



Designation: D4231 – 22

# Standard Practice for Evaluation of Launderable Woven Dress Shirts and Sports Shirts<sup>1</sup>

This standard is issued under the fixed designation D4231; 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 practice covers the evaluation of specific characteristics of importance in launderable woven dress shirts and sport shirts.

1.2 Any launderable woven dress shirt or sport shirt may be evaluated using this practice, but it shall not be construed to be a standard of performance.

1.3 This practice may be used by mutual agreement between the purchaser and supplier to establish purchasing specifications.

1.4 This practice is not intended to be used in the evaluation of woven dress shirts or sport shirts when drycleaned or hand-washed.

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

[D123 Terminology Relating to Textiles](#)

[D1683 Test Method for Failure in Sewn Seams of Woven Fabrics](#)

[D1776 Practice for Conditioning and Testing Textiles](#)

[D3136 Terminology Relating to Care Labeling for Apparel, Textile, Home Furnishing, and Leather Products](#)

[D3477 Performance Specification for Men's and Boys' Woven Dress Shirt Fabrics \(Withdrawn 2005\)](#)<sup>3</sup>

<sup>1</sup> This practice 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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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> The last approved version of this historical standard is referenced on [www.astm.org](http://www.astm.org).

[D4154 Performance Specification for Men's and Boys' Knitted and Woven Beachwear and Sports Shirt Fabrics](#)

[D7022 Terminology Relating to Apparel \(Withdrawn 2022\)](#)<sup>3</sup>

2.2 *AATCC Test Methods:*

[TM88B Smoothness of Seams in Fabrics After Repeated Home Laundering](#)<sup>4</sup>

[TM143 Appearance of Apparel and Other Textile End Products After Repeated Home Launderings](#)<sup>4</sup>

[TM150 Dimensional Changes of Garments after Home Laundering](#)<sup>4</sup>

[TM172 Colorfastness to Powdered Non-Chlorine Bleach in Home Laundering](#)<sup>4</sup>

[TM188 Colorfastness to Sodium Hypochlorite Bleach in Home Laundering](#)<sup>4</sup>

[EPI](#)<sup>4</sup> [Gray Scale for Color Change](#)

2.3 *ASTM Adjuncts:*<sup>5</sup>

Shirt Components- 15 Photographs

## 3. Terminology

3.1 *Definitions*—For definitions of textile terms used in this practice, refer to the individual ASTM Standards, AATCC Test Methods, Terminology [D123](#) and Terminology related to Apparel [D7022](#).

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *dress shirt, n*—a shirt designed to be worn with a tie and jacket and made with a specific collar size or numerical designation.

3.2.1.1 *Discussion*—For men's dress shirts, an additional size designation may be used to identify the sleeve length.

3.2.2 *sport shirt, n*—a shirt designed to be worn either informally or with a jacket, and which uses an alphabetical, numerical, or alphanumerical size designator.

## 4. Significance and Use

4.1 This practice may be used to evaluate pertinent performance characteristics of men's and boys' launderable woven dress shirts and sport shirts.

<sup>4</sup> *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>.

<sup>5</sup> Photographic standards for evaluating shirt components are available from ASTM International Headquarters. Order Adjunct NO. : [ADJD4231](#).

4.2 The characteristics to be evaluated and the acceptance criteria assigned to these areas shall be set by mutual agreement between purchaser and supplier.

4.3 The uses and significance of specific properties are discussed in the appropriate test methods and performance specifications.

**5. Sampling, Selection, and Number of Specimens**

5.1 *Primary Sampling Unit*—For the test methods used in this practice, consider boxes or other shipping containers to be the primary sampling unit.

5.2 *Laboratory Sampling Unit*—For the test methods used in this practice, take a minimum of two garments from each primary sampling unit to serve as both the laboratory sample and the test specimens.

**6. Characteristics and Conditions**

6.1 *Characteristics*—The characteristics to be evaluated and the acceptance criteria assigned to these areas shall be set by mutual agreement between purchaser and supplier.

6.2 *Fabric Performance Characteristics*—Evaluate the selected characteristics of the shirt fabric by methods directed in Performance Specification D3477 or Performance Specification D4154 as appropriate.

6.3 *Shirt Performance Characteristics Prior to Laundering.*

6.3.1 *Seam Failure*—Evaluate seam failure as directed in Test Method D1683.

6.3.2 *Seam Pucker*—Examine shirt(s) for seam pucker using AATCC TM88B and photographs described in Fig. 1, Fig. 2, and Fig. 3 (See ADJD4231)<sup>5</sup>.

6.3.3 *Shade Difference*—Examine shirts(s) for shade difference from part to part as directed in AATCC EPI.

