



Designation: D 3780 – 95a

Standard Performance Specification for Men's and Boys' Woven Dress Suit Fabrics and Woven Sportswear Jacket, Slack, and Trouser Fabrics¹

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1. Scope

1.1 This performance specification covers men's and boys' woven dress suit fabrics and woven sportswear jacket, slack, and trouser fabrics composed of any textile fiber or mixture of textile fibers.

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 The following safety hazards caveat pertains only to the test method described in this specification. *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 and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- D 123 Terminology Relating to Textiles²
- D 434 Test Method for Resistance to Slippage of Yarns in Woven Fabrics Using a Standard Seam²
- D 1424 Test Method for Tear Resistance of Woven Fabrics by Falling-Pendulum (Elmendorf) Apparatus²
- D 2261 Test Method for Tearing Strength of Woven Fabrics by the Tongue (Single Rip) Method (Constant-Rate-of-Extension Tensile Testing Machine)²
- D 2262 Test Method for Tearing Strength of Woven Fabrics by the Tongue (Single Rip) Method (Constant Rate-of-Traverse Tensile Testing Machine)²
- D 2724 Test Methods for Bonded, Fused, and Laminated Apparel Fabrics²
- D 2905 Practice for Statements on Number of Specimens for Textiles²
- D 5034 Test Method for Breaking Force and Elongation of Textile Fabrics (Grab Test)³

2.2 AATCC Test Methods:⁴

- 8 Colorfastness to Crocking: AATCC Crockmeter Method
- 15 Colorfastness to Perspiration
- 16 Colorfastness to Light
- 23 Colorfastness to Burnt Gas Fumes
- 61 Colorfastness to Washing, Domestic, and Laundering, Commercial: Accelerated
- 96 Dimensional Changes in Laundering of Woven and Knitted Textiles Except Wool
- 116 Colorfastness to Crocking: Rotary Vertical Crockmeter Method
- 119 Color Change Due to Flat Abrasion (Frosting): Screen Wire Method
- 124 Appearance of Durable Press Fabrics After Repeated Home Launderings
- 132 Colorfastness to Drycleaning
- 135 Dimensional Changes in Automatic Home Laundering of Durable Press Woven or Knit Fabrics Evaluation Procedure 1 Gray Scale for Color Change Evaluation Procedure 2 Gray Scale for Staining Evaluation Procedure 3 AATCC Chromatic Transference Scale

2.3 Federal Standards:-

- 16 CFR 1610 Standard for Flammability of Clothing Textiles⁵
- 16 CFR, Chapter II—Consumer Product Safety Commission, Subchapter D—Flammable Fabrics Act Regulations⁵

2.4 Military Standard:

- MIL-STD-105D Sampling Procedures and Tables for Inspection by Attributes⁶

NOTE 1—Reference to test methods in this specification gives 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*—For definitions of textile terms used in this specification, refer to the individual ASTM and AATCC test methods and to Terminology D 123. Definitions found in a

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² *Annual Book of ASTM Standards*, Vol 07.01.

³ *Annual Book of ASTM Standards*, Vol 07.02.

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

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

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—Class in a, b, c, and DP rating is based on a numerical scale of 5 for negligible or no color change, color transfer, or wrinkle to 1 for severe color change, color transfer, or wrinkle. The numerical rating in Table 1 or a higher numerical rating is acceptable.

