



Designation: D623 – 07 (Reapproved 2019)

Standard Test Methods for Rubber Property—Heat Generation and Flexing Fatigue In Compression¹

This standard is issued under the fixed designation D623; 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 These test methods may be used to compare the fatigue characteristics and rate of heat generation of different rubber vulcanizates when they are subjected to dynamic compressive strains.

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

D395 Test Methods for Rubber Property—Compression Set
D1349 Practice for Rubber—Standard Conditions for Testing

D3182 Practice for Rubber—Materials, Equipment, and Procedures for Mixing Standard Compounds and Preparing Standard Vulcanized Sheets

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

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 D11.15 on Degradation 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.

2.2 ASTM Adjuncts:

Goodrich Flexometer Anvil Drawings³

3. Summary of Test Method

3.1 The test consists of subjecting a specimen of rubber of definite size and shape to rapidly oscillating compressive stresses under controlled conditions. Although heat is generated by the imposed oscillating stress, the more convenient parameter, the temperature rise, is measured. The measured temperature rise is one of two types: (1) to an equilibrium temperature or (2) the rise in a fixed time period. Additional measured performance properties are the degree of permanent set or other specimen dimensional changes, or both, and for certain test conditions, the time required for a fatigue failure by internal rupture or blow out.

3.2 Two test methods are covered, using the following different types of apparatus:

3.2.1 *Test Method A*—Goodrich Flexometer.

3.2.2 *Test Method B*—Firestone Flexometer.

4. Significance and Use

4.1 Because of wide variations in service conditions, no correlation between these accelerated tests and service performance is given or implied. However, the test methods yield data that can be used to estimate relative service quality of different compounds. They are often applicable to research and development studies.

5. Preparation of Sample

5.1 The sample may consist of any vulcanized rubber compound except those generally classed as hard rubber, provided it is of sufficient size to permit preparation of the test specimen required for the test method to be employed. The sample may be prepared from a compound mixed experimentally in the laboratory or taken from process during manufacture, or it may be cut from a finished article of commerce.

5.2 If prepared in the laboratory, the procedure should preferably be essentially as specified in Practice **D3182**, except

³ Available from ASTM International Headquarters. Order Adjunct No. **ADJD0623**. Original adjunct produced in 1939.