6.3.4 *Shirt Appearance*—Evaluate the shirts for appearance of fabric and all component parts such as, but not limited to, seams, pockets, collars, and top centers (front placket) (see Fig. 4). Specimens shall be mounted as directed in AATCC TM143, using appropriate photographic standards as described in Fig. 1, Fig. 2, and Fig. 3<sup>5</sup> and AATCC TM88B. Acceptable performance requirements shall be as agreed between the purchaser and supplier.

6.3.5 *Other Defects*—Examine shirt(s) for any other obvious defects.

6.3.6 *Dimensional Change*—Measure shirt(s) prior to laundering as directed in Section 7.

6.4 *Laundering Conditions:*

6.4.1 *Wash Conditions*—Wash and dry shirts according to the care label, using the applicable procedure in AATCC TM150. Temperatures shall conform to those stated in Table 1.

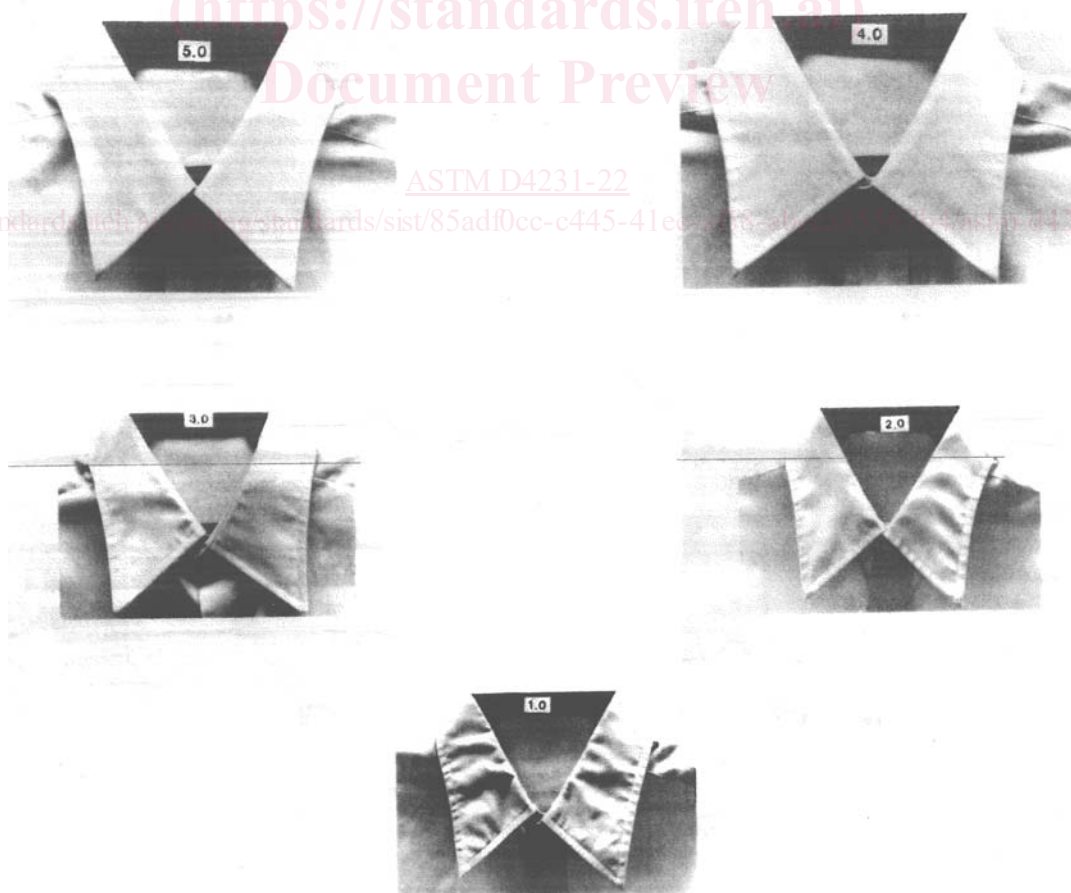


FIG. 1 Collar 5



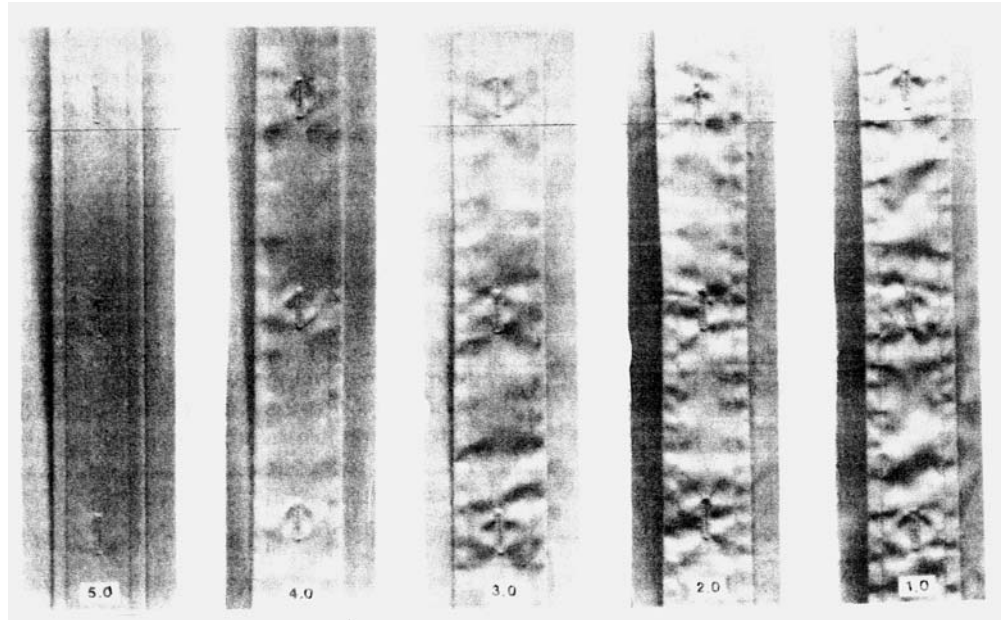


FIG. 3 Placket

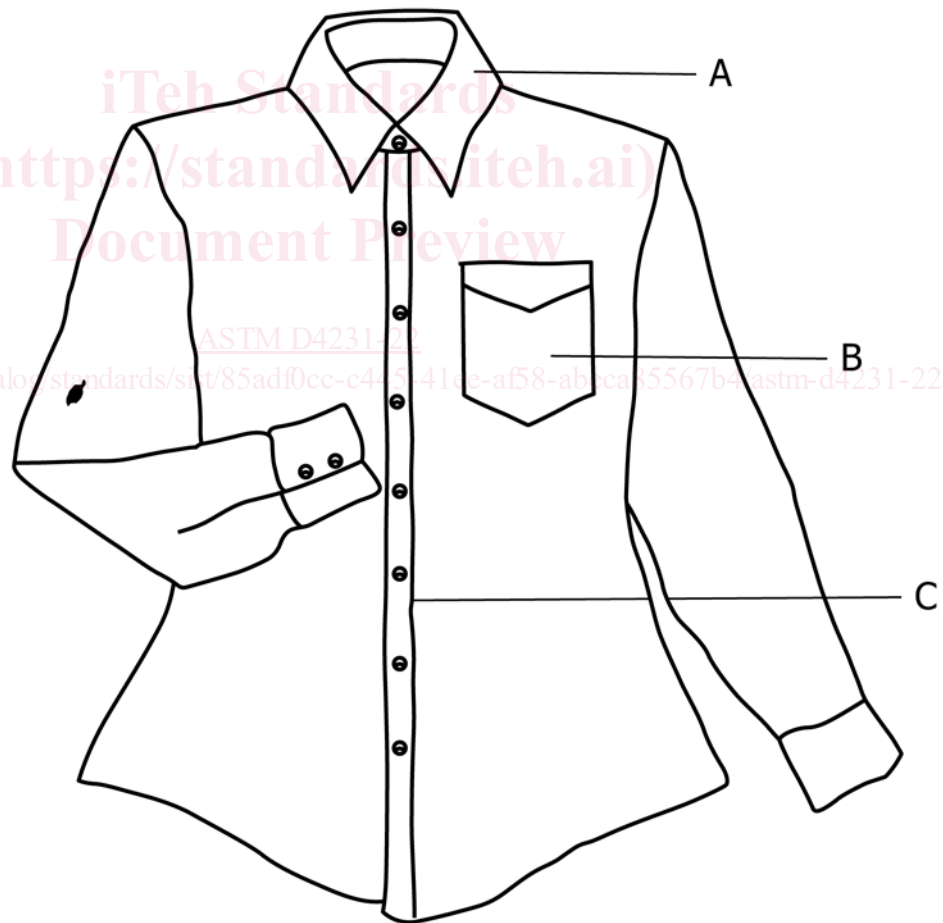


FIG. 4 Diagram of Shirt Components

6.4.1.1 Use any domestically available household laundry detergent as agreed between the purchaser and supplier.

6.4.1.2 When testing with chlorine bleach is indicated, introduce 1 cup of any liquid chlorine household bleach