Characteristic	Requirements		Section
	Suit, Slack, Trouser	Jacket	
Breaking strength (load) (CRT):			7.1
Worsted count yarns	178 N (40 lbf), min	133 N (30 lbf), min	
Cotton count yarns	178 N (40 lbf), min	133 N (30 lbf), min	
Woolen run yarns	133 N (30 lbf), min	111 N (25 lbf), min	
Yarn slippage	6.3-mm (1/4-in.) separation at 111 N (25 lbf), min	89 N (20 lbf), min	7.2
Tear strength	11 N (2.5 lbf), min	9 N (2 lbf)	7.3
Dimensional Change:			
Pressing and finishing (in each direction)	2 % max	2 % max	7.4.1
After five launderings (in each direction)	3 % max	3 % max	7.4.2
After three dry cleanings (in each direction)	2 % max	2 % max	7.4.3
Colorfastness:			
Burnt gas fumes—2 cycles:			
Shade change, original fabric	Class 4 ^A min	Class 4 ^A min	7.5.1
Shade change after one laundering or one dry cleaning	Class 4 ^A min	Class 4 ^A min	
Laundering:			
Shade change	Class 4 ^A min	Class 4 ^A min	7.5.2
Staining	Class 3 ^B min	Class 3 ^B min	
Dry cleaning:			
Shade change	Class 4 ^A min	Class 4 ^A min	7.5.3
Crocking:			
Dry	Class 4 ^C min	Class 4 ^C min	7.5.4
Wet	Class 3 ^C min	Class 3 ^C min	
Perspiration:			
Shade change	Class 4 ^A min	Class 4 ^A min	7.5.5
Staining	Class 3 ^B min	Class 3 ^B min	
Light (40 AATCC FU) (xenon-arc)	Step 4 ^A min	Step 4 ^A min	7.5.6
Frosting	Class 4 ^A min	Class 4 ^A min	7.5.7
Fabric appearance (See 7.6.1.1)	DP 3.5 ^D min	DP 3.5 ^D min	7.6
Flammability	Class 1 or Class 2	Class 1 or Class 2	7.6

^A AATCC Gray Scale for Color Change.

^B AATCC Gray Scale for Staining.

^C AATCC Chromatic Transference Scale.

^D For durable-press fabrics only.

dictionary of common terms are suitable for terms used in this specification.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *pressing and finishing*—this term takes into account all of the industrial pressing and finishing treatments used in garment production.

NOTE 2—No standard test method is available for reproducing on a laboratory level the results of industrial press or finish treatments, or both, used in the manufacture of woven outerwear garments.⁷

4. Specification Requirements

4.1 The properties of fabrics for men's and boys' woven dress suits and woven sportswear jackets, slacks, and trousers shall conform to the specification requirements in Table 1.

5. Significance and Use

5.1 Upon mutual agreement between the purchaser and the supplier, woven 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 Specification D 3780 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 significance and use of particular properties and test methods are discussed in the appropriate sections of the specified test methods.

6. Sampling

6.1 *Acceptance Testing Lot*—Unless there is prior agreement, consider as a lot for acceptance testing all material of a single item received as a single shipment.

6.2 *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.

6.3 *Laboratory Sample*—From each roll or piece in the lot sample, cut two laboratory samples the full width of the fabric

⁷ The development of a standard test method has been referred to Subcommittee D13.59 on Fabric Test Methods, General.

and at least 375 mm (15 in.) along the selvage.

6.4 *Test Specimens*—Take the number of specimens directed in each of the applicable test methods. Perform the tests on the fabric as it will reach the customer. Any “partially finished” or “post-finished” fabrics should be processed in accordance with the fabric manufacturer’s instructions.

6.5 If the applicable test method does not specify the number of specimens, use the procedures in Practice D 2905 to determine the number of specimens per laboratory sampling unit. Use (1) a reliable estimate of the variability of individual observations on similar materials in the user’s laboratory, (2) a 95 % probability level, and (3) an allowable difference of 5 % of the average between the test results on laboratory sampling units and the average for the laboratory sampling unit. The average for a laboratory sampling unit is the average that would be obtained by applying the test method to all of the potential specimens from that laboratory sampling unit.

7. Test Method (See Note 1)

7.1 *Breaking Force*—Determine the dry breaking force, in the standard atmosphere for testing textiles, as directed in Test Method D 5034, using a constant rate of traverse (CRT) tensile testing machine with the speed of the pulling clamp at 300 ± 10 mm (12 ± 0.5 in.)/min.

NOTE 3—If preferred, the use of a constant-rate-of-extension (CRE) tensile testing machine is permitted. The crosshead speed should be as agreed upon between the purchaser and the supplier. There may be no overall correlation between the results obtained with the CRT machine and with the CRE machine. Consequently, these two breaking load testers cannot be used interchangeably. In case of controversy, the CRT method shall prevail.

7.2 *Resistance to Yarn Slippage*—Determine the resistance to yarn slippage as directed in Test Method D 434.

NOTE 4—The precision of Test Method D 434 has not been established, and it may not be suitable for fabrics with low yarn counts.

7.3 *Tear Strength*—Determine the tongue tear strength as directed in Test Method D 1424.

