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Standard Performance Specification for Woven Awning and Canopy Fabrics¹

This standard is issued under the fixed designation D 4847; 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.

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1. Scope

- 1.1 This performance specification covers woven awning and canopy fabrics composed of any textile fiber or mixture of fibers.
- 1.2 These requirements apply to the length and width directions for those properties where fabric direction is pertinent.
- 1.3 The following safety hazards caveat pertains only to the test methods 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 14284 Test Methods for Relaxation and Consolidation Dimensional Changes Tearing Strength of Stabilized Knit Wool Fabrics by Falling-Pendulum Type (Elmendorf)~~²
- ~~D 1424 Test Method for Tear Resistance of Woven Fabrics by Falling-Pendulum (Elmendorf) Apparatus~~²
- ~~D 2261 Test 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 2905 Practice 2905 Practice for Statements on Number of Specimens for Textiles~~²
- D 5034 Test Method for Breaking Force Strength and Elongation of Textile Fabrics (Grab Test)³

2.2 AATCC Test Methods:⁴

- 8 Colorfastness to Crocking: AATCC Crockmeter Method
- 16 Colorfastness to Light
- 22 Water Repellency: Spray Test
- 23 Colorfastness to Burnt Gas Fumes
- 35 Water Resistance: Rain Test
- 116 Colorfastness to Crocking: Rotary Vertical Crockmeter Method
- 129 Colorfastness to Ozone in the Atmosphere under High Humidities
- 138 Shampooing: Washing of Textile Floor Coverings
- Evaluation Procedure 1 Gray Scale for Color Change
- Evaluation Procedure 2 Gray Scale for Staining
- ~~Evaluation Procedure 3~~ 9 Step Chromatic Transference Scale

NOTE 1—References 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 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 D 123.

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.

4. Specification Requirements

4.1 The properties of woven awning and canopy fabrics shall conform to the specification requirements listed in Table 1.

5. Significance and Use

5.1 Upon mutual agreement between the purchaser and the supplier, fabrics

5.1.1 ~~Fabrics intended for this end use should meet all of the requirements listed in Table 1 of this specification. 1.~~

5.2 ~~It is should be recognized that for purposes fabrics can be produced with an almost infinite number of combinations of construction variables (for example, 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 of may find acceptable 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 supplier.~~

5.2.1 ~~If any of the requirements in Table 1 is modified by mutual agreement between the purchaser and the supplier, any reference 1.~~

5.2.1 Hence, no single performance specification can possibly apply to all the specification shall state that: "This fabric meets ASTM Specification D 4847, except various fabrics that could be utilized for the following characteristic(s)."

TABLE 1 Specification Requirements

NOTE 1—Class in a, b, and D.P. rating is based on a numerical scale of 5 for no color change, color transfer, or wrinkle, to 1 for severe color change, color transfer, or wrinkle.

Characteristic	Requirements	Section
Breaking Strength (Load)	660 N (150 lbf), min	7.1
Breaking Strength (Load)	660 N (150 lbf), min	6.1
Yarn Slippage	6 mm (¼ in.) separation	7.2
Yarn Slippage	—at 67 N (15 lbf)	
Yarn Slippage	6 mm (¼ in.) separation	6.2
Yarn Slippage	—at 67 N (15 lbf)	
Tear Strength	44 N (10 lbf) min	7.3
Tear Strength	44 N (10 lbf) min	6.3
Dimensional Change:	3% max	7.4
Dimensional Change:	3% max	6.4
Colorfastness:		
—Burnt Gas Fumes-2 cycles	Class 4 ^A min	7.5.1
—Burnt Gas Fumes-2 cycles	Grade 4 ^A min	6.5.1
—Shade Change After One Laundering	Class 4 ^A min	7.5.1
—Shade Change After One Laundering	Grade 4 ^A min	6.5.1
Crocking		
—Dry	Class 4 ^B min	7.5.2
—Dry	Grade 4 ^B min	6.5.2
—Wet	Class 3 ^B min	7.5.2
—Wet	Grade 3 ^B min	6.5.2
—Light (160 AATCC SFU)	Class 4 ^A min	7.5.3
—Light (160 AATCC SFU)	Grade 4 ^A min	6.5.3
—Ozone—1 cycle	Class 4 ^A min	7.5.4
—Ozone—1 cycle	Grade 4 ^A min	6.5.4
Water Resistance		7.6
Water Resistance		6.6
Categories based on minimum time for 1-g (Original and After One Laundering)		
2 ft (600 mm)	30 s shower	
2 ft (600 mm)	2 min rain	
3 ft (915 mm)	5 min storm	
Water Repellency		7.7
Water Repellency		6.7
Smooth textured fabrics		
Original	90 min	
After laundering	70 min	
Rough textured fabrics		
Original	80 min	
After laundering	70 min	
Flammability	Pass	7.8
Flammability	Pass	6.8

