



# Standard Practice for Evaluation of the Performance of Machine Washable and Drycleanable Bedcoverings and Accessories<sup>1</sup>

This standard is issued under the fixed designation D 4721; 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 may be used to evaluate specific characteristics of importance in the performance of bedcoverings and accessories (machine washable or drycleanable, woven and knit) including bedspreads, comforters, quilts, pillowshams, dust ruffles, and blankets, hereinafter referred to collectively as bedcoverings.

1.2 This practice is not to be used to evaluate bedcoverings that are refurbished by handwashing.

1.3 This practice shall not be construed to be a standard of performance for bedcoverings.

1.4 This practice shall not be used to evaluate sheets.

1.5 This practice may be used by mutual agreement between purchaser and supplier to set purchasing specifications.

1.6 *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:

D 123 Terminology Relating to Textiles<sup>2</sup>

D 1683 Test Method for Failure in Sewn Seams of Woven Fabrics<sup>2</sup>

D 1776 Practice for Conditioning Textiles for Testing<sup>2</sup>

D 3136 Terminology for Permanent Care Labels for Consumer Textile and Leather Products Other Than Carpet and Upholstery<sup>2</sup>

D 3773 Test Methods for Length of Woven Fabric<sup>3</sup>

D 3940 Test Method for Bursting Strength (Load) and Elongation of Sewn Seams of Knit or Woven Stretch Textile Fabrics<sup>3</sup>

D 3993 Performance Specification for Woven, Thermal, Flocked, Nonwoven, and Knitted Household Blanket Fabrics<sup>3</sup>

D 4037 Performance Specification for Woven, Knitted, or Flocked Bedspread Fabrics<sup>3</sup>

### 2.2 AATCC Methods:<sup>4</sup>

AATCC Evaluation Procedure 1

AATCC 88B Appearance of Seams in Durable Press Items After Repeated Home Laundering

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

AATCC 135 Dimensional Changes in Automatic Home Laundering of Woven and Knit Fabrics

AATCC 143 Appearance of Apparel and Other Textile End Products After Repeated Home Launderings

AATCC 158 Dimensional Changes on Drycleaning in Perchloroethylene: Machine Method

## 3. Terminology

### 3.1 Definitions:

3.1.1 *bedcovering, n*—a textile product used on a bed over the sheets for warmth or decoration.

3.1.2 *bedspread, n*—a type of bedcovering that is placed over the blankets and sheets for appearance and warmth.

3.1.3 *blanket, n—for bedding*, an unquilted fabric covering designed primarily to provide thermal insulation.

3.1.3.1 *Discussion*—Blankets may be made by any textile process from various types of fibers and may or may not have a raised fiber surface.

3.1.4 *comforter, n*—a bedcovering assembly, consisting of an insulating filler secured between two layers of fabric, used primarily to reduce heat loss.

3.1.5 *drop, n*—that part of a bedcovering that hangs perpendicular to the floor.

3.1.5.1 *Discussion*—For bedspreads, drop is measured from the top of the mattress to the bottom of the spread. For dust ruffles, drop is measured from the top of the box spring to the bottom of the ruffle.

3.1.6 *dust ruffle, n*—a fabric which (1) lies flat over the box spring under the mattress on a bed and (2) has a pleated, tucked, or gathered drop to the floor.

3.1.7 *flounce, n*—a ruffled drop on a bedcovering.

3.1.8 *quilt, n*—a bedcovering assembly used primarily for warmth, consisting of an insulating filler secured between two layers of fabric, but generally lighter in weight and thinner than a comforter.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 07.01.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 07.02.

<sup>4</sup> Available from American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709.

3.1.9 *sham, n*—a fabric covering for a bed pillow, usually of decorative fabric that matches the bedcovering.

3.1.10 For definitions of other textile terms used in this practice, refer to Terminology D 123 and Terminology D 3136.

#### 4. Significance and Use

4.1 This practice may be used to evaluate pertinent performance characteristics of machine washable or drycleanable bedcoverings.

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 significance and use of specific properties are discussed in the appropriate test methods and performance standards.

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

5.1 *Division into Lots*—For acceptance testing, divide the product into lots as agreed upon by the purchaser and the supplier.

5.2 *Lot Sample*—As a lot sample for acceptance testing, take at random the number of shipping cartons directed in an applicable material specification or other agreement between the purchaser and the supplier. Consider shipping cartons of bedcoverings or accessories to be the primary sampling units.

