Designation: ~~D4155 – 14~~ D4155 – 22

Standard Performance Specification for Women's and Girls' Woven Sportswear, Shorts, Slacks, and Suiting Fabrics[1]

This standard is issued under the fixed designation D4155; 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 performance specification covers woven fabrics comprised of any textile fiber or mixture of fibers used in women's and girls' sportswear, or suitings.

1.2 These requirements apply to both the length and width directions for those properties where fabric direction is pertinent.

1.3 This performance specification is not applicable to woven fabrics used for interlinings, jeans, and dungarees.

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~~ safety, health, and ~~health~~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:*[2]

D123 Terminology Relating to Textiles

D434 Test Method for Resistance to Slippage of Yarns in Woven Fabrics Using a Standard Seam (Withdrawn 2003)[3]

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)

D2262 Test Method for Tearing Strength of Woven Fabrics by the Tongue (Single Rip) Method (Constant-Rate-of-Traverse Tensile Testing Machine) (Withdrawn 1995)[3]

D2724 Test Method for Bond Strength of Bonded, Fused, and Laminated Apparel Fabrics

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

2.2 *AATCC Test Methods:*[4]

~~8~~TM8 Colorfastness to Crocking—AATCC Crockmeter Method

~~15~~TM15 Colorfastness to Perspiration

[1] 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~~November 2022. Originally approved in 1982. Last previous edition approved in ~~2012~~2014 ~~D4155 – 01~~D4155 – 14.~~(2012).~~ DOI: ~~10.1520/D4155-14.~~10.1520/D4155-22.

[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.

[4] Available from American Association of Textile Chemists and Colorists (AATCC), P.O. Box 12215, Research Triangle Park, NC 27709, http://www.aatcc.org.

16TM16.3 Colorfastness to LightLight: Xenon-Arc
23TM23 Colorfastness to Burnt Gas Fumes
61TM61 Colorfastness to Washing, Domestic and Laundering, Commercial Accelerated
116TM116 Colorfastness to Crocking; Rotary Vertical, Crockmeter Method
119TM119 Color Change Due to Flat Abrasion (Frosting): Screen Wire Method
124TM124 Appearance of Durable Press Fabrics after Repeated Home Laundering
132TM132 Colorfastness to Dry Cleaning
135TM135 Dimensional Changes in Automatic Home Laundering of Durable Press Woven or Knit Fabricsof Fabrics after Home Laundering
TM172 Colorfastness to Powdered Non-chlorine Bleach in Home Laundering
188TM188 Colorfastness to Chlorine Sodium Hypochlorite Bleach in Home Laundering
Evaluation Procedure 1EP1 Gray Scale for Color Change
Evaluation Procedure 2EP2 Gray Scale for Staining
Evaluation Procedure 3EP8 AATCC 9-Step Chromatic Transference Scale

2.3 *Federal Standard:*[5]

16 CFR, CFR 1610, Chapter II-Consumer Product Safety Commission Subchapter D-Flammable Fabrics Act Regulations

2.4 *Military Standard:*[6]

MIL-STD-105D Sampling Procedures and Tables for Inspection by Attributes

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 editions of each test method cited shall prevail.

3. Terminology

3.1 *Definitions:*

3.1.1 For definitions of textile terms used in this specification, refer to the individual ASTM and AATCC test methods and to Terminology D123.

3.2 Definitions found in a dictionary of common terms are suitable for this specification.

4. Specifications Requirements

4.1 The properties of woven fabrics for women's and girls' sportswear and suitings shall conform to the specification requirements in Table 1.

5. Significance and Use

5.1 Upon mutual agreement between the purchaser and the supplier, fabrics intended for this end use should meet all of the requirements listed in Table 1 of this specification.

5.2 It is recognized that for purposes of fashion or aesthetics the ultimate consumer of articles made from these fabrics may find acceptable fabrics that do not conform to all of the requirements in Table 1. Therefore, one or more of the requirements listed in Table 1 may be modified by mutual agreement between the purchaser and the supplier.

5.2.1 In such cases, any references to the specification shall specify that: "This fabric meets ASTM Specification D4155 except for the following characteristic(s)."

