Designation: D7507 – 14

Standard Specification for Woven High Stretch Fabrics Used in Apparel[1]

This standard is issued under the fixed designation D7507; 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 performance requirements for woven high stretch fabrics used in apparel.

1.2 The following safety hazards caveat pertains only to the test methods described in this performance 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 (see Note 1)

2.1 *ASTM Standards:*[2]

D123 Terminology Relating to Textiles

D2905 Practice for Statements on Number of Specimens for Textiles (Withdrawn 2008)[3]

D3107 Test Methods for Stretch Properties of Fabrics Woven from Stretch Yarns

D3775 Test Method for Warp (End) and Filling (Pick) Count of Woven Fabrics

D3776 Test Methods for Mass Per Unit Area (Weight) of Fabric

2.2 *AATCC Test Methods:*[4]

8 Colorfastness to Crocking: AATCC Crockmeter Method

15 Colorfastness to Perspiration

16 Colorfastness to Light

61 Colorfastness to Laundering, Home and Commercial: Accelerated

81 pH of the Water-Extraction from West Processed Textiles

109 Colorfastness to Ozone in the Atmosphere Under Low Humidity's

116 Colorfastness to Crocking: Rotary Vertical Crockmeter Method

132 Colorfastness to Drycleaning

135 Dimensional Changes of Fabrics after Home Laundering

158 Dimensional Changes on Drycleaning in Perchloroethylene: Machine Method

172 Colorfastness to Non-Chlorine Bleach in Home Laundering

2.3 *Other Documents:*[5]

16 CFR 1610 Standard for Flammability of Clothing Textiles

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:* For definitions of textile terms used in this specification, refer to Terminology D123 and the AATCC Glossary.

3.1.1 *woven high stretch fabric, n*—woven fabrics with greater than 15 % elastic fiber content.

4. Significance and Use

4.1 Upon mutual agreement between the purchaser and the supplier, woven high stretch fabrics used in apparel should meet all of the requirements listed in Table 1 of this specification.

4.2 It is recognized that, for 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 listed in Table 1. Therefore, one or more of the requirements in Table 1 may be modified by mutual agreement between the purchaser and the supplier.

4.2.1 In such cases, any references to the specifications should specify that: "This product meets ASTM specifications XXXX except for the following characteristic(s)."

4.3 Where no pre-purchase agreement has been reached between the purchaser and supplier, and in case of controversy, the requirements listed in Table 1 are intended to be used as a

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[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 American Association of Textile Chemists and Colorists (AATCC), P.O. Box 12215, Research Triangle Park, NC 27709, http://www.aatcc.org.

[5] Available from Superintendent of Documents, Government Printing Office, Washington, DC 20402.

TABLE 1 Specification Requirements

Characteristic	Requirements		Section
	One-Way Stretch	Two-Way Stretch	
Dimensional Change to Home Laundering 3 Cycles	±3 %	±5 %	7.1.1
Dimensional Change to Drycleaning 1 Cycle	±2 %		7.1.2
Colorfastness to Accelerated Laundering-General[A]			7.2.1
Color change	Grade 4		
Staining	Grade 3		
Colorfastness to Drycleaning			
Color Change	Grade 4		
Staining	Grade 3		
Colorfastness to Non-chlorine Bleach			
Color change	Grade 4		7.2.3
Colorfastness to Crocking[A]			7.2.4
Dry	Grade 4		
Wet	Grade 3		
Colorfastness to Crocking[A] —Raised Surfaces, Dark shades or Pigment			7.2.4
Dry	Grade 3		
Wet	Grade 2		
Colorfastness to Perspiration[A]			7.2.5
Color Change	Grade 4		
Staining	Grade 3		
Colorfastness to Light, 20 AFU	Grade 4		7.2.6
Colorfastness to Ozone (one cycle) Bleached Denim and Indigo Fabrics Only	Grade 4		7.2.7
Stretch Properties			7.3
Stretch percentage	report actual		
Growth	5 % maximum		
Recovery	minimum 80 %		
Fabric Count	Report actual or ±5 % tolerance if a specific count is claimed		7.4
Fabric Weight	Record actual		7.5
pH			
Wool, nylon	4.5 – 7.0		7.6
White	5.5 – 6.5		
All Other	6.0 – 8.0		
Flammability	Class 1		7.7

[A]See Note 3.

guide only. As noted in 4.2, ultimate consumer demands dictate varying performance parameters for a particular product.

4.4 The uses and significance 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 agreed otherwise, 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 by 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 finished fabrics representative of product as it reaches the consumer.

5.3.1 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.

5.3.2 Use a reliable estimate of the variability of individual observations on similar materials in the user's laboratory, a 95 % probability level, and an allowable difference of 5 % of units and the average for the laboratory sampling unit.

5.3.3 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 the laboratory sampling unit.

6. Specification Requirements

6.1 The properties of high stretch fabrics used in apparel shall conform to the specification requirements of Table 1.

7. Test Method

7.1 *Dimensional Change:*

7.1.1 *Laundering*—Determine the dimensional change after laundering as directed in AATCC Method 135.

NOTE 2—After drying, non durable-press items may be hand-pressed as directed in 7.4.3 of AATCC 135, to eliminate wrinkles before measuring.

7.1.2 *Drycleaning*—Determine the dimensional change after dry cleaning as directed in AATCC Test Method 158.

7.2 *Colorfastness:*

7.2.1 *Laundering*—Determine the colorfastness to accelerated laundering as directed in Test II A of AATCC Method 61, or if applicable, one of the other conditions of that test method.

NOTE 3—It has been reported that the results for staining, obtained by standard AATCC Test Methods, on fabrics dyed to dark shades that contain a combination of polyester and spandex, or their blends, may not show the full staining propensity of such fabrics in consumer use. It is, therefore, recommended that the staining results obtained by these tests not be used for acceptance testing of such fabrics.

7.2.1.1 Use Multifiber Test Fabric and evaluate all fibers.

7.2.2 *Drycleaning*—Determine the colorfastness of drycleaning as directed in AATCC Method 132.

7.2.3 Determine the colorfastness to non-chlorine bleach as directed in the applicable procedures of AATCC Test Method 172.

7.2.4 *Crocking*—Determine the colorfastness to wet and dry crocking as directed in AATCC Method 8 for solid shades and AATCC Method 116 for small prints (see Note 3).

7.2.5 *Perspiration*—Determine the colorfastness of perspiration as directed in AATCC Method 15 (see Note 3).

7.2.6 *Light*—Determine colorfastness to light as directed in AATCC Method 16, Test Option 3 – Xenon Arc Lamp, Continuous Light, Black Panel.

NOTE 4—There are distinct differences in spectral distribution between the various types of machines listed in AATCC 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 3 shall prevail.

7.2.7 *Ozone*—For bleached or indigo denim fabrics, determine the colorfastness to ozone as directed in AATCC Method 109.

7.3 *Stretch Properties*—Determine the amount of stretch, growth and recovery as directed in Test Methods D3107.

7.4 *Fabric Count*—Determine the fabric count as directed in Test Method D3775.

7.5 *Fabric Weight*—Determine the fabric mass (weight) as directed in Test Methods D3776

7.6 *pH*—Determine the pH (acidity or alkalinity level) as directed in AATCC 81.

7.7 *Flammability*—The flammability requirements shall be as regulated by applicable government mandatory standards. 16 CFR 1610.

8. Keywords

8.1 apparel; fabrics; high stretch; performance specification