



Designation: **D4154 – 01 (Reapproved 2008) D4154 – 14**

Standard Performance Specification for Men's and Boys' Knitted and Woven Beachwear and Sports Shirt Fabrics¹

This standard is issued under the fixed designation D4154; 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 and woven fabrics comprised of any textile fiber or mixture of fibers used in men's and boy's beachwear and sports shirts.

1.2 This performance specification is not applicable to knitted and woven fabrics used for interlining and swimwear.

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

1.4 *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](#)

[D434 Test Method for Resistance to Slippage of Yarns in Woven Fabrics Using a Standard Seam \(Withdrawn 2003\)](#)³

[D1424 Test Method for Tearing Strength of Fabrics by Falling-Pendulum \(Elmendorf-Type\) Apparatus](#)

[D2262 Test Method for Tearing Strength of Woven Fabrics by the Tongue \(Single Rip\) Method \(Constant-Rate-of-Traverse Tensile Testing Machine\) \(Withdrawn 1995\)](#)³

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[D2905 Practice for Statements on Number of Specimens for Textiles \(Withdrawn 2008\)](#)³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

[D5034 Test Method for Breaking Strength and Elongation of Textile Fabrics \(Grab Test\)](#) [77a9d124d/astm-d4154-14](#)

[D7022 Terminology Relating to Apparel](#)

2.2 *AATCC Test Methods:*⁴

[8 Colorfastness to Crocking: AATCC-Crockmeter Method](#)

[15 Colorfastness to Perspiration](#)

~~16~~ [16.3 Colorfastness to Light: Xenon-Arc](#)

[23 Colorfastness to Burnt Gas Fumes](#)

~~61~~ [61 Colorfastness to Washing, Domestic, and Laundering, Commercial-Laundering: Accelerated](#)

[96 Dimensional Changes in Laundering of Woven and Knitted Textiles Except Wool](#)

[116 Colorfastness to Crocking: Rotary Vertical Crockmeter Method](#)

[124 Smoothness Appearance of Durable-Press Fabrics After Repeated Home Launderings](#)

[132 Colorfastness to Drycleaning](#)

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; Feb. 1, 2014. Published October 2008; March 2014. Originally approved in 1982. Last previous edition approved in 2001 as [D4154 – 01](#); [D4154 – 01\(2008\)](#). DOI: [10.1520/D4154-01R08](#); [10.1520/D4154-14](#).

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

135 Dimensional Changes in Automatic Home Launderings of Durable Press Woven or Knit Fabrics or Fabrics after Home Laundering

172 Colorfastness to Powdered Non-chlorine Bleach in Home Laundering

188 Colorfastness to Chlorine Sodium Hypochlorite Bleach in Home Laundering

Evaluation Procedure 1 Gray Scale for Color Change

Evaluation Procedure 2 Gray Scale for Staining

Evaluation Procedure 38 AATCC 9-Step Chromatic Transference Scale

A Glossary of AATCC Standard Terminology

2.3 Federal Standard:⁵

16 CFR, Chapter II—Consumer Product Safety Commission Subchapter D—Flammable Fabrics Act Regulations.

2.4 Military Standard:⁶

MIL-STD-105D Sampling Procedures and Tables for Inspection by Attributes

NOTE 1—Reference to test methods in this performance specification give only the permanent part of the designation of ASTM, AATCC, or other test

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

⁶ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

TABLE 1 Specification Requirements

NOTE 1—Class Grade for colorfastness and DP_{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
	Knitted	Woven	
Breaking strength (load) (CRT)	...	111 N (25 lbf), min	7.1
Bursting strength (load) (ball burst)	222 N (50 lbf)	...	7.2
Yarn slippage, 6-mm (1/4-in.) separation	...	89 N (20 lbf), min	7.3
Tongue tear strength	...	6.7 N (1.5 lbf), min	7.4
Dimensional Change:			
Pressing and finishing	2 % max	1 % max, pre-finished fabrics	7.5.1
After five launderings (see 7.5.2.2 if shrinkage exceeds 3 %)	3 % max	2 % max, post-finished fabrics	7.5.2
After three dry cleanings	3 % max	3 % max	7.5.3
Growth	3 % max	3 % max	7.5.4
Colorfastness:			
Burnt Gas Fumes—2 Cycles:			
Shade change, original fabric	Class 4 ^A min	Class 4 ^A min	7.6.1
Shade change, original fabric	Grade 4 ^A min	Grade 4 ^A min	7.6.1
Shade change after 1 laundering or 1 dry cleaning	Class 4 ^A min	Class 4 ^A min	7.6.1
Shade change after 1 laundering or 1 dry cleaning	Grade 4 ^A min	Grade 4 ^A min	7.6.1
Laundering: ^E			
Shade change	Class 4 ^A min	Class 4 ^A min	7.6.2
Staining	Class 3 ^B min	Class 3 ^B min	7.6.2
Shade change	Grade 4 ^A min	Grade 4 ^A min	7.6.2
Staining	Grade 3 ^B min	Grade 3 ^B min	7.6.2
Dry cleaning:			
Shade change	Class 4 ^A min	Class 4 ^A min	7.6.3
Shade change	Grade 4 ^A min	Grade 4 ^A min	7.6.3
Crocking: ^E			
Dry	Class 4 ^C min	Class 4 ^C min	7.6.4
Wet	Class 3 ^C min	Class 3 ^C min	7.6.4
Dry	Grade 4 ^C min	Grade 4 ^C min	7.6.4
Wet	Grade 3 ^C min	Grade 3 ^C min	7.6.4
Perspiration: ^E			
Shade Change	Class 4 ^A min	Class 4 ^A min	7.6.5
Staining	Class 3 ^B min	Class 3 ^B min	7.6.5
Shade Change	Grade 4 ^A min	Grade 4 ^A min	7.6.5
Staining	Grade 3 ^B min	Grade 3 ^B min	7.6.5
Light (40 AATCC FU) (xenon-arc)	Step 4 ^A min	Step 4 ^A min	7.6.6
Light (40 AATCC Fading Units) (xenon-arc)	Grade 4 ^A min	Grade 4 ^A min	7.6.6
Chlorine Bleach	Class 4 ^A , min	Class 4 ^A , min	7.6.7
Sodium Hypochlorite Bleach	Grade 4 ^A , min	Grade 4 ^A , min	7.6.7
Non-chlorine Bleach	Class 4 ^A , min	Class 4 ^A , min	7.6.8
Powdered Non-chlorine Bleach	Grade 4 ^A , min	Grade 4 ^A , min	7.6.8
Fabric appearance (see 7.7.1.1)	DP 3.5 ^D min	DP 3.5 ^D min	7.7
Fabric smoothness appearance (see 7.7.1)	SA 3.5 ^D min	SA 3.5 ^D min	7.7
Flammability	pass	pass	7.8

^A AATCC Gray Scale for Color Change.

^B AATCC Gray Scale for Staining.

^C AATCC-AATCC 9-Step Chromatic Transference Scale.

^D For durable-press fabrics only.

^E See Note 11.