NOTE 1—A realistic specification or other agreement between the purchaser and the supplier requires taking into account the variability between shipping cartons, between items within a carton, and between specimens within an item so as to provide a sampling plan which has a meaningful producer's risk, consumer's risk, acceptable quality level, and limiting quality level.

5.3 *Laboratory Sample*—As a laboratory sample for acceptance testing, take two items from each shipping carton in the lot sample.

5.4 *Test Specimens*—Take test specimens from each item in the laboratory sample as directed in individual test methods. Perform each test on the product as it will reach the customer.

### CHARACTERISTICS AND TEST METHODS

#### 6. Characteristics

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

#### 7. Fabric Performance Characteristics

7.1 The fabric in the item shall be evaluated as directed in Performance Specification D 3993 for blanket fabrics, and Performance Specification D 4037 for bedspread fabrics.

#### 8. Bedcoverings Performance Characteristics Prior to Refurbishing

8.1 Evaluate joining seam performance (strength) as directed in Test Method D 1683 for woven fabrics or Test Method D 3940 for knit fabrics. Evaluate appearance of all seams as directed in AATCC Method 88B.

8.2 Mark and record measurements as directed in Section 10 of this practice to establish size consistency, side to side, and part to part.

8.3 Examine bedcoverings for shade difference from part to part, as directed in AATCC Evaluation Procedure 1.

8.4 Examine bedcoverings for all obvious defects.

#### 9. Refurbished Bedcoverings

9.1 Refurbish bedcoverings following the instructions on the care label. Prepare and measure the bedcovering as directed in Section 11. Record measurements.

9.2 For institutional use, commercially launder as directed in AATCC Method 96, using washing and drying procedures as agreed upon between the purchaser and supplier.

9.2.1 Repeat the process two more times or as agreed upon by purchaser and supplier.

9.3 For home use, wash items in an automatic home washing machine, as directed in AATCC Method 135, beginning with Section 5, except use any domestically available laundry detergent as agreed upon by purchaser and supplier. Use laundering temperatures as directed in AATCC Method 135, Table 1, or as agreed between the purchaser and the supplier, or as specified on the care label.

9.3.1 When chlorine bleach is to be used, introduce a chlorine-type household bleach containing 5.25 % sodium hypochlorite (5 % available chlorine) into the washer in the manner directed by the bleach manufacturer's instructions. When testing with non-chlorine is indicated, introduce it into the washer in the amount and manner directed by the bleach manufacturer.

NOTE 2—Many bedcovering products, such as comforters, bedspreads, and blankets, either will not fit into a domestic type washing machine or dryer, or will be so crowded that they will be damaged by the agitator, or will not permit air flow in the dryer. Such large items should be tested in a large front loading machine, such as those available in many laundromats. The care instructions should recommend such a machine, rather than only "machine wash", which implies domestic-type equipment.

9.3.2 Dry items following permanently attached care label or as directed in AATCC Method 135.

9.3.3 Evaluate the items for durable press where applicable as in AATCC Method 143.

9.3.4 For ironing where applicable, follow the procedure in section 6.3.1 of AATCC Method 135.

9.3.5 Repeat laundering, drying, and ironing four times, or as agreed upon by the purchaser and supplier.

9.4 If the item is to be drycleaned, refurbish as directed in AATCC Method 158.

9.4.1 Repeat two or more times as agreed upon by purchaser and supplier.

#### 10. Bedcoverings Performance Characteristics After Refurbishing

10.1 Remeasure the items as directed in Section 11 and record measurements. Calculate percent dimensional change using the following equation:

$$\text{Percent Change} = \frac{F - O}{O} \times 100$$

where:

$F$  = final measurement, and

$O$  = original measurement.

10.1.1 Negative value is an indication of shrinkage. Positive value is an indication of growth.

10.2 Reexamine the items for shade difference from part to part, as directed in 8.3.

10.3 Examine the items for any defects obvious after refurbishing.

10.4 Evaluate joining seam performance (strength) as directed in Test Method D 1683 for woven fabrics or Test Method D 3940 for knit fabrics. Evaluate appearance of all seams as directed in AATCC Method 88B.

**11. Procedure for Measuring Bedcoverings**

11.1 Condition the bedcoverings, laid flat in the standard atmosphere for testing textiles as directed in Practice D 1776 for at least 4 h.

