Designation: D4035 – 14

Standard Performance Specification for Knitted Necktie and Scarf Fabrics[1]

This standard is issued under the fixed designation D4035; 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 knitted necktie and scarf fabrics composed of any textile fiber or mixture of textile fibers.

1.2 These requirements apply to 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]

D123 Terminology Relating to Textiles

D2594 Test Method for Stretch Properties of Knitted Fabrics Having Low Power

D2724 Test Methods for Bonded, Fused, and Laminated Apparel Fabrics

D2905 Practice for Statements on Number of Specimens for Textiles (Withdrawn 2008)[3]

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

D3787 Test Method for Bursting Strength of Textiles—Constant-Rate-of-Traverse (CRT) Ball Burst Test

D7022 Terminology Relating to Apparel[3]

2.2 *AATCC Methods:*[4]

8 Colorfastness to Crocking: Crockmeter Method

15 Colorfastness to Perspiration

16.3 Colorfastness to Light

23 Colorfastness to Burnt Gas Fumes

61 Colorfastness to Laundering: Accelerated

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

116 Colorfastness to Crocking: Rotary Vertical Crockmeter Method

124 Smoothness Appearance of Fabrics After Repeated Home Laundering

132 Colorfastness to Drycleaning

135 Dimensional Changes of Fabrics

172 Colorfastness to Powdered Non-Chlorine Bleach in Home Laundering

188 Colorfastness to Sodium Hypochlorite Bleach in 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

2.3 *Federal Standard:*[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 For all terminology related to D13.61, Apparel, see Terminology D7022.

3.1.1 The following terms are relevant to this standard: necktie, scarf, *in apparel*.

3.2 For definitions of all other textile terms, see Terminology D123.

[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.

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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.

3.3 For terms relating to chemical or colorfastness testing, refer to specific AATCC methods.

4. Specification Requirements

4.1 The properties of fabrics for neckties and scarfs 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 D4035 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.

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

TABLE 1 Specification Requirements

NOTE 1—Grade for colorfastness and SA rating is 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. The numerical rating in Table 1 or a higher numerical rating is acceptable.

Characteristic	Requirements	Section
Bursting strength (load) (ball burst)	50 lbf (222 N)	7.1
Dimensional change:		
Pressing and finishing	2 % max	7.2.1
After five launderings	5 % max	7.2.2
After three dry cleanings	3 % max	7.2.3
Growth	3 % max	7.2.4
Colorfastness:		
Burnt gas fumes, 2 cycles:		7.3.1
Shade change, original fabric	Grade 4[A] min	
Shade change after one laundering or one dry cleaning	Grade 4[A] min	
Sodium Hypochlorite Bleach	Grade 4[A] min	7.3.7
Powdered Non-Chlorine Bleach	Grade 4[A] min	7.3.8
Laundering:[E]		7.3.2
Shade change	Grade 4[A] min	
Staining	Grade 3[B] min	
Drycleaning:		7.3.3
Shade change	Grade 4[A] min	
Crocking:[E]		7.3.4
Dry	Grade 4[C] min	
Wet	Grade 3[C] min	
Perspiration:[E]		7.3.5
Shade change	Grade 4[A] min	
Staining	Grade 3[B] min	
Light (40 AATCC Fading Units) (xenon-arc)	Grade 4[A] min	7.3.6
Fabric appearance (see 7.4.1.1)	SA 3.5[D] min	7.4
Flammability	Class 1 or Class 2	7.5

[A] AATCC Gray Scale for Color Change.
[B] AATCC Gray Scale for Staining.
[C] AATCC 9-Step Chromatic Transference Scale.
[D] For durable press fabrics only.
[E] See Note 7.

6. Sampling

6.1 Tests shall be performed on the fabric as it will reach the consumer. Any "partially finished" or "post-finished" fabrics should first be processed in accordance with the fabric manufacturer's instructions.

6.2 Unless otherwise agreed upon, as when specified in an applicable material specification, take the number of specimens directed in each of the applicable test methods.

6.2.1 If there has been no prior agreement and the test method does not specify the number of specimens, use the procedures in Practice D2905 to determine the number of specimens, such that the user may expect at the 95 % probability level that the test result is no more than 5 % of the average above or below the lot average (that is, the average that would be obtained by applying this method to the entire lot) when using a reliable estimate of variability of individual observations on similar materials in the user's laboratory under conditions of single-operator precision.

7. Test Methods (see Note 1)

7.1 *Bursting Strength*—Determine the bursting strength, in the standard atmosphere for testing textiles, as directed in Test Method D3786 or Test Method D3787.

NOTE 2—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 two bursting testers cannot be used interchangeably. In case of controversy, the CRT machine equipped with a bursting attachment method shall prevail.

