



Standard Test Method for Rubber Deterioration in Carbon—Arc Weathering Apparatus¹

This standard is issued under the fixed designation D 750; 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.

1. Scope

1.1 This test method covers specific variations in the test conditions and procedures which shall be applicable when Practice G 23² is employed for exposure of vulcanized rubber compounds. It also covers the preparation of test specimens and the evaluation of results.

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

1.3 *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.*

2. Referenced Documents

2.1 ASTM Standards:

D 412 Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers—Tension³

D 925 Test Methods for Rubber Property—Staining of Surfaces (Contact, Migration, and Diffusion)³

D 3182 Practice for Rubber—Materials, Equipment, and Procedures for Mixing Standard Compounds and Preparing Standard Vulcanized Sheets³

D 3183 Practice for Rubber—Preparation of Pieces for Test Purposes from Products³

D 4483 Practice for Determining Precision for Test Method Standards in the Rubber and Carbon Black Industries³

G 23 Practice for Operating Light-Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials²

3. Significance and Use

3.1 This test method describes a procedure to use in continuously or intermittently exposing rubber specimens held in a jig or holder with or without a specified strain. This exposure assesses the effect of light having essentially the same

wavelengths as are found in natural sunlight but with increased intensities in the ultraviolet range.

3.2 The primary criterion used in estimating resistance to light aging is the percentage decrease in tensile strength and in elongation at break. A supplementary criterion for estimating resistance to light aging is the observed extent of surface crazing and cracking.

3.3 Results obtained by use of this test method should not be represented as equivalent to those of any natural exposure test until the degree of quantitative correlation has been established for the material in question.

4. Apparatus⁴

4.1 The preferred exposure apparatus shall be Type E or EH as described in Practice G 23.

4.2 Types D or DH apparatus may be used by mutual consent of the concerned parties. It shall be understood that results obtained from different types of apparatus may not be directly comparable due to spectral differences in the radiant energy emitted by the two types of carbon arcs.

5. Test Specimens

5.1 Unless otherwise mutually agreed upon, test specimens shall be rectangular strips 75 mm (3 in.) in width by 150 mm (6 in.) in length prepared especially for this test method or cut from the material to be evaluated. The specimens should have a maximum thickness of 0.75 mm (0.030 in.) and a minimum thickness of 0.60 mm (0.025 in.).

5.2 If evaluation is limited only to visual observation, then specimens of any thickness may be used and the thickness shall be included in the report. Specimens cut from rubber products may be buffed.

5.3 Duplicate specimens should be exposed whenever possible.

6. Procedure

6.1 Unless otherwise mutually agreed upon or specified Method 1—Continuous Exposure to Light and Intermittent Exposure to Water Spray of Practice G 23 shall be used.

¹ This test method is under the jurisdiction of ASTM Committee D-11 on Rubber and is the direct responsibility of Subcommittee D11.15 on Degradation Tests.

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² Annual Book of ASTM Standards, Vol 14.02.

³ Annual Book of ASTM Standards, Vol 09.01.

⁴ Apparatus meeting these requirements is available from Atlas Electric Devices Co., 4114 N. Ravenswood Ave., Chicago, IL 60613.