5.3 Where no prepurchase agreement has been reached between the purchaser and the supplier, and in case of controversy, the requirements listed in Table 1 are intended to be used as a guide only. As noted in 5.2, ultimate consumer demands dictate varying performance parameters for any particular style of fabric.

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

[5] Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, http://www.access.gpo.gov.

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

TABLE 1 Specification Requirements

NOTE 1—Grade for colorfastness and ~~durable press~~smoothness appearance (SA) rating is based on a numerical scale of 5 for negligible or no color change, color transfer, or wrinkle to 1 for very severe color change, color transfer, or wrinkle.

Characteristics	Requirements	Section
Breaking strength (load) CRE or CRT[A]		7.1
Worsted and cotton count yarns:		
Warp	155 N (35 lbf) min	
Filling	133 N (30 lbf) min	
Woolen run yarns, each direction	111 N (25 lbf) min	
Yarn slippage, 6.3-mm (¼-in.) separation at	89 N (20 lbf) min	7.2
Tear strength	8.9 N (2.0 lbf) min	7.3
~~Fabric appearance (see 7.4.1.1)~~	~~DP 3.5[B] min~~	~~7.4~~
Fabric smoothness appearance (see 7.4.1.1)	SA 3.5[B] min	7.4
Colorfastness:		
Burnt gas fumes—1 cycle		7.5.1
Shade change, original fabric	Grade 4[C] min	
Shade change, after one laundering or one drycleaning	Grade 4[C] min	
Laundering:[F]		
Shade change	Grade 4[C] min	7.5.2
Staining	Grade 3[D] min	
Drycleaning:		
Shade change	Grade 4[C] min	7.5.3
Perspiration:[F]		
Shade change	Grade 4[C] min	7.5.4
Staining	Grade 3[D] min	
~~Light (40 AATCC FU) (xenon-arc)[A]~~	~~Grade 4[C] min~~	~~7.5.5~~
Light (40 AFU) (xenon-arc)[A]	Grade 4[C] min	7.5.5
Crocking:[F]		
Dry	Grade 4[E] min	7.5.6
Wet	Grade 3[E] min	
Frosting:		
Shade change	Grade 4[C] min	7.5.7
Chlorine Bleach	Grade 4[C] , min	7.5.8
Non-chlorine Bleach	Grade 4[C] , min	7.5.9
Dimensional change:		7.6
Pressing and finishing	2 % max	7.6.1
Laundering	3 % max	7.6.2
Drycleaning	2 % max	7.6.3
~~Flammability~~	~~pass~~	~~7.7~~
Flammability	Class 1	7.7

[A] More than one method can be used to measure these properties. These methods cannot be used interchangeably, since there may be no overall correlation between them (see Note 2, ~~Note 4, and~~ and Note ~~7~~4).
[B] For durable press fabrics only.
[C] AATCC Gray Scale for Color Change.
[D] AATCC Gray Scale for Staining.
[E] ~~AATCC~~ 9-Step Chromatic Transference Scale.
[F] See Note 5.

6. Sampling

6.1 *Lot Sample*—As a lot sample for acceptance testing, take at random the number of rolls as directed in an applicable specification or other agreement between the purchaser and the supplier, such as an agreement to use MIL-STD-105D.

6.2 *Laboratory Sample*—From each roll or piece in the lot sample, cut two laboratory samples the full width of the fabric and at least 375 mm (15 in.) along the selvage.

7. Test Methods (See Note 1)

7.1 *Breaking Force*—Determine the dry breaking force as directed in Test Method D5034, using a constant rate of ~~traverse (CRT)~~extension (CRE) tensile testing machine with the speed of the pulling clamp at ~~300~~300 mm ± 10 mm ~~(12~~(12 in. ± 0.5 in.)/min.

NOTE 2—~~If preferred,~~ Historically, the use of a ~~constant-rate-of-extension (CRE)~~constant-rate-of-traverse (CRT) testing machine ~~is permitted.~~was used. The crosshead speed should be as agreed between the purchaser and the supplier. There may be no overall correlation between the results obtained with the CRT machine and the CRE machine, consequently, these two breaking load testers cannot be used interchangeably. In case of controversy, the CRT machine will prevail.