Designation: D5378 – 12

Standard Performance Specification for Woven and Knitted Shower Curtains for Institutional and Household Use[1]

This standard is issued under the fixed designation D5378; 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 specification covers the evaluation of specific performance characteristics of importance in woven and knitted shower curtains for use in institutional and household environments.

1.2 This specification may be used by mutual agreement between purchaser and supplier to establish purchasing specification requirements.

1.3 The requirements in Table 1 apply to the length and width directions for those properties where fabric direction is pertinent.

1.4 This specification is not applicable for coated, laminated or vinyl product.

1.5 *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:*[2]

D123 Terminology Relating to Textiles

D1776 Practice for Conditioning and Testing Textiles

D2905 Practice for Statements on Number of Specimens for Textiles (Withdrawn 2008)[3]

D3136 Terminology Relating to Care Labeling for Apparel, Textile, Home Furnishing, and Leather Products

D3786 Test Method for Bursting Strength of Textile Fabrics—Diaphragm Bursting Strength Tester Method

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

D6797 Test Method for Bursting Strength of Fabrics Constant-Rate-of-Extension (CRE) Ball Burst Test

D7023 Terminology Relating to Home Furnishings

2.2 *AATCC Methods:*[4]

8 Colorfastness to Crocking: Crockmeter Method

16 Option 1 Colorfastness to Light: Carbon Arc Lamp Continuous Light

16 Option 3 Colorfastness to Light: Xenon-Arc, Continuous Light

35 Water Resistance: Rain Test

61 Colorfastness to Laundering: Accelerated

88B Smoothness of Seams in Fabrics after Repeated Home Laundering

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

96 Dimensional Changes in Commercial Laundering of Woven and Knitted Fabrics Except Wool

116 Colorfastness to Crocking: Rotary Vertical Crockmeter Method

143 Appearance of Apparel and Other Textile End Use Products After Repeated Home Launderings

179 Skewness Change in Fabric and Garment Twist Resulting from Automatic Home Laundering

Evaluation Procedure 1 Gray Scale for Color Change

Evaluation Procedure 2 Gray Scale for Staining

Evaluation Procedure 8 AATCC 9-Step Chromatic Transference Scale

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

3. Terminology

3.1 *Definitions:*

3.1.1 For all terminology related to Home Furnishings see Terminology D7023.

3.1.2 The following terms are relevant to this standard: knitted fabric, shower curtain, woven fabric.

[1] This performance specification is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.63 on Home Furnishings.

Current edition approved Feb. 1, 2012. Published March 2012. Originally approved in 1993. Last previous edition approved in 2000 as D5378 - 93 (2000) which was withdrawn October 2009 and reinstated in February 2012. DOI: 10.1520/D5378-12.

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

TABLE 1 Specification Requirements

NOTE 1—Grade in a, b, and c, is based on a numerical scale of 5 for negligible or no color change or color transfer to 1 for severe color change or color transfer.

Characteristic	Requirement	Section
Breaking Force (Load) (CRT)		7.1.1
Dry	178 N (40 lbf), minimum	
Wet	89 N (20 lbf), minimum	
Bursting Force (Knit Fabrics)	178 N (40 lbf), minimum	7.1.2
Dimensional Change (L× W)	3.0 % maximum	7.1.3
Skew	4.0 % maximum	7.1.4
Colorfastness:		
Laundering		7.1.5.1
Shade change	Grade 4[A] minimum	
Stain	Grade 3[B] minimum	
Crocking		7.1.5.2
Dry	Grade 4[C] minimum	
Wet	Grade 4[C] minimum	
Light (20 AATCC AFU) (xenon arc)	Grade 4[A] minimum	7.1.5.3
Water Resistance		7.1.6
Categories based on minimum time for 1-g weight		
2 ft (600 mm)	2 min rain	
3 ft (915 mm)	5 min storm	
Appearance Retention	Satisfactory	7.2.1

[A]AATCC Gray Scale for Color Change.
[B]AATCC Gray Scale for Staining.
[C]AATCC 9-Step Chromatic Transference Scale.

3.1.3 For definitions of all other textile terms see Terminology D123.

4. Significance and Use

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

4.2 It is recognized that for the purposes of fashion or aesthetics the ultimate consumer of articles made from these fabrics may find acceptable products 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 seller.

4.2.1 In such cases, any references to the specification shall specify that: this product meets Specification D5378 except for the following characteristic(s).

4.3 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 4.2, ultimate consumer demands dictate varying performance parameters for any particular style.

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

5. Sampling

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

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

5.3 *Specimens*—Take the number of specimens directed in each of the applicable test methods. Perform the tests on the product as it reaches the customer. Any "partially finished" or "post-finish" fabrics should be processed in accordance with the fabric manufacturer's instructions.

