



## Designation: D4850 – 13 (Reapproved 2017)

# Standard Terminology Relating to Fabrics and Fabric Test Methods<sup>1</sup>

This standard is issued under the fixed designation D4850; 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.

## 1. Scope

1.1 This terminology covers definitions of technical terms used in the industry related to textile fabrics. Terms that are generally understood or adequately defined in other readily available sources are not included. Other terminology standards that have terms related to textile fabrics are shown in 2.1

1.2 *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:<sup>2</sup>

- D737 Test Method for Air Permeability of Textile Fabrics
- D1230 Test Method for Flammability of Apparel Textiles
- D1336 Test Method for Distortion of Yarn in Woven Fabrics
- D1388 Test Method for Stiffness of Fabrics
- D1424 Test Method for Tearing Strength of Fabrics by Falling-Pendulum (Elmendorf-Type) Apparatus
- D1775 Test Method for Tension and Elongation of Wide Elastic Fabrics (Withdrawn 2000)<sup>3</sup>
- D1777 Test Method for Thickness of Textile Materials
- D2261 Test Method for Tearing Strength of Fabrics by the Tongue (Single Rip) Procedure (Constant-Rate-of-Extension Tensile Testing Machine)
- D2594 Test Method for Stretch Properties of Knitted Fabrics Having Low Power

- D2724 Test Methods for Bonded, Fused, and Laminated Apparel Fabrics
- D2906 Practice for Statements on Precision and Bias for Textiles (Withdrawn 2008)<sup>3</sup>
- D3107 Test Methods for Stretch Properties of Fabrics Woven from Stretch Yarns
- D3511 Test Method for Pilling Resistance and Other Related Surface Changes of Textile Fabrics: Brush Pilling Tester
- D3512 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
- D3773 Test Methods for Length of Woven Fabric
- D3774 Test Method for Width of Textile Fabric
- D3775 Test Method for Warp (End) and Filling (Pick) Count of Woven Fabrics
- D3776 Test Methods for Mass Per Unit Area (Weight) of Fabric
- D3786 Test Method for Bursting Strength of Textile Fabrics—Diaphragm Bursting Strength Tester Method
- D3787 Test Method for Bursting Strength of Textiles—Constant-Rate-of-Traversal (CRT) Ball Burst Test
- D3789 Practice for Labeling Cans of Consumer Spray Paint (Withdrawn 1997)<sup>3</sup>
- D3882 Test Method for Bow and Skew in Woven and Knitted Fabrics
- D3883 Test Method for Yarn Crimp and Yarn Take-up in Woven Fabrics
- D3884 Guide for Abrasion Resistance of Textile Fabrics (Rotary Platform, Double-Head Method)
- D3885 Test Method for Abrasion Resistance of Textile Fabrics (Flexing and Abrasion Method)
- D3886 Test Method for Abrasion Resistance of Textile Fabrics (Inflated Diaphragm Apparatus)
- D3887 Specification for Tolerance for Knitted Fabrics (Withdrawn 2017)<sup>3</sup>
- D3939 Test Method for Snagging Resistance of Fabrics (Mace)
- D3990 Terminology Relating to Fabric Defects

<sup>1</sup> This terminology is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.59 on Fabric Test Methods, General.

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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> The last approved version of this historical standard is referenced on [www.astm.org](http://www.astm.org).

D4032 Test Method for Stiffness of Fabric by the Circular Bend Procedure

D4033 Test Method for Resistance to Yarn Slippage at the Sewn Seam in Upholstery Fabrics (Dynamic Fatigue Method) (Withdrawn 2001)<sup>3</sup>

D4034 Test Method for Resistance to Yarn Slippage at the Sewn Seam in Woven Upholstery Fabrics (Withdrawn 2001)<sup>3</sup>

D4157 Test Method for Abrasion Resistance of Textile Fabrics (Oscillatory Cylinder Method)

D4158 Guide for Abrasion Resistance of Textile Fabrics (Uniform Abrasion)

D4390 Practice for Evaluation of the Performance of Terry Bathroom Products for Household Use (Withdrawn 1994)<sup>3</sup>

D4772 Test Method for Surface Water Absorption of Terry Fabrics (Water Flow)

D4350 Test Method for Corrosivity Index of Plastics and Fillers

D4685 Test Method for Pile Fabric Abrasion

D4848 Terminology Related to Force, Deformation and Related Properties of Textiles

D4850 Terminology Relating to Fabrics and Fabric Test Methods

D4851 Test Methods for Coated and Laminated Fabrics for Architectural Use

D4964 Test Method for Tension and Elongation of Elastic Fabrics (Constant-Rate-of-Extension Type Tensile Testing Machine)

