



Designation: D 3939 – 97a

Standard Test Method for Snagging Resistance of Fabrics (Mace Test Method)¹

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1. Scope

1.1 This test method determines the snagging resistance of a fabric.

1.2 Studies of fabric snagging have shown that this test method is suitable for a range of woven and knitted fabrics made from textured or untextured yarns containing staple or continuous filaments.^{2,3} This test method is not suitable for (1) open construction fabrics (such as a net) because the points on the mace will snag the felt pad rather than the specimen, (2) very heavy or very stiff fabrics than cannot be made to fit tightly on the drum and felt pad, and (3) tufted or nonwoven fabrics because the apparatus is designed for woven and knitted fabrics.

1.3 The values stated in either acceptable metric units or in other units shall be regarded separately as the standard. The values stated in each system may not be exact equivalents; therefore, each system must be used independently of the other, without combining values in any way. In case of referee decisions, the metric units will prevail.

1.4 *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.* Specific precautionary statements are given in Section 7.

2. Referenced Documents

2.1 ASTM Standards:

- D 123 Terminology Relating to Textiles⁴
- D 1335 Test Method for Tuft Bind of Pile Floor Coverings⁴
- D 1776 Practice for Conditioning Textiles for Testing⁴
- D 2724 Test Methods for Bonded, Fused, and Laminated Apparel Fabrics⁴
- D 3136 Terminology Relating to Permanent Labels for Consumer Textile and Leather Products and Other Textile Floor Coverings⁴

¹ This test method is under the jurisdiction of ASTM Committee D-13 on Textiles and is the direct responsibility of Subcommittee D13.59 on Fabric Test Methods, General.

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² Finnigan, J. A., "Laboratory Prediction of the Tendency of a Fabric to Snag During Wear," *Textile Institute and Industry*, Vol 10, No. 6, 1972, pp. 164–167.

³ Leung, P., and Hershkowitz, R., "Snag- and Fuzz-Resistant Double Knits via Fabric Construction," *Textile Research Journal*, Vol 45, No. 2, 1975, pp. 93–102.

⁴ *Annual Book of ASTM Standards*, Vol 07.01.

D 4467 Practice for Interlaboratory Testing of a Test Method that Produces Non-Normally Distributed Data⁵

D 5362 Test Method for Snagging Resistance of Fabrics (Bean Bag Test Method)⁵

2.2 AATCC Standards:⁶

65 Snag Resistance of Women's Nylon Hosiery (see Note 1)

135 Dimensional Changes in Automatic Home Laundering of Woven and Knit Fabrics

NOTE 1—In 1988, the AATCC voted to withdraw this method from its technical manual; however, the ASTM task group on fabric snagging decided it should be listed as an alternative for testing open construction fabrics.

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *color contrast, n—in textiles*, a general term for a visible color difference between two adjacent areas.

3.1.1.1 *Discussion*—For the purpose of this test method, a color contrast is a visible color difference between a snag and the immediate surrounding area of the fabric that has no defects. Color contrasts often occur when printed fabrics are snagged.

3.1.2 *distortion, n—in fabrics*, a general term for a visible defect in the texture of a fabric.

3.1.2.1 *Discussion*—For the purpose of this test method, snags are composed of different combinations of protrusions and distortions. A distortion is characterized by a group of fibers, yarn, or a yarn segment that is displaced from its normal pattern so that there is a visible change in the texture of the fabric; however, the displaced group of fibers, yarn, or yarn segment does not extend above the fabric surface. Distortions include conditions where (1) tension on a snagged yarn has changed the size of some of the loops within a knitted fabric and the result is a pucker on the surface of the fabric, and (2) tension on a snagged yarn has caused the yarn to break off within a woven fabric and the result is a change in the texture where the yarn used to be.

3.1.3 *protrusion, n—in fabrics*, a general term for a visible group of fibers, a yarn, or a yarn segment that extends above the fabric surface.

3.1.4 *snag, n—in fabrics*, a yarn or part of a yarn pulled or plucked from the surface.

⁵ *Annual Book of ASTM Standards*, Vol 07.02.

⁶ Available from American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709.