



Designation: ~~D7020~~—14 D7020 – 22

## Standard Performance Specification for Woven Blouse, Dress, Dress Shirt & Sport Shirt Fabrics<sup>1</sup>

This standard is issued under the fixed designation D7020; 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 performance specification covers fabrics for woven blouses, dresses, dress shirts, and sport shirts.
- 1.2 This performance specification is not applicable to woven fabrics used for interlinings.
- 1.3 These requirements apply to the length and width directions for those properties where fabric direction is pertinent.
- 1.4 When a fabric requires special treatment, specific methods will be described as they are developed for that material, and such special tests will have precedence over these general requirements.

1.5 The following precautionary caveat pertains only to the test methods described in this performance specification: *This standard may involve hazardous materials, operations, and equipment. 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 and health practices, 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 (See Note 1)

#### 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- D434 Test Method for Resistance to Slippage of Yarns in Woven Fabrics Using a Standard Seam (Withdrawn 2003)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
- D2261 Test Method for Tearing Strength of Fabrics by the Tongue (Single Rip) Procedure (Constant-Rate-of-Extension Tensile Testing Machine)
- D5034 Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test)
- D7022 Terminology Relating to Apparel (Withdrawn 2022)<sup>3</sup>

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

- 8TM8 Colorfastness to Crocking: AATCC-Crockmeter Method
- 15TM15 Colorfastness to Perspiration

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.61 on Apparel. Current edition approved Feb. 1, 2014/Nov. 1, 2022. Published March 2014/December 2022. Originally approved in 2005. Last previous edition approved 2012/2014 as D7020-05(2012)-D7020-14. DOI: 10.1520/D7020-14.10.1520/D7020-22.

<sup>2</sup> 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.

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

<sup>4</sup> Available from American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709.

- ~~16~~TM16.3 Colorfastness to Light
- ~~23~~TM23 Colorfastness to Burnt Gas Fumes
- ~~64~~TM61 Colorfastness to ~~Laundering, Home and Commercial Laundering~~; Accelerated
- ~~H6~~TM116 Colorfastness to Crocking: Rotary Vertical Crockmeter Method
- ~~I24~~TM124 Appearance of Fabrics After ~~Repeated-Home Launderings~~Laundering
- ~~I32~~TM132 Colorfastness to Dry Cleaning
- ~~I35~~TM135 Dimensional Changes of Fabrics after Home Laundering
- ~~I58~~TM158 Dimensional Changes on Drycleaning in Perchloroethylene: Machine Method
- ~~I72~~TM172 Colorfastness to Powdered Non-Chlorine Bleach in Home Laundering
- ~~I88~~TM188 Colorfastness to Sodium Hypochlorite Bleach in Home Laundering

2.3 *Federal Standards*:<sup>5</sup>

16 CFR 1610 Flammable Fabrics Act Regulations

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

### 3. Terminology

3.1 For definitions of textile terms used in this specification, refer to the Terminologies **D123** and **D7022**. For terms relating to chemical and colorfastness testing refer to specific AATCC methods.

3.2 Definitions found in a dictionary of common terms are suitable for terms found in this 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 finishes). 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**.

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 sections of the specified test methods.

### 5. Test Methods (see **Note 1**)

5.1 *Breaking Strength*—Determine the breaking strength as directed in Test Method **D5034**, using a constant rate of extension (CRE) tensile testing machine.

NOTE 2—If preferred, the use of a constant rate of traverse (CRT) tensile testing machine is permitted. There may be no overall correlation between the results obtained with the CRT machine and the CRE machine. Consequently, these two breaking force testers can not be used interchangeably. In case of controversy, the CRE method (Test Method **D5034**) shall prevail.

5.2 *Resistance to Yarn Slippage*—Determine the resistance to yarn slippage as directed in Test Method **D434**.

5.3 *Tearing Strength*—Determine the tearing strength as directed in Test Method **D1424**.

NOTE 3—If preferred, use of Test Method **D2261** is permitted with existing requirements as given in this standard. There may be no overall correlation between the results obtained with the tongue tear method (Test Method **D2261**) and the Elmendorf machine (**D1424**). Consequently, these two tear testers cannot be used interchangeably. In the case of controversy, Test Method **D1424** shall prevail.