D4966 Test Method for Abrasion Resistance of Textile Fabrics (Martindale Abrasion Tester Method)

D4970 Test Method for Pilling Resistance and Other Related Surface Changes of Textile Fabrics: Martindale Tester

D5034 Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test)

D5035 Test Method for Breaking Force and Elongation of Textile Fabrics (Strip Method)

D5103 Test Method for Length and Length Distribution of Manufactured Staple Fibers (Single-Fiber Test)

D5278 Test Method for Elongation of Narrow Elastic Fabrics (Static-Load Testing)

D5362 Test Method for Snagging Resistance of Fabrics (Bean Bag)

D5378 Performance Specification for Woven and Knitted Shower Curtains for Institutional and Household Use

D5426 Practices for Visual Inspection and Grading of Fabrics Used for Inflatable Restraints

D5430 Test Methods for Visually Inspecting and Grading Fabrics

D5446 Practice for Determining Physical Properties of Fabrics, Yarns, and Sewing Thread Used in Inflatable Restraints

D5587 Test Method for Tearing Strength of Fabrics by Trapezoid Procedure

D5684 Terminology Relating to Pile Floor Coverings

D5793 Test Method for Binding Sites per Unit Length or Width of Pile Yarn Floor Coverings

D6207 Test Method for Dimensional Stability of Fabrics to Changes in Humidity and Temperature

D6614 Test Method for Stretch Properties of Textile Fabrics – CRE Method

D6674 Guide for Proficiency Test Program for Fabrics

D6770 Test Method for Abrasion Resistance of Textile Webbing (Hex Bar Method)

D6797 Test Method for Bursting Strength of Fabrics Constant-Rate-of-Extension (CRE) Ball Burst Test

### 3. Terminology

#### 3.1 Definitions:

**abrasion, *n***—the wearing away of any part of a material by rubbing against another surface. **D3884, D3885, D3886, D4157, D4158, D4685, D4966**

**abrasion cycle, *n***—one complete movement across the surface of a material.

DISCUSSION—The complete movement for an abrasion cycle is dependent on the action of the abrasion machine and the test method used. It may consist of one back-and-forth unidirectional movement or one circular movement, or a combination of both. **D3885**

**abrasion cycle, *n***—for the Martindale Abrasion Tester, 16 rubs required to complete a geometric shape, known as a Lissajous. **D4966**

**abrasion cycle, *n***—in abrasion testing, one or more movements of the abradant across a material surface, or the material surface across the abradant, that permits a return to its starting position.

DISCUSSION—The abrasion cycle is dependent on the programmed motions of the abrasion machine and the test standard used. It may consist of one back-and-forth unidirectional movement such as for the flexing and abrasion test method; a circular movement such as for the rotary platform test method, or a combination of both such as for the inflated diaphragm test method. For the oscillatory cylinder abrasion method, an abrasion cycle consists of one double-rub. **See double-rub.**

**[D13.60] D4157, D6770**

**absorption, *n***—a process in which one material (the absorbent) takes in or absorbs another (the absorbate); as the absorption of moisture by fibers. **[D13.59] D4772**

**accuracy, *n***—of a test method, the degree of agreement between the true value of the property being tested (or accepted standard value) and the average of many observations made according to the test method, preferably by many observers. **[D13.60] D2906, D6674**

**air permeability, *n***—the rate of air flow passing perpendicular through a known area under a prescribed air pressure differential between the two surfaces of a material.

DISCUSSION—Air permeability of fabric at a stated pressure differential between two surfaces of the fabric is generally expressed in SI units as cm<sup>3</sup>/s/cm<sup>2</sup> and in inch-pound units as ft<sup>3</sup>/min/ft<sup>2</sup> calculated in operating conditions. (See **permeability, porosity.**) **D737**

**air-supported roof, *n***—a fabric roof-system that is properly secured and primarily supported and held in place by air pressure. **D4851**

**architectural-use, *n***—in the building trade, a descriptive term for fabrics used in fabric roof-systems or similar industrial applications. (See also **fabric roof-system.**) **D4851**

**bagging**, *n*—any material, such as fabric or other suitable material used to protect commodities during shipment and/or storage.

