



Designation: D2136 – 19^ε¹

Standard Test Method for Coated Fabrics—Low-Temperature Bend Test¹

This standard is issued under the fixed designation D2136; 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.

^ε¹ NOTE—Corrected 2.2 editorially in March 2021.

1. Scope

1.1 Fabrics coated with rubber or rubber-like materials display increased stiffening when exposed to decreasing ambient temperatures. This test method describes a simple pass/fail procedure whereby material flexibility at a specified low temperature can be determined. Failure is indicative of unacceptability of the coated fabric for use at that temperature.

1.2 The values stated in SI units are to be regarded as 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.* For specific precautionary statement see 8.1.

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

D751 Test Methods for Coated Fabrics

2.2 *ASTM Adjuncts:*

Bending Fixture Drawings³

¹ This test method is under the jurisdiction of ASTM Committee D11 on Rubber and Rubber-like Materials and is the direct responsibility of Subcommittee D11.37 on Coated Fabrics, Rubber Threads and Seals.

Current edition approved May 1, 2019. Published May 2019. Originally approved in 1962. Last previous edition approved in 2012 as D2136 – 02 (2012). DOI: 10.1520/D2136-19E01.

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.

³ Detail drawings of this apparatus are available at a nominal cost from ASTM International Headquarters. Order Adjunct No. [ADJD2136-E-PDF](#). Original adjunct produced in 1988.

3. Summary of Test Method

3.1 Specimens cut from the coated fabric are conditioned at a selected low temperature for a specified duration. While remaining exposed at that temperature, they are then individually placed in a bending apparatus and bent through a specified angle. Failure of the coated fabric is indicated by fracture of the specimen or the appearance of surface cracks in the coating.

4. Significance and Use

4.1 This test method evaluates the ability of coated fabrics to withstand a prescribed bend at an established low temperature. Fabrics coated with polymeric materials are used in many applications requiring low temperature flexing. Data obtained using this test method may be used to predict in-use behavior only in applications in which the conditions of deformation are similar to those specified in this test method. This test method has been found useful for specification purposes but does not necessarily indicate the lowest temperature at which the material may be used.

5. Apparatus

5.1 *Low-Temperature Chamber*—The chamber in which the test specimens are exposed to low temperature shall be sufficient in size to contain the bending fixture used for testing the specimens and to permit the operation of the fixture to bend the specimens without removal from the chamber. The chamber shall also have sufficient work space to permit the conditioning of test specimens in accordance with Section 8 of this test method. It shall be capable of maintaining a uniform atmosphere of cold dry air or any suitable gas at specified temperatures within a tolerance of $\pm 1^\circ\text{C}$ ($\pm 1.8^\circ\text{F}$).

5.2 *Bending Fixture*³—The basic requirements for the device used for bending the test specimens are shown in Fig. 1 and Fig. 2. Dimensions and mass shall conform to Fig. 2. The fixture shall be mounted on a horizontal base of sufficient mass and dimensions to prevent movement or tipping of the fixture during operation.

5.3 *Glass Plates*—A sufficient number of glass plates approximately 125 by 175 mm (5 by 7 in.) shall be used when conditioning all test specimens. All test specimens shall be