



Designation: D4970/D4970M – 22

Standard Test Method for Pilling Resistance and Other Related Surface Changes of Textile Fabrics: Martindale Tester¹

This standard is issued under the fixed designation D4970/D4970M; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

1. Scope

1.1 This test method covers the determination of the resistance to the formation of pills and other related surface changes on textile fabrics using the Martindale tester.

NOTE 1—For other methods, if testing the pilling resistance of textiles, refer to Test Methods [D3511/D3511M](#), [D3512/D3512M](#), and [D3514](#).

1.2 This test method is generally applicable to knit, woven, and nonwoven fabrics; however, material thickness may limit suitability for testing due to specimen holder capacity.

1.3 The fabric may be laundered or dry cleaned before testing as agreed upon among interested parties.

1.4 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 non-conformance with the standard.

1.5 *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.*

1.6 *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.*

¹ This test method is under the jurisdiction of ASTM Committee [D13](#) on Textiles and is the direct responsibility of Subcommittee [D13.60](#) on Fabric Physical Test Methods B.

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2. Referenced Documents

2.1 *ASTM Standards*:²

[D123](#) Terminology Relating to Textiles

[D1776](#) Practice for Conditioning and Testing Textiles

[D3511/D3511M](#) Test Method for Pilling Resistance and Other Related Surface Changes of Textile Fabrics: Brush Pilling Tester

[D3512/D3512M](#) Test Method for Pilling Resistance and Other Related Surface Changes of Textile Fabrics: Random Tumble Pilling Tester

[D3514](#) Test Method for Pilling Resistance and Other Related Surface Changes of Textile Fabrics: Elastomeric Pad

[D4850](#) Terminology Relating to Fabrics and Fabric Test Methods

2.2 *ASTM Adjuncts*:³

[ADJD3512](#) Set of 5 Photographic Standards for Random Tumble Pilling Test

3. Terminology

3.1 For all terminology relating to [D13.59](#), Fabric Test Methods, General, refer to Terminology [D4850](#).

3.1.1 The following terms are relevant to this standard: *fuzz*, *Lissajous figure*, *movement*, *pilling resistance*, *pills*.

3.2 For all other terms related to textiles, refer to Terminology [D123](#).

3.3 *fuzz*, *n*—fiber ends that protrude from the surface of a yarn or fabric.

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 Available from ASTM International Headquarters. Order Adjunct No. [ADJD3512](#).