Weathering²

C 741 Test Method for Accelerated Aging of Wood Sash Face Glazing Compound²

D 529 Practice for Accelerated Weathering Test of Bituminous Materials³

D 750 Test Method for Rubber Deterioration in Carbon-Arc or Weathering Apparatus⁴

D 822 Practice for Conducting Tests on Paint and Related Coatings and Materials Using Filtered Open-Flame Carbon-Arc Light- and Water-Exposure Apparatus⁵

D 904 Practice for Exposure of Adhesive Specimens to Artificial (Carbon-Arc Type) and Natural Light⁶

D 1499 Practice for Operating Light- and Water-Exposure Apparatus (Carbon-Arc Type) for Exposure of Plastics⁷

D 3361 Practice for Operating Light- and Water-Exposure Apparatus (Unfiltered Open-Flame Carbon-Arc Type) for Testing Paint, Varnish, Lacquer, and Related Products Using the Dew Cycle⁵

D 3424 Method for Evaluating the Lightfastness of Printed Matter⁵

D 3583 Methods of Testing Joint Sealant, Hot-Applied, Elastomeric Type for Portland Cement Concrete Pavements, or Joint Sealant, Hot-Applied Elastomeric, Jet-Fuel-Resistant Type, for Portland Cement Concrete Pavements⁸

D 3815 Practice for Accelerated Aging of Pressure Sensitive Tapes by Carbon-Arc Exposure Apparatus⁹

E 765 Practice for Evaluation of Cover Materials for Flat Plate Solar Collectors¹⁰

2.2 AATCC Standards:¹¹

Blue Wool Lightfastness

Test method 16A Colorfastness to Light, Carbon-Arc Lamp, Continuous Light

² Annual Book of ASTM Standards, Vol 04.07.

³ Annual Book of ASTM Standards, Vol 04.04.

⁴ Annual Book of ASTM Standards, Vol 09.01.

⁵ Annual Book of ASTM Standards, Vol 06.01.

⁶ Annual Book of ASTM Standards, Vol 15.06.

⁷ Annual Book of ASTM Standards, Vol 08.01.

⁸ Annual Book of ASTM Standards, Vol 04.03.

⁹ Annual Book of ASTM Standards, Vol 15.09.

¹⁰ Annual Book of ASTM Standards, Vol 12.02.

¹¹ Available from the Secretary, American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709.