



Designation: D1294 – 22

Standard Test Method for Tensile Strength and Breaking Tenacity of Wool Fiber Bundles 1-in. (25.4 mm) Gage Length¹

This standard is issued under the fixed designation D1294; 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 force (or load) and estimation of the tensile strength and tenacity of wool fiber bundles with a 1-in. (25.4 mm) gage length. A procedure for preparation of the fiber bundle is included.

1.2 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. Because the instrument is calibrated in inch-pound units, inch-pound units are shown first, contrary to Committee D13 policy.

NOTE 1—For other methods of measuring breaking tenacity of fiber bundles, refer to Test Methods [D1445](#) and [D2524](#).

NOTE 2—This test method can be used for other fibers that lend themselves to the same kind of preparation but the difference in density must be taken into account when calculating the tensile strength. It is not necessary to know or correct for the density of a fiber when calculating breaking tenacity.

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.*

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

[D76](#) Specification for Tensile Testing Machines for Textiles

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 1953. Last previous edition approved in 2013 as D1294 – 05(2013) which was withdrawn in January 2022 and reinstated in June 2022. DOI: 10.1520/D1294-22.

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.

[D123](#) Terminology Relating to Textiles

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

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

[D2524](#) Test Method for Breaking Tenacity of Wool Fibers, Flat Bundle Method— $\frac{1}{8}$ -in. (3.2-mm) Gage Length (Withdrawn 2022)³

[D2525](#) Practice for Sampling Wool for Moisture (Withdrawn 2022)³

[D4845](#) Terminology Relating to Wool

3. Terminology

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

3.1.1 The following terms are relevant to this standard: gage length; recycled wool; tenacity; tensile strength; wool (as defined in the Wool Products Labeling Act of 1939).

3.2 For all other terminology related to textiles see Terminology [D123](#).

4. Summary of Test Method

4.1 The strength determination is based on the load required to break a bundle of fibers which had been parallelized and held under uniform tension with masking tape. A 1-in. (25.4 mm) spacing between the tapes (and clamps at the zero setting) makes possible the cutting and weighing of this amount of fiber for use in calculating the strength expressed as breaking tenacity in grams-force per tex or tensile strength in pounds-force per square inch.

5. Significance and Use

5.1 Test Method D1294 for the determination of tensile strength may be used for the acceptance testing of commercial shipments of wool, but caution is advised since technicians may fail to get good agreement between results. Comparative tests as directed in [5.1.1](#) may be advisable.

5.1.1 If there are differences of practical significance between reported test results for two laboratories (or more), comparative test should be performed to determine if there is a

³ The last approved version of this historical standard is referenced on www.astm.org.