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

**TABLE 1 Performance Requirements for Woven Blouse, Dress, Dress Shirt & Sport Shirt Fabrics**

Characteristic	Minimum Requirements				Section
	Blouse & Dress Fabrics		Shirt Fabrics		
	Sheer Fabrics	Non-sheer Fabrics	Dress Shirt Fabrics	Sports Shirt Fabrics	
Breaking Strength (CRE) <sup>A</sup>	67N (15 lbf)	111N (25 lbf)	111N (25 lbf)	111N (25 lbf)	5.1
Resistance to Yarn Slippage; 6mm (¼ in.) separation	45N (10 lbf)	67N (15 lbf)	67N (15 lbf)	89N (20 lbf)	5.2
Resistance to Yarn Slippage; 6 mm (¼ in.) separation	45N (10 lbf)	67N (15 lbf)	67N (15 lbf)	89N (20 lbf)	5.2
Tearing Strength <sup>A</sup>	4.5N 1.0 (lbf)	6.7 (1.5 lbf)	6.7 (1.5 lbf)	6.7 (1.5 lbf)	5.3
Dimensional change:					
Pressing			2.0 %, maximum		5.4.1
After 5 launderings			3.0 %, maximum		5.4.2
After 3 dry cleanings			2.0 %, maximum		5.4.3
Colorfastness to:					
Laundering: <sup>B</sup>					5.5.1
Shade change			Grade 4		
Staining			Grade 3		
Dry cleaning					5.5.2
Shade Change			Grade 4		
Sodium Hypochlorite Bleach					5.5.3
Shade Change			Grade 4		
Non-Chlorine Bleach					5.5.3
Shade Change			Grade 4		
Burnt gas fumes					5.5.4
Shade change (1 cycle each original & after 1 cleaning)			Grade 4		
Crocking: <sup>B</sup>					5.5.5
Dry			Grade 4		
Wet			Grade 3		
Perspiration: <sup>B</sup>					5.5.6
Shade change			Grade 4		
Staining			Grade 3		
Light (Xenon-arc)			Grade 4		5.5.7
20 AATCC fading units					
Light (Xenon-arc)			Grade 4		5.5.7
20 AFU					
Fabric Appearance			SA 3.5		5.6
Flammability -16 CFR 1610			Class 1		5.7

<sup>A</sup>There is more than one method that can be used to measure breaking strength, tearing strength and colorfastness. These methods cannot be used interchangeably since there may be no overall correlation between them (see [Note 2](#), [Note 3](#), and [Note 63](#)).

<sup>B</sup>See [Note 5](#).

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<https://standards.iteh.ai/catalog/standards/sist/40e6b159-c490-43d6-bebe-4edef5c0e7fc/astm-d7020-22>

#### 5.4 Dimensional Change:

5.4.1 *Pressing and Finishing During Garment Manufacturing*—Determine the dimensional change during pressing and finishing as directed in ~~AATCC Method 135~~. TM135.

5.4.2 *Laundering*—Determine the dimensional change after laundering as directed in the applicable procedure in ~~AATCC test Method 135~~. TM135.

5.4.3 *Drycleaning*—Determine the dimensional change after drycleaning as directed in ~~AATCC Test Method 158~~. TM158.

NOTE 4—Launderable fabrics are expected normally to be drycleaned, except where all or part of the fabric will not withstand drycleaning. For example, the fabric could contain a functional finish soluble in the solvent, or the fiber could be degraded by the solvent, which would be the case with poly (vinyl chloride) fiber. If a fabric would be harmed by ALL methods of care except for drycleaning, it should be considered Dryclean only.

#### 5.5 Colorfastness:

5.5.1 *Laundering*—Determine the colorfastness to laundering as directed in ~~AATCC Method 61~~. TM61.

NOTE 5—It has been reported that the results for staining, obtained by standard AATCC Test Methods, on fabrics dyed to dark shades that contain a combination of polyester and spandex, or their blends, may not show the full staining propensity of such fabrics in consumer use. It is, therefore, recommended that the staining results obtained by these tests not be used for acceptance testing of such fabrics.