5.4 If the applicable test method does not specify the number of specimens, use the procedures in Practice D2905 to determine the number of specimens per laboratory sample unit. Use (1) a reliable estimate of the responsibility 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 of a laboratory sampling unit is the average that would be obtained by applying the test method to all of the potential specimens from the laboratory sampling unit.

6. Specification Requirements

6.1 *Fabrics*—The properties of fabrics for institutional and household shower curtains shall conform to the specification requirements in Table 1.

6.2 *Product*—The properties to be evaluated and the acceptance criteria assigned to these areas shall be set by mutual agreement between purchaser and supplier.

7. Testing for Household and Institutional Use

7.1 *Test Methods:–Fabric*—The physical and colorfastness properties of the fabric in the shower curtains products shall be evaluated as directed as follows:

7.1.1 *Breaking Force*—Determine the breaking force as directed in Test Method D5034, using a constant-rate-of-extension (CRE) tensile testing machine.

NOTE 2—If preferred, 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 cannot be used interchangeably. In case of controversy the CRE method shall prevail.

7.1.2 *Bursting Force—(Knitted Fabrics Only)*—Determine the bursting force of knit fabrics in the standard atmosphere for textile testing, as described in Test Method D3786 or Test Method D6797 as agreed between the purchaser and supplier.

NOTE 3—There is no overall correlation between the results obtained with the CRE machine equipped with a bursting attachment and the diaphragm bursting tester. Consequently, these testers cannot be used interchangeably. In the case of controversy, the motor-driven diaphragm tester method (Test Method D3786) shall prevail.

NOTE 4—The precision of the bursting strength testers has not been established. The methods are accordingly not recommended for acceptance testing unless preceded by an interlaboratory check in the laboratories of the purchaser and the seller, using randomized replicate specimens of the material to be evaluated.

7.1.3 *Dimensional Change*—Determine the maximum dimensional change after five launderings following permanently attached care label instructions, and as directed in AATCC

Method 135 for household use or AATCC Method 96 for institutional use as agreed by the purchaser and the seller.

7.1.3.1 The wash conditions and drying procedure shall be as specified by the seller when using AATCC Methods 135 for household products or AATCC Method 96 for institutional products.

7.1.3.2 When chlorine bleach is to be used, introduce 1 cup of any liquid chlorine household bleach containing 5.25 % sodium-hypochlorite (5.0 % available chlorine) into the washer in the manner directed on the bleach container. When non-chlorine bleach is to be used, introduce it into the washer in the amount and manner directed on the bleach container.

7.1.4 *Skewness Change*—Before and after laundering, determine the bias of the shower curtain as directed in AATCC 179 16 Option 1.

7.1.5 *Colorfastness*

7.1.5.1 *Laundering*—Determine the colorfastness to laundering as directed in Test 4-A of AATCC Method 61 unless otherwise agreed between the purchaser and supplier. Use Multifiber Test Fabric No. 10[5] to determine the staining characteristics.

NOTE 5—For all unbleachable items, Test 3-A will be used.

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

7.1.5.3 *Light*—Determine the colorfastness to light as directed in AATCC Method 16 Option 3.

NOTE 6—There is a distinct difference in spectral distribution between the various types of machines listed in AATCC Method 16 with no overall correlation between them. Consequently, these machines cannot be used interchangeably. In case of controversy, AATCC Method 16 Option 3 shall prevail.

[5] Multifiber Test Fabric No. 10 available from Test Fabrics, Inc., P.O. Box 420, Middlesex, NJ 08841.

7.1.6 *Water Resistance*—Determine the water resistance as directed in AATCC Method 35.

7.2 *Product:*

7.2.1 *Appearance*—Before and after laundering, determine the appearance of hems, ruffles, or other embellishments, or such other appearance characteristics as agreed upon by the purchaser and the supplier.

8. Report

8.1 State that the specimen(s) were tested as directed in Performance Specification D5378. Describe the fiber content, the type of fabric, the type(s) of shower curtains tested and identify the components.

8.2 The report shall include the following additional information:

8.2.1 Objective of the test,

8.2.2 Description and identification of the shower curtains,

8.2.3 Describe the method of sampling used,

8.2.4 List of performance characteristics evaluated, the test method used for each, and the results of each,

8.2.5 Report the number of laundering cycles and the wash conditions used, and

8.2.6 Conclusion, if appropriate.

9. Conformance

9.1 When the purchaser and supplier have agreed upon specific requirements for the characteristics that are to be considered, shower curtains that fail to meet these requirements may be rejected. Rejection should be reported to the supplier in writing. In case of disagreement with the results of the test, the supplier may make a claim for a retest.

10. Keywords

10.1 bath products; household; institutional; shower curtains