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Standard Performance Specification for Woven Slipcover Fabrics[1]

This standard is issued under the fixed designation D 4113; 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 to be used in slipcovers.

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

1.3 *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 Textiles[2]

D 434 Test Method for Resistance to Slippage of Yarns in Woven Fabrics Using a Standard Seam[2]

D 1336 Test Method for Distortion of Yarn in Woven Fabrics[2]

D 1424 Test Method for Tear Resistance of Woven Fabrics by Falling-Pendulum (Elmendorf) Apparatus[2]

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 Fabrics[2]

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

116 Colorfastness to Crocking: Rotary Vertical Crockmeter Method

124 Appearance of Durable Press Fabrics After Repeated Home Launderings

129 Colorfastness to Ozone in the Atmosphere Under High Humidities

132 Colorfastness to Drycleaning

135 Dimensional Changes in Automatic Home Laundering of Woven or Knit Fabrics

Evaluation Procedure No. 1 Gray Scale for Color Change

Evaluation Procedure No. 2 Gray Scale for Staining

Evaluation Procedure No. 3 AATCC Chromatic Transference Scale

2.3 *Other Document:*[5]

UFAC Fabric Classification Test Method for Cigarette Smolder Resistance

2.4 *Military Standard*[6]

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

NOTE 1—Reference to test methods in this specification 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 Terminology D 123 and the Technical Manual of the American Association of Textile Chemists and Colorists.

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

4. Specification Requirements

4.1 The properties of woven fabrics for use in slipcovers shall conform to the specification requirements in Table 1.

5. Significance and Use

5.1 Upon 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

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

[5] Available from UFAC Central, Box 2436, High Point, NC 27261.

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

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TABLE 1 Specification Requirements

NOTE 1—Class for color change, color transfer, 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.

Characteristic	Requirements	Section
Breaking strength (*load*)(CRT)	220 N (50 lbf) min	7.1
Yarn slippage	6-mm (¼-in.) separation at 67 N (15 lbf), min	7.2
Tongue-tear strength	13 N (3.0 lbf) min	7.3
Yarn distortion	2.5 mm (0.10 in), max at 9-N (2-lbf) load	7.4
Dimensional change:		
Laundering	2.5 %, max	7.5.1
Dry cleaning	2.5 %, max	7.5.2
Colorfastness:		
Burnt gas fumes—1 cycle:		7.6.1
Shade change after one laundering or one dry cleaning	Class 4[A], min	
Laundering:		7.6.2
Shade change	Class 4[A], min	
Staining	Class 3[B], min	
Dry cleaning:		7.6.3
Shade change	Class 4[A], min	
Crocking:		7.6.4
Dry	Class 4[C], min	
Wet	Class 3[C], min	
Perspiration:		7.6.5
Shade change	Class 4[A], min	
Staining	Class 3[B], min	
Light (40 AATCC FU) (xenon-arc)	Step 4[A], min	7.6.6
Ozone	Class 4, min	7.6.7
Fabric appearance (see 7.7.1.1)	DP 3.5[D], min	7.7
Flammability:	pass	7.8

[A] AATCC Gray Scale for Color Change.
[B] AATCC Gray Scale for Staining.
[C] AATCC Chromatic Transference Scale.
[D] For durable press fabrics only.

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 upon 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 D 4113 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 methods are discussed in the appropriate sections of the specified methods.

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, 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 2—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 3—The precision of Method D 434 is being established, and it may not be suitable for fabrics with low-yarn counts in terms of ends and picks per inch (see 5.2).

7.3 *Tongue-Tear Strength*—Determine the tongue-tear strength as directed in Test Method D 2262.

NOTE 4—If preferred, the use of Test Methods D 1424 or D 2261 is permitted with existing requirements as given in this specification. There may be no overall correlation between the results obtained with the tongue-tear machines and with the Elmendorf machine. Consequently, these three tear testers cannot be used interchangeably. In case of controversy, Test Method D 2262 shall prevail.

7.4 *Yarn Distortion*—Determine the yarn distortion as directed in Test Method D 1336.

7.5 *Dimensional Change*:

7.5.1 *Laundering*—Determine the maximum dimensional change after five launderings as directed in the applicable procedure in AATCC Test Method 135 or as agreed upon between the purchaser and the supplier (Note 5).

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

7.5.2 *Drycleaning*—Determine the maximum-dimensional change after three dry cleanings as directed in 10.1.1 through 10.1.5 of Test Methods D 2724 or as agreed upon between the purchaser and the supplier (Note 5).

NOTE 5—Launderable fabrics are expected to be dry-cleanable except where all or part of the fabric is not dry-cleanable and is so labeled. For example, the fabric could contain a functional finish that is soluble in the solvent, or the fiber could be degraded by the solvent, as would be the case with poly(vinyl chloride) fiber. "Dry-cleanable" goods are to be dry-cleaned only.

7.6 *Colorfastness*:

7.6.1 *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 after 1 cycle.

NOTE 6—Washing conditions shall be the same as those used in 7.5.1.1. Dry-cleaning conditions shall be the same as those used in 7.5.2.

7.6.2 *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 supplier (Note 5).

7.6.3 *Dry cleaning*—Determine colorfastness to dry cleaning as directed in AATCC Test Method 132 (Note 5).

7.6.4 *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.

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

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

NOTE 7—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.

7.6.7 *Ozone*—Determine the colorfastness to ozone after two cycles as directed in AATCC Test Method 129.

7.7 *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 supplier as specified in 7.5.1.1 for washable fabrics or after dry cleaning as specified in 7.5.2 for dry-cleanable fabrics (see Note 5).

7.7.1 For fabrics not intended for use in durable press determine the fabric smoothness after pressing as specified in 10.2.3 of Test Methods D 2724.

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

7.8 *Flammability*—The flammability requirements shall be as agreed upon between the purchaser and the supplier, provided they meet or exceed applicable federal, state, or local mandatory standards.

7.8.1 All slipcover fabrics shall be evaluated for cigarette ignition resistance by the UFAC Fabric Classification Test Method.

8. Keywords

8.1 fabric; performance; specification; upholstery

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