



# Standard Test Method for Coated Fabrics—Low-Temperature Bend Test<sup>1</sup>

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 ( $\epsilon$ ) 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 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 and health practices and determine the applicability of regulatory limitations prior to use.* For specific precautionary statement see 8.1.

## 2. Referenced Documents

2.1 *ASTM Standards*:<sup>2</sup>  
**D751 Test Methods for Coated Fabrics**

2.2 *ASTM Adjuncts*:  
Bending Fixture Drawings<sup>3</sup>

## 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.

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D11 on Rubber and is the direct responsibility of Subcommittee D11.10 on Physical Testing.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> Detail drawings of this apparatus are available at a nominal cost from ASTM International Headquarters. Order Adjunct No. **ADJD2136**. Original adjunct produced in 1988.

## 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*<sup>3</sup>—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.

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 placed between glass plates during the exposure period to eliminate any curling or bending. The thickness of the glass plates shall be of such size as to permit ease of handling.

5.4 *Gloves*—A pair of gloves shall be required for handling test specimens within the low-temperature chamber.

5.5 *Lubrication*—A suitable low-temperature grease, if needed, should be applied to the trigger release and hinge pin of the bending apparatus to prevent stiffening during the conditioning period.