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Standard Performance Specification for Knit Swimwear Fabrics[1]

This standard is issued under the fixed designation D 3996; 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 circular and warp knitted fabrics for use in knit swimwear, composed of any textile fiber or mixture of textile fibers.

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

1.3 The following precautionary statement pertains only to the test methods portion, Section 7, of 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:*[2]

D 123 Terminology Relating to Textiles

D 2905 Practice for Statements on Number of Specimens for Textiles

D 3786~~Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics—Diaphragm Bursting Strength Tester Method~~ Test Method for Bursting Strength of Textile FabricsDiaphragm Bursting Strength Tester Method

D 3787 Test Method for Bursting Strength of ~~Knitted Goods—Constant-Rate-of-Traverse~~ TextilesConstant-Rate-of-Traverse (CRT) Ball Burst Test

2.2 *AATCC Methods:*[3]

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

106 Colorfastness to Water: Sea

107 Colorfastness to Water

116 Colorfastness to Crocking: Rotary Vertical Crockmeter Method

129 Colorfastness to Ozone in the Atmosphere Under High Humidities

135 Dimensional Changes in Automatic Home Laundering of Durable Press 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

162 ~~Colorfastness to Water Chlorinated Pool~~ Colorfastness to Water Chlorinated Pool

172 Colorfastness to Non-Chlorine Bleach in Home Laundering

188 Colorfastness to Sodium Hypochlorite Bleach in Home Laundering

2.3 *Federal Standard:*[4]

16 CFR 1610 Standard for Flammability of Clothing Textiles

[1] ~~This specification is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.61 on Apparel. Current edition approved May 15, 1995. Published July 1995. Originally published as D3996–81. Last previous edition D3996–92.~~

[1] This performance specification is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.61 on Apparel. Current edition approved Aug. 1, 2008. Published October 2008. Originally approved in 1981. Last previous edition approved in 2002 as D 3996 – 02.

[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* ~~, Vol 07.01.~~volume information, refer to the standard's Document Summary page on the ASTM website.

[3] ~~Annual Book of ASTM Standards, Vol 07.02.~~

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

[4] ~~Available from American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709.~~

[4] Available from Superintendent of Documents, Government Printing Office, Washington, DC 20407.

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 *Definition:*

3.1.1 *swimwear*—textile garments intended for wear in fresh, chlorinated, or salt water.

3.2 For definitions of textile terms used in this specification, refer to the individual ASTM and AATCC test methods and Terminology D 123.

4. Specification Requirements

4.1 The properties of fabrics for knitted swimwear shall conform to the specification requirements in Table 1.

5. Significance and Use

5.1 Upon mutual agreement between the purchaser and the seller, 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 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 by mutual agreement between the purchaser and the seller.

5.2.1 In such cases, any references to the specification shall specify that: "This fabric meets ASTM Specification D 3996 except for the following characteristic(s)."

5.3 Where no prepurchase agreement has been reached between the purchaser and the seller, 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.

TABLE 1 Specification Requirements

NOTE 1—The classes of colorfastness and DP rating are based on a numerical scale of 5 for negligible or no color change, color transfer, or wrinkle to 1 for very severe color change, color transfer, or wrinkle.

Characteristic	Requirements	Section
Bursting strength (ball burst)	30 lbf (133 N), min	7.1
Dimensional change:		
Laundering:		7.2.1
Nonstretch fabrics	5.0 % max in each direction	
Stretch fabrics	7.5 % max in each direction	
Wet relaxation or growth:		7.2.2
Stretch fabrics	10.0 % max in each direction	
Dry relaxation or growth	5.0 % max in each direction	7.2.3
Colorfastness:		
Burnt Gas Fumes—1 cycle:		7.3.1
Shade change, original fabric and after 1 laundering	Class 4 min[A]	
Sodium Hypochlorite Bleach	Class 4 min[A]	7.3.10
Non-Chlorine Bleach	Class 4 min[A]	7.3.11
Laundering:	7.3.2	
Shade change	Class 4 min[A]	
Staining	Class 3 min[B]	
Crocking:		7.3.3
Dry	Class 4 min[C]	
Wet	Class 3 min[C]	
Water:	7.3.4	
Shade change	Class 4, min[A]	
Staining	Class 3 min[B]	
Perspiration:		7.3.5
Shade change	Class 4 min[A]	
Staining	Class 3 min[B]	
Chlorinated pool water[D]	...	7.3.6
Sea water:	7.3.7	
Shade change	Class 4 min[A]	
Staining	Class 3, min[B]	
Ozone:		7.3.8
Shade change	Class 3–4 min[A]	
Light (40 AATCC FU) (xenon-arc)	Step 4 min[A]	7.3.9
Flammability	pass	7.4

[A] AATCC Gray Scale for Color Change.
[B] AATCC Gray Scale for Staining.
[C] AATCC Chromatic Transference Scale.
[D] See Note 7.