



Designation: D5683/D5683M – 95 (Reapproved 2022)

Standard Test Method for Flexibility of Roofing and Waterproofing Materials and Membranes¹

This standard is issued under the fixed designation D5683/D5683M; 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 This test method measures the flexibility of roofing or waterproofing sheet materials or membranes by bending the test material over a block containing arcs of specific radii at a standard temperature.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with 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, 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

D1079 Terminology Relating to Roofing and Waterproofing

3. Terminology

3.1 For definitions of terms used in this test method, refer to Terminology D1079.

¹ This test method is under the jurisdiction of ASTM Committee D08 on Roofing and Waterproofing and is the direct responsibility of Subcommittee D08.20 on Roofing Membrane Systems.

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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.

4. Summary of Test Method

4.1 Bend the five specimens of roofing or waterproofing sheet materials or membrane, conditioned at 4.4 °C [40 °F] (see Note 1), over a block (see Fig. 1) designed to provide arcs of equal length with 6 mm [$\frac{1}{4}$ in.], 13 mm [$\frac{1}{2}$ in.], 19 mm [$\frac{3}{4}$ in.], and 25 mm [1 in.] radii, and the smallest radius is reported where cracking is not observed in any specimen.

NOTE 1—Other test temperatures may be used in addition to the tests required at 4.4 °C [40 °F], and refrigerated conditioning chambers may be used instead of the water bath specified. Follow procedures outlined in Section 8 if refrigerated chamber is utilized; however, the plastic bag may be omitted.

5. Significance and Use

5.1 This test method is designed to aid those interested in the engineering properties of roofing and waterproofing sheet materials and membranes.

5.2 This test method enables a researcher to measure the relative flexibility of roofing and waterproofing sheet materials and membranes under standard conditions in the laboratory.

5.3 The data obtained from this test method will not permit prediction of the service life of a membrane. Membrane flexibility is important during application, and changes in flexibility are believed to be linked to the performance of roofing and waterproofing membranes, but the actual link between test data and performance is unknown and is dependent on the materials and exposure.

6. Apparatus

6.1 *Water Bath*—A bath with the capacity of at least 10 L [2.5 gal] and capable of maintaining a temperature of 4.4 ± 0.1 °C [40 ± 0.2 °F].

6.2 *Polyethylene Bags*—A sealable plastic bag for conditioning each group of test specimens. Commercial 1 gal sealable polyethylene scrap or food storage bags can perform this function.

6.3 *Test Block*—The test block (see Fig. 1) may be made from any hard, durable material that conforms to the dimensions shown in Fig. 1. It is designed to provide equal arc lengths for arcs with 6 mm [$\frac{1}{4}$ in.], 13 mm [$\frac{1}{2}$ in.], 19 mm [$\frac{3}{4}$ in.], and 25 mm [1 in.] radii.