



# Standard Performance Specification for Woven and Knitted Shower Curtains for Institutional and Household Use<sup>1</sup>

This standard is issued under the fixed designation D 5378; 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 ( $\epsilon$ ) 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:

- D 123 Terminology Relating to Textiles<sup>2</sup>
- D 629 Test Methods for Quantitative Analysis of Textiles<sup>2</sup>
- D 1776 Practice for Conditioning Textiles for Testing<sup>2</sup>
- D 2905 Standard Practice for Statements on Number of Specimens for Textiles<sup>2</sup>
- D 3136 Terminology for Care Labels for Consumer Textile and Leather Product<sup>2</sup>
- D 3786 Bursting Strength, Hydraulic, of Knitted and Nonwoven Fabrics—Diaphragm Bursting Strength Tester Method<sup>3</sup>
- D 3882 Test Method for Bow Skewness (Bias) in Woven and Knitted Fabrics<sup>3</sup>
- D 3938 Guide for Evaluation of Textile Products in Relation to Refurbishing Described on Care Labels<sup>3</sup>
- D 5034 Standard Test Method for Breaking Force and Elongation of Textile Fabrics (Grab Test)<sup>3</sup>

<sup>1</sup> This performance specification is under the jurisdiction of ASTM Committee D-13 on Textiles and is the direct responsibility of Subcommittee D13.63 on Home Furnishings.

Current edition approved April 15, 1993. Published September 1993.

<sup>2</sup> *Annual Book of ASTM Standards*, Vol 07.01.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 07.02.

**TABLE 1 Specification Requirements**

NOTE 1—Class 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
Nonfibrous Material	3.0 % maximum	7.1.3
Dimensional Change (L × W)	3.0 % maximum	7.1.4
Fabric Appearance	5A 3.0 minimum	7.2.1
Bow and Skewness	4.0 % maximum	7.1.5
Colorfastness:		
Laundering		7.1.6.1
Shade change	Class 4 <sup>A</sup> minimum	
Stain	Class 3 <sup>B</sup> minimum	
Crocking		7.1.6.2
Dry	Class 4 <sup>C</sup> minimum	
Wet	Class 4 <sup>C</sup> minimum	
Light (20 AATCC FU) (xenon arc)	Step 4 <sup>A</sup> minimum	7.1.6.3
Water Resistance		7.1.7
Categories based on minimum time for		
1-g weight		
2 ft (600 mm)	30 s shower	
2 ft (600 mm)	2 minute rain	
3 ft (915 mm)	5 minute storm	
Flammability	Pass	7.1.8
Appearance Retention	Satisfactory	7.2.1

<sup>A</sup>AATCC Gray Scale for Color Change.

<sup>B</sup>AATCC Gray Scale for Staining.

<sup>C</sup>AATCC Chromatic Transference Scale.

### 2.2 AATCC Methods:<sup>4</sup>

- 8 Colorfastness to Crocking
- 16a Colorfastness to Light: Carbon Arc Lamp Continuous Light
- 16E Colorfastness to Light: Water Cooled Xenon-Arc, Continuous Light
- 35 Water Resistance: Rain Test
- 61 Colorfastness to Washing, Domestic and Laundering Commercial, Accelerated
- 88B Appearance of Seams in Wash and Wear Items After Home Laundering
- 135 Dimensional Changes in Automatic Home Laundering of Woven or Knitted Fabrics

<sup>4</sup> Available from AATCC, American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709.

- 96 Dimensional Changes in Laundering of Woven and Knitted Fabrics Except Wool
- 97 Non-Cotton Content of Bleached Cotton Textiles
- 116 Colorfastness to Crocking: Rotary Vertical Crockmeter Method
- 143 Appearance of Apparel and Other Textile End Use Products After Repeated Home Launderings
- Evaluation Procedure 1 Gray Scale for Color Change
- Evaluation Procedure 2 Gray Scale for Staining
- Evaluation Procedure 3 AATCC 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 *knitted fabric, n*—a structure produced by interlooping one or more ends of yarn or comparable material.
- 3.1.2 *shower curtain, n*—a hanging fabric used to prevent water spillage from a shower area.
- 3.1.3 *woven fabric, n*—a structure produced when at least two sets of strands are interlaced, usually at right angles to each other, according to a predetermined pattern of interlacing and such that at least one set is parallel to the axis along the lengthwise direction of the fabric.
- 3.1.4 For definitions of other textile terms used in this standard, refer to individual ASTM Standards and AATCC Test Methods, Terminology D 123, and Terminology D 3136.

### 4. Significance and Use

- 4.1 Upon mutual agreement between the purchaser and the seller, 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 D 3993 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 D 2905 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 (Load)*—Determine the breaking force as directed in the grab test procedure of Test Methods D 5034, using a constant-rate-of-traverse (CRT) tensile testing machine with the speed of the pulling jaw at  $300 \pm 10$  mm/min ( $12 \pm 0.5$  in/min).

NOTE 2—If preferred, a constant-rate-of-extension (CRE) tensile testing machine may be used. The crosshead speed should be as agreed between the purchaser and seller. 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.

7.1.2 *Bursting Force—(Knit Fabrics Only)*—Determine the bursting force of knit fabrics in the standard atmosphere for textile testing, as described in Test Method D 3786 or D 3787 as agreed between the purchaser and supplier.

NOTE 3—There is no overall correlation between the results obtained with the CRT 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 D 3786) 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 *Nonfibrous Material*—Determine only the water-soluble and enzyme-extractable material as directed in AATCC Method 97.

7.1.4 *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.

7.1.4.1 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.

7.1.4.2 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.

7.1.5 *Bow and Skewness*—Before and after laundering, determine the bias of the shower curtain as directed in Test Method D 3882.

#### 7.1.6 *Colorfastness*

7.1.6.1 *Laundering*—Determine the colorfastness to laundering as directed in Test 4-A of AATCC Method 61 unless otherwise agreed between the purchaser and seller. Use Multifiber Test Fabric No. 10<sup>5</sup> to determine the staining characteristics.

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

7.1.6.2 *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 seller.

7.1.6.3 *Light*—Determine the colorfastness to light as directed in AATCC Method 16A or Method 16E.

NOTE 6—There is a distinct difference in spectral distribution between the xenon fading lamp apparatus and the enclosed carbon arc (not sunshine-carbon arc). Consequently, these two facing apparatus cannot be used interchangeably since there is no known correlation between them. In case of controversy, AATCC Method 16E shall prevail.

---

<sup>5</sup> Multifiber Test Fabric No. 10 available from Test Fabrics, Inc., P.O. Box 420, Middlesex, NJ 08841.

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

7.1.8 *Flammability*—The flammability requirements shall be agreed to between the purchaser and the supplier, except when regulated by applicable government mandatory standards.

#### 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 seller.

## 8. Report

8.1 State that the specimen(s) were tested as directed in Performance Specification D 5378. 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

*The American Society for Testing and Materials takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.*

*This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.*

*This standard is copyrighted by ASTM, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org).*