Test Method for Skew Change in Fabrics After Home Laundering

Foreword

AATCC TM179 is used to evaluate the *change* in fabric skew *after* home laundering. AATCC TM207 is for evaluation of seam twist *before and after* home laundering. ASTM D3882 is only used to evaluate fabric skew in its original (*unlaundered*) state. The relationship among results of these methods is unknown; results of one method should not be compared to those of another method.

1. Purpose

1.1 This test method is used to determine change in skew of fabrics as a result of home laundering.

1.2 This test is applicable to all woven and knitted fabrics suitable for home laundering.

2. Principle

2.1 Marks are applied to fabric or garment specimens before laundering. The alignment of marks is measured after 3 standard laundering cycles. Percent skew is calculated and direction of skew recorded. A value close to zero indicates little or no skew; a higher value indicates greater skew; the calculations in this method do not produce negative skew values.

3. Referenced Documents

3.1 AATCC LP1, Home Laundering: Machine Washing (see 15.1).

3.2 AATCC LP2, Home Laundering: Hand Washing (see 15.1).

3.3 AATCC TM124, Smoothness Appearance of Fabrics after Home Laundering (see 15.1).

3.4 AATCC TM133, Colorfastness to Heat: Hot Pressing (see 15.1).

3.5 AATCC TM135, Dimensional Changes of Fabrics after Home Laundering (see 15.1).

3.6 AATCC TM143, Appearance of Apparel and Other Textile End Products after Home Laundering (see 15.1).

3.7 AATCC TM150, Dimensional Changes of Garments after Home Laundering (see 15.1).

3.8 AATCC TM207, Seam Twist in Garments Before and After Home Laundering (see 15.1).

3.9 ASTM D123, Standard Terminology Relating to Textiles (see 15.2).

3.10 ASTM D1776, Standard Practice for Conditioning and Testing Textiles (see 15.2).

3.11 ASTM D3882, Standard Test Method for Bow and Skew of Woven and Knitted Fabrics (see 15.2).

3.12 ISO 6330, Textiles—Domestic washing and drying procedures for textile testing (see 15.3).

4. Terminology

4.1 **laundering,** n.—*of textile materials*, a process intended to remove soils and/or stains by treatment (washing) with an aqueous detergent solution and normally including rinsing, extraction and drying.

4.2 **skew,** n.—a fabric condition resulting when filling yarns or knitted courses are angularly displaced from a line perpendicular to the edge or side of the fabric (see ASTM D123).

5. Safety Precautions

NOTE: These safety precautions are for information purposes only. The precautions are ancillary to the testing procedures and are not intended to be all inclusive. It is the user's responsibility to use safe and proper techniques in handling materials in this test method. Manufacturers MUST be consulted for specific details such as material safety data sheets and other manufacturer's recommendations. All OSHA standards and rules must also be consulted and followed.

5.1 Good laboratory practices should be followed. Wear safety glasses in all laboratory areas.

5.2 Detergent may cause irritation. Care should be taken to prevent exposure to skin and eyes.

5.3 Manufacturer's safety recommendations should be followed when operating laboratory testing equipment.

6. Apparatus and Materials (see 15.4)

6.1 Conditioning facilities and conditioning/drying racks with pull-out, perforated shelves (see 15.1).

6.2 Indelible ink marking pen (see 15.1).

6.3 Right-angle marking device (triangle, L-square or template).

6.4 Tape or rule marked in millimeters, tenths of an inch or smaller increments.

6.5 Standard washing machine (see Table I and 15.5).

6.6 AATCC 1993 Standard Reference Detergent (powder, with brightener) (see 15.1).

6.7 Balance with at least 5.0 kg (10.0 lb) capacity.

6.8 Laundering ballast, Type 1 or Type 3 (see Table IV).

6.9 Standard tumble dryer (see Table III and 15.5), or facilities for drip/line drying.

6.10 Digital Imaging System (optional, see 15.6).

7. Test Specimens

7.1 Test Specimens from Fabric Samples.

7.1.1 Consider each roll of fabric to be a sample. Randomly select rolls from each production lot as agreed.

7.1.2 Test 3 specimens from each sample. Cut specimens for Marking Method 1 at least 380 × 380 mm (15 × 15 in.) Cut specimens for Marking Method 2 at least 380 × 660 mm (15 × 26 in.)