NOTE 5—If preferred, use of Test Methods D 2261 or D 2262 is permitted with existing requirements as given in this specification. There may be no overall correlation between the results obtained with the tongue tear machine and with the Elmendorf machine. Consequently, these two tongue tear testers cannot be used interchangeably. In case of controversy, Test Method D 1424 shall prevail.

7.4 Dimensional Change:

7.4.1 *Pressing and Finishing During Manufacturing*—Mark specimen(s) as directed in Section 4 of AATCC Test Method 135. Press and finish specimen(s) as agreed upon between the purchaser and the supplier with respect to time cycles, temperature, steam, vacuum, and mechanical pressure of the press head. Measure the specimen(s) and calculate the dimensional change as directed in Section 5 of AATCC Test Method 135 (see Note 2).

7.4.1.1 If no agreement has been made between the purchaser and the supplier, press the specimen(s) using a flat-bed steam press as follows:

- (1) Five seconds steam with head up.
- (2) Five seconds dry hot press with head down 293 to 303°F (145 to 151°C) at the press.

(3) Five seconds vacuum, steam off, head down.

(4) Five seconds vacuum, steam off, head up.

7.4.2 *Laundering*—Determine the maximum dimensional change after five launderings as directed in the applicable procedure in AATCC Test Method 135 (Note 6).

7.4.2.1 The wash conditions and drying procedure shall be as specified by the supplier.

7.4.3 *Dry Cleaning*—Determine the maximum dimensional change after three dry cleanings as directed in Test Methods D 2724.

NOTE 6—Specimens prepared for 7.4.1 may be used for 7.4.2 and 7.4.3 as desired. When this is done, subtract the pressing and finishing dimensional change from the total dimensional change to obtain that portion due to laundering or dry cleaning. The dimensional change to pressing and finishing is determined on the fabric as it will reach the user.

7.5 Colorfastness:

7.5.1 *Burnt Gas Fumes*—Determine the colorfastness to burnt gas fumes on the original fabric and after one laundering or one dry cleaning as directed in AATCC Test Method 23.

NOTE 7—Washing conditions shall be the same as those used in 7.4.2.1. Dry-cleaning conditions shall be the same as those used in 7.4.3.

7.5.2 *Laundering*—Determine the colorfastness to laundering as directed in the applicable procedure of AATCC Test Method 61. The test conditions shall be as specified by the seller.

7.5.3 *Dry Cleaning*—Determine colorfastness to dry cleaning as directed in AATCC Test Method 132.

7.5.4 *Crocking*—Determine colorfastness to dry and wet crocking as directed in AATCC Test Method 8 for solid shades and AATCC Test Method 116 for prints or as agreed upon between the purchaser and the supplier.

7.5.5 *Perspiration*—Determine colorfastness to perspiration as directed in AATCC Test Method 15.

7.5.6 *Light*—Determine colorfastness to light as directed in AATCC Test Method 16.

NOTE 8—There are distinct differences in spectral distribution between the various types of machines listed in AATCC Test Method 16, with no overall correlations between them. Consequently, these machines cannot be used interchangeably. In case of controversy, results obtained with the water-cooled xenon-arc machine listed in Option E shall prevail.

7.5.7 *Flat Abrasion (Frosting)*—Determine the color change due to flat abrasion (frosting) as directed in AATCC Test Method 119.

7.6 *Fabric Appearance*—Determine the fabric appearance as directed in AATCC Test Method 124 after laundering using the wash-and-wear cycle or the normal cycle as agreed upon between the purchaser and the seller as specified in 7.4.2.1 for washable fabrics or after dry cleaning as specified in 7.4.3 for dry-cleanable fabrics.

7.6.1 For fabrics not intended for use in “durable-press” garments, determine the fabric smoothness after pressing as specified in 5.12 of AATCC Test Method 96.

7.6.1.1 The fabric smoothness durable-press (DP) rating of such fabrics, and the DP rating of dry-cleaned fabrics, shall have decreased no more than ½ DP rating from that of the fabric before it is laundered or dry-cleaned.

7.7 *Flammability*—The flammability requirements shall be as agreed upon between the purchaser and the supplier,

provided they meet or exceed those of Part 1610 of the Flammable Fabric Act Regulations.

8. Keywords

8.1 dress suit; fabric; performance; specification; sports-wear; trouser

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