



Designation: D3597 – 02 (Reapproved 2018)<sup>ε1</sup>

## Standard Performance Specification for Woven Upholstery Fabrics—Plain, Tufted, or Flocked<sup>1</sup>

This standard is issued under the fixed designation D3597; 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.

<sup>ε1</sup> NOTE—Editorial changes were made throughout in December 2018.

### 1. Scope

1.1 This performance specification covers the performance requirements for plain, tufted, or flocked woven upholstery fabrics as used in the manufacture of new indoor furniture. These requirements apply to both the warp and filling directions for those factors where each fabric direction is pertinent.

1.2 This performance specification is not applicable to fabrics used in porch, deck, or lawn furniture; nor for knitted fabrics, bonded or laminated fabrics, or surface-coated fabrics (such as vinyls and urethanes).

1.3 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.

1.4 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *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>

**D123 Terminology Relating to Textiles**

**D434 Test Method for Resistance to Slippage of Yarns in Woven Fabrics Using a Standard Seam (Withdrawn 2003)<sup>3</sup>**

**D1424 Test Method for Tearing Strength of Fabrics by Falling-Pendulum (Elmendorf-Type) Apparatus**

**D2262 Test Method for Tearing Strength of Woven Fabrics by the Tongue (Single Rip) Method (Constant-Rate-of-Traverse Tensile Testing Machine) (Withdrawn 1995)<sup>3</sup>**

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

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

#### 2.2 AATCC Test Methods:<sup>4</sup>

**Test Method 8 AATCC Colorfastness to Crocking: Crockmeter Method**

**Test Method 16.3 Colorfastness to Light: Xenon Arc**

**Test Method 23 Colorfastness to Burnt Gas Fumes**

**Test Method 107 Colorfastness to Water**

**Test Method 116 Colorfastness to Crocking: Rotary Vertical Crockmeter Method**

**Test Method 129 Colorfastness to Ozone in the Atmosphere Under High Humidities**

**Evaluation Procedure 1 Gray Scale for Color Change**

**Evaluation Procedure 8 AATCC 9-Step Chromatic Transference Scale**

#### 2.3 Federal Standard:

**16CFR, Chapter II-Consumer Product Safety Commission, Subchapter D-Flammable Fabrics Act Regulation<sup>5</sup>**

#### 2.4 Military Standard:

**ASQ/ANSI Z1.4 Sampling Procedures and Tables for Inspection by Attributes<sup>6</sup>**

<sup>1</sup> This performance specification is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.63 on Home Furnishings.

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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).

<sup>4</sup> AATCC Technical Manual, available from American Association of Textile Chemists and Colorists (AATCC), P.O. Box 12215, Research Triangle Park, NC 27709, <http://www.aatcc.org>.

<sup>5</sup> Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

<sup>6</sup> Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

2.5 *Non-Government Organization Standard: Specifications Standards Test Procedures for Upholstered Furniture Fabrics*<sup>7</sup>  
*Guides for the Household Furniture Industry*<sup>8</sup>

NOTE 1—Reference to documents in this standard give only the permanent part of the designation of ASTM, AATCC, or other test methods and standards. The current editions of each test method cited shall prevail.

### 3. Terminology

3.1 For definitions of textile terms used in this performance specification, refer to Terminology **D123**. Definitions found in a dictionary of common terms are suitable for terms used in this performance specification.

### 4. Significance and Use

4.1 Fabrics intended for this end-use should meet all of the requirements listed in **Table 1**.

4.2 It should be recognized that fabrics can be produced utilizing an almost infinite number of combinations of construction variables (e.g., type of fibers, percentage of fibers, yarn twist, yarn number, warp and pick count, chemical and mechanical finished). Additionally, fashion or aesthetics dictate that the ultimate consumer may find acceptable articles made from fabrics that do not conform to all of the requirements in **Table 1**.