7.1.3 Where possible, cut specimens from different areas of the fabric so that each specimen will contain different groups of lengthwise and widthwise yarns. Identify fabric face; mark lengthwise direction on each specimen.

7.1.4 If it is of interest to determine whether the magnitude of the skew change is different from one side of the fabric to the other, prepare 3 specimens from each area of interest. Identify area from which each set of specimens was taken; i.e., left-side, center or right-side.

7.1.5 Test specimens prepared for AATCC TM124 and/or AATCC TM135 may also be tested by this method, using Marking Method 1 (see 15.7), or Marking Method 2, provided specimens are cut large enough to accommodate the required markings.

7.2 Test Specimens from Garment Samples.

7.2.1 Consider each garment to be a sample. Randomly select garments from each production lot as agreed.

7.2.2 Test 3 garments or a total of 3 panels from 2 garments. Use the largest panels in the garments. Consider each tested panel to be a specimen.

7.2.3 Test specimens prepared for AATCC TM143, AATCC TM150, and/or AATCC TM207 may also be tested by this method, using Marking Method 1 or 2.

8. Conditioning

8.1 Prior to marking, condition test specimens as directed in ASTM D1776. Use conditions indicated in Table 1 for Textiles, general and conditioning time as indicated in Table 2 for the appropriate fiber content.

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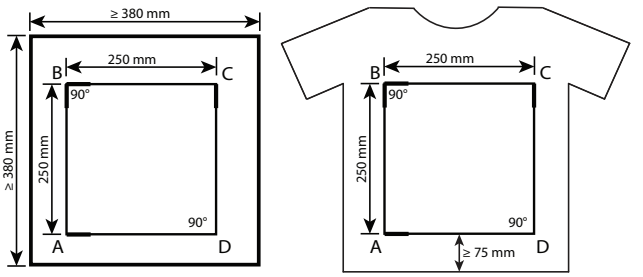

Fig. 1—Marking Method 1 for fabric (left) and garment (right).

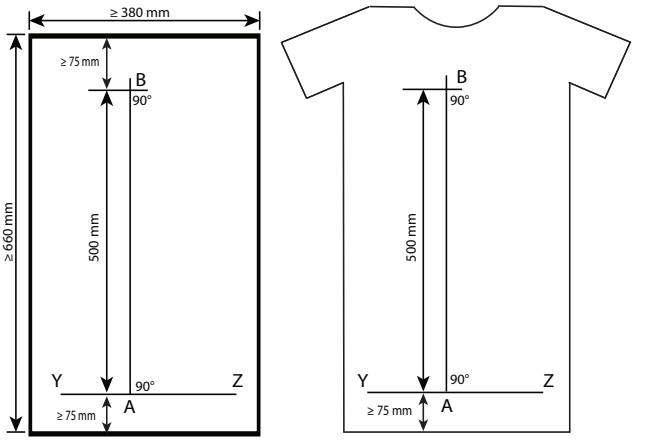

Fig. 2—Marking Method 2 for fabric (left) and garment (right).

8.1.1 Lay specimens flat, separately, on a screen or perforated shelf of a conditioning rack. For garments normally stored hung, hang separately on hangers to condition. Allow space for air movement on all sides of the garment.

8.2 Specimens will be conditioned again after laundering.

9. Marking of Specimens

9.1 Marking Method 1 (see 15.8 and Fig. 1).

9.1.1 Mark specimens without tension on a flat, smooth, horizontal surface.

9.1.2 On each specimen, mark 250-mm (10-in.) pairs of benchmarks parallel to the length of the specimen and 250-mm (10-in.) pairs of benchmarks perpendicular to the length of the specimen. Indicate any alternate benchmark distances in the test report (see 15.9).

