



Designation: D575 – 91 (Reapproved 2024)

Standard Test Methods for Rubber Properties in Compression¹

This standard is issued under the fixed designation D575; 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 U.S. Department of Defense.

1. Scope

1.1 These test methods cover two test procedures for determining the compression-deflection characteristics of rubber compounds other than those usually classified as hard rubber and sponge rubber.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

D3183 Practice for Rubber—Preparation of Pieces for Test Purposes from Products

D3767 Practice for Rubber—Measurement of Dimensions

D4483 Practice for Evaluating Precision for Test Method Standards in the Rubber and Carbon Black Manufacturing Industries

E4 Practices for Force Calibration and Verification of Testing Machines

¹ These test methods are under the jurisdiction of ASTM Committee D11 on Rubber and Rubber-like Materials and are the direct responsibility of Subcommittee D11.10 on Physical Testing.

Current edition approved May 1, 2024. Published June 2024. Originally approved in 1940. Last previous edition approved in 2018 as D575 – 91 (2018). DOI: 10.1520/D0575-91R24.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

3. Summary of Test Methods

3.1 These tests constitute one kind of compression stiffness measurement. Deflection is the change in thickness of the specimen upon application of a compressive force. The two different procedures are as follows:

3.1.1 *Test Method A—Compression Test of Specified Deflection*—A compression test in which the force required to cause a specified deflection is determined.

3.1.2 *Test Method B—Compression Test at Specified Force*—A compression test in which the specified mass or compressive force is placed on the specimen and the resulting deflection is measured and recorded.

4. Significance and Use

4.1 These test methods are useful in comparing stiffness of rubber materials in compression. They can be used by rubber technologists to aid in development of materials for compressive applications.

5. Apparatus

5.1 *Compression Testing Machine*—A compression testing machine conforming to the requirements of Practices E4, and having a rate of head travel of 12 ± 3 mm/m (0.5 ± 0.1 in./min), may be used for either type of test. Any other type machine that will meet these requirements may be used. For example, a platform scale equipped with a yoke over the platform and a hand-operated screw to apply the force will serve if it will conform to the requirements prescribed for accuracy and rate of travel. Compression tests at specified forces may be performed on any machine that applies minor and major forces gently, without impact, or by placing specified masses gently on the specimen. The machine shall be equipped to permit measurement of the deflection caused by the increase from minor force to major force.

5.2 *Deflection Gage*—The deflection shall be read on a gage of dial type graduated in hundredths of millimetres (or thousandths of an inch).

5.3 *Micrometer*—The thickness of the specimen shall be measured in accordance with Test Method A of Practice D3767.