11.2 When necessary, mark the dimension to be measured with a suitable marking device.

11.3 Unless otherwise stipulated by mutual agreement between purchaser and supplier, make original measurement marks at the locations shown in Fig. 1.

11.3.1 Measure the total length of the bedcovering 250 mm (10 in.) in from each selvage or hem and in the middle of the covering, including all ruffles, flounces, and trims (A-A, Fig. 1) in a relaxed state, taking care that all wrinkles have been removed.

11.3.2 Measure the total width of bedcovering 250 mm (10 in.) from each selvage or hem and in the middle including all ruffles, flounces, and trims (B-B, Fig. 1) in a relaxed state, taking care that all wrinkles have been removed.

11.3.3 Mark the inner edge of ruffle or flounce where attached to item with 250-mm (10-in.) or 1-m (36-in.) gage marks (D-D, Fig. 1). Permitting all fullness to remain, mark the outer edge of the ruffle or flounce with corresponding gage

marks (E, Fig. 1). Measure full dimensions between second set of gage marks (E-E, Fig. 1).

NOTE 3—Ruffle and flounce fullness are standard dimensions which are based on 250-mm (10-in.) or 1-m (36-in.) measurements. It is therefore recommended that these measurements be used.

11.3.4 Measure ruffle and flounce widths edge to edge (C-B1, F-F, Fig. 1).

11.3.5 On the pillowsham, measure the length of the opening.

11.3.6 On each panel of the bedcovering, including ruffle or flounce, both face and back, mark with a suitable marking device three sets of 1-m (36-in.) gage marks parallel to the length of the fabric and three sets of 1-m gage marks parallel to the width of the fabric to the nearest 50 mm (2 in.) away from all edges of the panel and approximately 125 mm (5 in.) apart. Where the size of the panel or product limits the size of gage marks, 500 mm (18 in.), or 250 mm (10 in.) may be used.

**12. Report**

12.1 State that the specimens were tested as directed in Practice D 4721 and report the following information:

- 12.1.1 Objective of test.
- 12.1.2 Description and identification of bedcoverings.
- 12.1.3 Number of bedcoverings tested.
- 12.1.4 List of performance characteristics evaluated and the results of each.
- 12.1.5 Specifics of test where there is any option (“agreement between purchaser and supplier”).
- 12.1.6 Conclusions, if appropriate.

**13. Conformance**

13.1 When the purchaser and supplier have agreed upon specific requirements for the characteristics that are to be considered, soft window coverings that fail to meet these requirements may be rejected. Rejection should be reported to the supplier in writing. In case of disagreement with results of the test, the supplier may make claim for a retest.

**14. Precision and Bias**

14.1 *Precision*—The precision of the method for measuring bedcoverings as directed in Practice D 4721 is being established.

14.2 *Bias*—The method in Practice D 4721 for measuring bedcoverings has no known bias and may be used as a referee method.

NOTE 4—When actual length and width measurements are made, the tolerances shall be to the nearest 1 mm (1/16 in.). When gage marks are used, the measurement tolerances should be supplied by the gage manufacturer. See Test Methods D 3773.

**15. Keywords**

15.1 bedspread; appearance; dimensional change; drycleaning; laundering; knitted fabric; woven fabric.

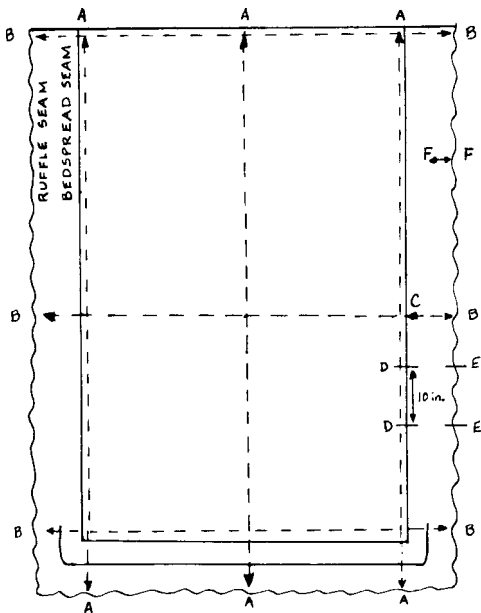


FIG. 1 Measurement Marks

 **D 4721**

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