9.1.3 Extend and connect benchmarks so that a square is formed. Label corners as *A*, *B*, *C* and *D* in clockwise direction starting with lower left corner.

9.1.4 For circular knitted fabrics to be used in tubular form (e.g., underwear, sweatshirts, etc.), test in tubular form. For others, slit tube and test in open-width form.

9.2 Marking Method 2 (see 15.8 and Fig. 2).

9.2.1 Mark specimens without tension on a flat, smooth, horizontal surface.

9.2.2 On each specimen, mark reference line *YZ* perpendicular to the length of the specimen, at least 75 mm (3 in.) above the bottom edge.

9.2.3 Mark *A* midway on *YZ*.

9.2.4 Place one side of a right-angle marking device along *YZ* so that the perpendicular side extends upward from point *A*. Mark a line along this side of the right-angle marking device, upward from point *A*, perpendicular to *YZ*, at least 500 mm (20-in.) long.

9.2.5 Mark point *B* along the second line, 500 mm (20-in) above point *A*. If the specimen size is insufficient to mark a 500-mm (20-in.) length, mark *B* at the farthest available point along the line that is at least 75 mm (3 in.) below the upper edge of the test specimen. Indicate any alternate distance in the test report.

9.2.6 or circular knitted fabrics to be used in tubular form (e.g., underwear, sweatshirts, etc.), test in tubular form. For others, slit tube and test in open-width form.

10. Laundering Procedure

10.1 Washing.

10.1.1 Select washing conditions for testing from Table I. Set washing machine controls to generate the selected cycle parameters.

10.1.2 Load for laundering shall consist of all specimens in the sample, plus enough laundering ballast pieces to make a total load weight of 1.8 ± 0.1 kg (4.0 ± 0.2 lb).

10.1.3 Begin selected wash cycle. Allow machine to fill to specified water level.

10.1.4 Add 66 ± 1 g of AATCC 1993 Standard Reference Detergent to washing machine as directed by washing machine manufacturer's instructions. If detergent is added directly to wash water, agitate briefly to dissolve completely. Stop agitation before adding wash load.

10.1.5 Add wash load (test specimens and ballast), distributing evenly around center agitator. Restart wash cycle.

10.1.6 For specimens to be drip dried (drying procedure C), stop wash cycle before the water begins to drain from the final rinse cycle. Remove specimens soaking wet. For specimens to be tumble (A), line (B), or screen/flat (D) dried, allow washing to proceed through the final spin cycle.

10.1.7 After each washing cycle, sepa-

Table I—Standard Washing Machine Parameters (see 15.5, 15.10)

Cycle	(1) Normal		(2) Delicate		(3) Permanent Press	
Water Level, L (gal)	72 ± 4 (19 ± 1)		72 ± 4 (19 ± 1)		72 ± 4 (19 ± 1)	
Agitation Speed, strokes/min.	86 ± 2		27 ± 2		86 ± 2	
Washing Time, min.	16 ± 1		8.5 ± 1		12 ± 1	
Final Spin Speed, rpm	660 ± 15		500 ± 15		500 ± 15	
Final Spin Time, min.	5 ± 1		5 ± 1		5 ± 1	
Wash Temp, °C (°F)[1]	(II) Cold:	27 ± 3 (80 ± 5)	(II) Cold:	27 ± 3 (80 ± 5)	(II) Cold:	27 ± 3 (80 ± 5)
	(III) Warm:	41 ± 3 (105 ± 5)	(III) Warm:	41 ± 3 (105 ± 5)	(III) Warm:	41 ± 3 (105 ± 5)
	(IV) Hot:	49 ± 3 (120 ± 5)	(IV) Hot:	49 ± 3 (120 ± 5)	(IV) Hot:	49 ± 3 (120 ± 5)
	(V) Very Hot:	60 ± 3 (140 ± 5)	(V) Very Hot:	60 ± 3 (140 ± 5)	(V) Very Hot:	60 ± 3 (140 ± 5)

[1] Due to US Department of Energy requirements, many washing machines use cooler water. An external control box may be used to override the machine set temperatures.

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