



Designation: D2524 – 22

Standard Test Method for Breaking Tenacity of Wool Fibers, Flat Bundle Method— $\frac{1}{8}$ in. (3.2 mm) Gage Length¹

This standard is issued under the fixed designation D2524; 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 covers the determination of the breaking tenacity of wool fibers as a flat bundle with a $\frac{1}{8}$ in. (3.2 mm) clamp separation.

1.2 This test method is especially adapted to the fiber bundle clamps and strength testing instruments specified, but may be used on other tensile testing machines when equipped with appropriate adapters to accommodate the prescribed clamps.

1.3 This test method is applicable to wool in any form which can be hand-combed into small bundles of parallelized fibers.

NOTE 1—Other test methods for measuring breaking tenacity of fiber bundles include Test Methods [D1294](#), [D1445](#), and [D540](#).

1.4 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered 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.*

2. Referenced Documents

2.1 *ASTM Standards:*²

[D123 Terminology Relating to Textiles](#)

[D540 Methods of Testing Man-Made Staple Fibers; Replaced by D 3660 \(Withdrawn 1973\)](#)³

[D1294 Test Method for Tensile Strength and Breaking Tenacity of Wool Fiber Bundles 1-in. \(25.4 mm\) Gage Length](#)

[D1445 Test Method for Breaking Strength and Elongation of Cotton Fibers \(Flat Bundle Method\)](#)

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

[D4845 Terminology Relating to Wool](#)

[D2525 Practice for Sampling Wool for Moisture \(Withdrawn 2022\)](#)³

3. Terminology

3.1 For all terminology related to D13.13, Wool and Felt, see Terminology [D4845](#).

3.1.1 The following terms are relevant to this standard: breaking tenacity, constant-rate-of-extension (CRE) type tensile testing machine, constant-rate-of-loading (CRL) type tensile testing machine, constant-rate-of-traverse (CRT) type tensile testing machine, gage length, tenacity, wool.

3.2 For definitions of all other textile terms see Terminology [D123](#).

4. Summary of Test Method

4.1 A bundle of fibers is combed until parallel, placed under a uniform tension sufficient to remove as much crimp as possible without stretching the fibers, and secured in special clamps. The fibers are then cut to a known length, broken in the tensile testing machine, removed from the clamps, and weighed. Breaking tenacity is calculated from the ratio of breaking force to bundle linear density. The length measured under the applied tension is the basis for computing linear density from bundle mass.

5. Significance and Uses

5.1 Test Method D2524 for testing wool fibers for tenacity is considered satisfactory for acceptance testing when the participating laboratories, using a reference wool, have shown acceptable between-laboratory precision. It is recommended

¹ This test method is under the jurisdiction of ASTM Committee [D13](#) on Textiles and is the direct responsibility of Subcommittee [D13.13](#) on Wool and Felt.

Current edition approved June 1, 2022. Published July 2022. Originally approved in 1966. Last previous edition approved in 2013 as D2524 – 13 which was withdrawn in January 2022 and reinstated in June 2022. DOI: 10.1520/D2524-22.

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 The last approved version of this historical standard is referenced on www.astm.org.