NOTE 3—The precision of the ball burst method using the CRT machine equipped with a bursting attachment and the precision of the diaphragm bursting tester method are being established by Subcommittee D13.59. The methods are accordingly not recommended for acceptance testing unless preceded by an interlaboratory check test in the laboratory of the purchaser and the laboratory of the seller using randomized replicate specimens of the material to be evaluated.

7.2 *Dimensional Change:*

7.2.1 *Pressing and Finishing During Manufacturing*[6]—Mark specimen(s) as directed in 4.5 of AATCC Method 135. Press and finish specimen(s) as agreed upon between the purchaser and the seller with respect to time cycles, temperature, steam, vacuum, and mechanical pressure of the press head. Measure the specimen(s) and calculate the dimensional change as directed in Sections 6 and 7 of AATCC Method 135.

7.2.1.1 If no agreement has been made between the purchaser and the seller, press the specimen(s) using a flat-bed steam press according to the cycle in 10.1.4.1 through 10.1.4.5 of Test Methods D2724.

7.2.2 *Laundering*—Determine the maximum dimensional change after five launderings as directed in the applicable

[6] The development of a standard method has been referred to Subcommittee D13.59 on Fabric Test Methods, General.

procedure in AATCC Method 135-1978 or as agreed upon between the buyer and the seller (Note 4 and Note 5).

7.2.2.1 The wash conditions and drying procedure shall be as specified by the seller.

7.2.3 *Dry-cleaning*—Determine the maximum dimensional change after three dry cleanings in accordance with Section 10.1.1 through 10.1.5 of Test Methods D2724 (Note 4 and Note 5).

7.2.4 *Growth*—Determine the growth of the fabric as directed in Test Methods D2594.

NOTE 4—Launderable fabrics are expected to be dry-cleanable except where all or part of the fabric is not dry-cleanable and is so labeled. For example, the fabric could contain a functional finish soluble in the solvent, or the fiber could be degraded by the solvent, which would be the case with poly(vinyl chloride) fiber. Goods labeled "Dry-cleanable" are to be dry-cleaned only.

NOTE 5—Specimens prepared for 7.2.1 may be used for 7.2.2 and 7.2.3 as desired. When this is done the dimensional change due to laundering or drycleaning is calculated using Eq 1. The dimensional change to pressing and finishing is determined on the fabric as it will reach the user. It is not additive to the dimensional change to laundering or drycleaning of the fabric as it will reach the consumer (see 6.1).

$$\text{Percent Dimensional Change} = 100(D_1 - D_2)/D_2 \qquad (1)$$

where:

D_1 = measurement after laundering or dry-cleaning, and
D_2 = measurement after pressing and finishing.

7.3 *Colorfastness:*

7.3.1 *Burnt Gas Fumes*—Determine the colorfastness to burnt gas fumes on the original fabric and after one laundering or one dry cleaning as directed in AATCC Method 23.

NOTE 6—Washing conditions shall be the same as those used in 7.2.2.1. Dry-cleaning conditions shall be the same as those used in 7.2.3.

7.3.2 *Laundering*—Determine the colorfastness to laundering as directed in the applicable procedure of AATCC Method 61-1975. The test conditions shall be as specified by the seller (Note 4).

NOTE 7—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.

7.3.3 *Dry cleaning*—Determine colorfastness to dry cleaning as directed in AATCC Method 132 (Note 4).

7.3.4 *Crocking*—Determine colorfastness to dry and wet crocking as directed in AATCC Method 8 for solid shades and AATCC Method 116 for prints or as agreed upon between the purchaser and the seller (see Note 7).

7.3.5 *Perspiration*—Determine colorfastness to perspiration as directed in AATCC Method 15 (see Note 7).

7.3.6 *Light*—Determine colorfastness to light as directed in AATCC Method 16.3.

NOTE 8—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 E3 shall prevail.

7.3.7 *Colorfastness to Sodium Hypochlorite Bleach*—Determine colorfastness to sodium hypochlorite bleach as directed in AATCC Method 188.

7.3.8 *Colorfastness to Powdered Non–Chlorine Bleach*—Determine colorfastness to non-chlorine bleach as directed in AATCC Method 172.

7.4 *Fabric Appearance*—Determine the fabric appearance as directed in AATCC Method 124 after laundering using the wash-and-wear cycle or the normal cycle as agreed upon between the purchaser and the seller, as specified in 7.2.2.1 for washable fabrics or as specified in 7.2.3 for dry-cleanable fabrics (see Note 4).

7.4.1 For fabrics not intended for use in durable-press garments, determine the fabric smoothness after pressing as specified in AATCC Method 96.

7.4.1.1 The fabric smoothness durable-press (SA) rating of such fabrics, and the SA rating of dry-cleaned fabrics, shall have decreased no more than ½ SA rating from that of the fabric before it is laundered or dry-cleaned.

7.5 *Flammability*—The flammability requirements shall be as agreed upon between the purchaser and the seller, except when regulated by applicable Government mandatory standard (see section 2.3).

8. Keywords

8.1 necktie