



Designation: D 750 – 00

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 151² plus either of Practices G 152² or G 153² are 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 151 Practice for Exposing Nonmetallic Materials in Accelerated Test Devices That Use Laboratory Light Sources²
- G 152 Practice for Operating Open Flame Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials²

G 153 Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials²

G 155 Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials²

3. Significance and Use

3.1 This test method describes procedures to use in determining the effects of an open-flame carbon-arc light source, an enclosed carbon-arc light source, or a xenon-arc light source along with heat and moisture on rubber specimens held in a jig or holder with or without a specified strain. The purpose is to attempt to accelerate the effects produced by light, heat, and moisture in the natural environment. Exposures are not intended to simulate the deterioration caused by localized weather phenomena, such as atmospheric pollution, biological attack, and saltwater exposure. The Significance and Use section in Practice G 151 and the standard for the appropriate apparatus, that is, Practices G 152, or G 153 should be consulted for additional information on significance and use of the exposure tests.

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.

3.4 Practices G 151, G 152, and G 153 recommend that a similar material of known performance (a control) be exposed simultaneously with the test specimen to provide a standard for comparative purposes. Preferably, a control material known to have poor durability as well as one that has good durability should be used. The reason for using a control is that reproducibility in ranking stabilities is usually better than reproducibility of absolute changes. Therefore, the use of controls is particularly important when test materials are not being compared with one another.

¹ This test method is under the jurisdiction of ASTM Committee D11 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 14.04.

³ Annual Book of ASTM Standards, Vol 09.01.