DISCUSSION—Fabrics may be of the woven, knitted, or non-woven type, and are typically produced with cotton, jute, polyethylene, or polypropylene fibers. **D4850**

**batch sample**, *n*—the material(s) used for the proficiency test study taken from a common roll or garment lot and distributed to the participants. **[D13.60] D6674**

**bending length**, *n*—(1) *general*—a measure of the interaction between fabric weight and fabric stiffness as shown by the way in which a fabric bends under its own weight. It reflects the stiffness of a fabric when bent in one plane under the force of gravity, and is one component of drape; (2) *specific*—the cube root of the ratio of the flexural rigidity to the weight per unit area. **D1388**

**bias**, *n*—*in statistics*, a constant or systematic error in test results. **[D13.60] D6674**

**blister**, *n*—*in bonded, fused, or laminated fabrics*, a bulge, swelling, or similar surface condition on either the face fabric or the backing fabric characterized by the fabric being raised from the plane of the underlying component over a limited area to give a puffy appearance. **D2724**

**bond strength**, *n*—*of bonded, fused, or laminated fabrics*, the tensile force expressed in ounces per 25 mm (1 in.) of width, required to separate the component layers under specified conditions. **D2724**

**bonded fabric**, *n*—a layered fabric structure wherein a face or shell fabric is joined to a backing fabric, such as tricot, with an adhesive that does not significantly add to the thickness of the combined fabrics. (See also **laminated fabric, coated fabric**.) **D2724**

**book fold**, *n*—a fabric doubled selvage to selvage, then folded back and forth upon itself in predetermined lengths. (See also **shoe fold**.)

DISCUSSION—When the piece is completed, the fold-edges on each side are folded once more upon themselves so that the fold-edges are inside, forming a compact package as long as one half the width of the fabric. **D4850**

**bow**, *n*—a fabric condition resulting when filling yarns or knitted courses are displaced from a line perpendicular to the selvages and form one or more arcs across the width of the fabric. (See also **double bow**.) **D3882, D3990**

**braided fabric**, *n*—a structure produced by interlacing three or more ends of yarns in a manner such that the paths of the yarns are diagonal to the vertical axis of the fabric. **D4850**

**breaking force**, *n*—the maximum force applied to a material carried to rupture (compare *breaking point, breaking strength*). **[D13.60] D3884, D3885, D4157, D4848, D5034, D5035, D6770**

**breaking load**, *n*—deprecated term. Use *breaking force*. **[D13.60] D4848, D5034**

**broken end**, *n*—*in woven fabrics*, a void in the warp direction due to yarn breakage. **D3990**

**bubble**—See preferred term *blister*. **[D13.59] D2724**

**burlap**, *n*—a coarse, heavy, plain weave fabric of yarns, such as bast or cotton fiber yarn. **D4850**

**bursting strength**, *n*—the force or pressure required to rupture a textile by distending it with a force, applied at right angles to the plane of the fabric, under specified conditions.

DISCUSSION—The angle of application of force, and the area of the fabric upon which the force is applied varies continuously as the fabric stretches when it is tested as directed in this method. **D6797**

**bursting strength**, *n*—the force or pressure required to rupture a fabric by distending it with a force, applied at right angles to the plane of the fabric, under specified conditions. **D3786, D3787, D3887**

**calibrate**, *n*—to determine and record the relationship between a set of standard units of measure and the output of an instrument or test procedure. **[D13.60] D6674**

**circular bend**, *n*—simultaneous, multidirectional deformation of a fabric in which one face of a flat specimen becomes concave and the other becomes convex. **D4032**

**coated fabric**, *n*—a flexible material composed of a fabric and any adherent polymeric material applied to one or both surfaces. (See also **laminated fabric**.) **D4850, D4851, D5446**

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

DISCUSSION—For the purpose of Test Methods **D3939** and **D5362**, 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. **D3939, D5362**

**constant-rate-of-extension tensile testing machine (CRE)**, *n*—a testing machine in which the rate of increase of the specimen length is uniform with time. **D6797**

**constant-rate-of-extension (CRE) tensile testing machine**—a testing machine in which the rate of increase of specimen length is uniform with time. **[D13.60] D5035**

**constant-rate-of-extension type tensile testing machine (CRE)**, *n*—*in tensile testing*, an apparatus in which the pulling clamp moves at a uniform rate, and the force-measuring mechanism moves a negligible distance with increasing force, less than 0.13 mm (0.005 in.). **D3787**

**constant-rate-of-load (CRL) tensile testing machine**—a testing machine in which the rate of increase of the load being applied to the specimen is uniform with time after the first 3 s. **[D13.60] D4964, D5035, D5034**

**constant-rate-of-traverse (CRT) tensile testing machine**—a testing machine in which the pulling clamp moves at a uniform rate and the load is applied through the other clamp which moves appreciably to actuate a weighing mechanism, so that the rate of increase of load or elongation is dependent