<sup>7</sup> Issued in 1969 by the National Association of Furniture Manufacturers and the National Retail Furniture Association. Available from Home Furniture Manufacturers Assn., P. O. Box HP-7, High Point, NC 27261.

<sup>8</sup> Available from the Bureau of Consumer Protection, Federal Trade Commission, Washington, DC 20580.

4.2.1 Hence, no single performance specification can possibly apply to all the various fabrics that could be utilized for this end-use.

4.3 The uses and significance of particular properties and test methods are discussed in the appropriate section of the specified test methods.

### 5. Specification Requirements

5.1 The properties of woven upholstery fabrics (plain, tufted, or flocked) shall conform to the specification requirements in **Table 1**.

### 6. Test Methods (See **Note 1**)

6.1 *Breaking Strength*—Determine the dry breaking force in the standard atmosphere for testing textiles, as directed in Test Method **D5034**, using a constant rate of extension (CRE) tensile testing machine.

6.2 *Tear Strength*—Determine the tear strength in accordance with Test Method **D2262**.

NOTE 2—If preferred, use of Test Method **D1424** is permitted with existing requirements as given in this standard. However, in case of controversy, Test Method **D2262** shall prevail.

6.3 *Resistance to Yarn Slippage*:

6.3.1 Determine the resistance to yarn slippage in accordance with Test Method **D434**. Regardless of the disclaimer found in 1.2 of Test Method **D434**, this procedure is applicable with the following modifications.

6.3.2 Sew the seam using a minimum of seven and a maximum of eight stitches per inch (320 stitches per metre).

**TABLE 1 Specification Requirements**

| Characteristics                              | Requirements                             | Section |
|----------------------------------------------|------------------------------------------|---------|
| Breaking strength (load)                     | 222 N (50 lbf), min                      | 6.1     |
| Tongue tear strength                         | 27 N (6 lbf), min                        | 6.2     |
| Resistance to yarn slippage                  | 111 N (25 lbf), min                      | 6.3     |
| Surface abrasion <sup>A</sup>                |                                          |         |
| Light-duty                                   | 3000 cycles (double rubs), min           | 6.4     |
| Medium-duty                                  | 9000 cycles (double rubs), min           | 6.4     |
| Heavy-duty                                   | 15,000 cycles (double rubs), min         | 6.4     |
| Dimensional change:                          |                                          |         |
| Warp or filling                              | 5.0% shrinkage, max to<br>2.0% gain, max | 6.5     |
| Colorfastness to: <sup>B</sup>               |                                          |         |
| Water, <sup>C</sup> Color Change             | grade 4, <sup>D</sup> min                | 6.6     |
| Solvent, <sup>C</sup> Color Change           | grade 4, <sup>D</sup> min                | 6.7     |
| Burnt gas fumes-2 cycles                     | grade 4, <sup>D</sup> min                | 6.8     |
| Crocking:                                    |                                          |         |
| Dry                                          | grade 4, <sup>E</sup> min                | 6.9     |
| Wet                                          | grade 3, <sup>E</sup> min                | 6.9     |
| Light-40 AATCC Fading Units                  | grade 4, <sup>D</sup> min                | 6.10    |
| Ozone 1 cycle                                | grade 4, <sup>D</sup> min                | 6.11    |
| Retention of hand, character, and appearance | no significant change                    | 6.12    |
| Durability of back coating                   | no significant change                    | 6.13    |
| Flammability                                 | pass                                     | 6.14    |
| FTC Requirements                             | pass                                     | 6.15    |

<sup>A</sup> For guideline purposes see 6.4.1.

<sup>B</sup> Class in the colorfastness requirements is based on a numerical scale of 5 for negligible for no colorchange or color transfer to 1 for very severe color change or color transfer.

<sup>C</sup> For guidelines purposes—See Section 6.6.2.

<sup>D</sup> AATCC Gray Scale for Color Change.

<sup>E</sup> AATCC 9-Step Chromatic Transference Scale.