^A AATCC Gray Scale For Color Change.

^B AATCC Chromatic Transference Scale.

~~5.3 Where no pre-purchase agreement has been reached between the purchaser and the supplier, the requirements listed in Table 1 particular properties and test methods are intended to be used as a guide only. As stated in 5.2, ultimate consumer demands dictate varying performance parameters for any particular style of fabric, the specified test methods.~~

~~5.3 The uses and the supplier, and in case of controversy, the requirements listed in Table 1 particular properties and test methods are intended to be used as a guide only. As stated in 5.2, ultimate consumer demands dictate varying performance parameters for any particular style of fabric, the specified test methods.~~

~~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 Samples and Laboratory Samples—For acceptance testing, take lot samples and laboratory samples as directed in each of the applicable test methods.~~

~~6.3 Test Specimens—Take the number of specimens directed in each of the applicable test methods. Perform the tests on the fabric as it reaches the customer. Any “partially finished” or “post-finish” fabrics should be processed in accordance with the fabric manufacturer’s instructions.~~

~~6.4 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 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 cross head speed should be as agreed between the purchaser and the supplier. There may be no overall correlation between the results obtained with the CRT and CRE machines. Consequently, these two testers cannot be used interchangeably. In case of controversy, the CRT method shall prevail.~~

~~7.2 testing~~

~~6.2 Resistance to Yarn Slippage—Determine the resistance to yarn slippage as directed in Test Method D 434.~~

~~NOTE 3—The precision of Test Method D 434 has not been established, and it may not be suitable for fabrics with low yarn counts in terms of ends and picks.~~

~~7.3 Tear Strength—Determine the tear strength as directed in Test Method D 1424. NOTE 4—If preferred, the 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 machines and the Elmendorf machine. Consequently, these three testers cannot be used interchangeably. In case of controversy, Test Method D 1424 shall prevail.~~

~~7.4~~

~~6.4 Dimensional Change—Determine the maximum dimensional change after five cleanings, as directed in AATCC Test Method 138.~~

~~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 drycleaning, as directed in AATCC Test Method 23.~~

~~7.5.2 Crocking—Determine the colorfastness to dry and wet crocking as directed in AATCC Test Method 8 or AATCC Test Method 116, or as agreed to by the purchaser and the supplier. In case of controversy, AATCC Test Method 8 shall prevail.~~

~~7.5.3 Light—Determine the colorfastness to light as directed in AATCC Test Method 16.~~

~~NOTE 5—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.~~

~~7.5.4 Ozone—Determine the colorfastness to ozone as directed in AATCC Test Method 129.~~

~~7.6 Water Resistance (Rain Test)—Determine the water resistance (rain test) on the original fabric, and after one laundering, as directed in AATCC Test Method 35.~~

~~7.7 Water Repellency—Determine the water repellency (spray test) on the original fabric, and after one laundering, as directed in AATCC Test Method 22.~~

~~7.8 Flammability—The flammability requirements shall be agreed upon by the purchaser and supplier, except when regulated by applicable government mandatory standards.~~

87. Keywords

87.1 fabric; performance; specification

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