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Appearance of Apparel and Other Textile End Products after Repeated Home Laundering

Developed in 1975 by AATCC Committee RA61; revised 1982, 1989, 1992, 1996, 2006, 2010, 2011, 2014; editorially revised and reaffirmed 1984, 2001; editorially revised 1986, 1991, 1997, 2004, 2005, 2008, 2012. Technically equivalent to ISO 15487.

1. Purpose and Scope

1.1 This test method is designed for evaluating the smoothness appearance of flat fabric and seams, and the retention of pressed-in creases in garments and other textile products after repeated home laundering.

1.2 Any washable textile end product may be evaluated for smoothness appearance, seam smoothness and crease retention using this method.

1.3 Textile end products containing fabrics of any construction, such as woven, knit and nonwoven, may be evaluated according to this method.

1.4 Techniques for seaming and creasing are not outlined since the purpose is to evaluate textile end products as they will be supplied from manufacturing or as ready for use.

2. Principle

2.1 Textile end product items are subjected to standard home laundering practices. A choice is provided of hand or machine washing, alternative machine wash cycles and temperatures, and alternative drying procedures. Evaluation is performed using a standard lighting and viewing area by rating the appearance of specimens in comparison with appropriate reference standards.

3. Terminology

3.1 **appearance of textile end products**, n.—the overall visual impression of a textile end product quantified by comparison of individual components with appropriate reference standards.

3.2 **ballast**, n.—in procedures for processing or testing of textiles, material that is used to bring the total weight or volume of the textiles to an amount specified in the procedure.

3.3 **crease retention**, n.—in fabrics, the visual impression of an inserted crease quantified by comparison with a set of reference standards.

3.4 **durable press**, adj.—having the

ability to retain substantially the initial shape, flat seams, pressed-in creases and unwrinkled appearance during use and after laundering or drycleaning.

3.5 **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, extracting and drying.

3.6 **laundering creases**, n.—sharp folds or lines running in any direction in a washed or dried specimen.

NOTE: Laundering creases are an unintended result of restricted movement of specimens in a washer or the dryer.

3.7 **seam smoothness**, n.—in fabrics, the visual impression of planarity of a seamed specimen quantified by comparison with a set of reference standards.

3.8 **smoothness appearance**, n.—in fabrics, the visual impression of planarity of a specimen quantified by comparison with a set of reference standards.

4. 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.

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

4.2 The 1993 AATCC Standard Reference Detergent and the 2003 AATCC Standard Reference Liquid Detergent may cause irritation. Care should be taken to prevent exposure to skin and eyes.

4.3 All chemicals should be handled with care.

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

4.5 When evaluating crease retention, use of a lamp with a shield can aid in prevention of burns that could result from lamp heat.

5. Uses and Limitations

5.1 This test method is designed to be

used for evaluating the appearance of apparel or other textile end products produced with washable fabric after repeated home laundering.

5.2 The test procedure is designed to reflect the capabilities of home laundry equipment which is currently used by consumers. In general, it is preferable to conduct the test under relatively severe laundering conditions.

5.3 Prints and patterns may mask the mussiness present in textile end products. The rating process is, however, based on the visual appearance of specimens including such effects.

5.4 The interlaboratory reproducibility of the results of this test method depends upon mutual agreement by users of the method on the washing and drying conditions as outlined in 8.1 and the weighting factors to use for individual components of the items as described in 9.7.1.

6. Apparatus and Materials (see 12.1)

6.1 Automatic washing machine (see 12.2).

6.2 Automatic tumble dryer (see 12.2).

6.3 Drip dry and line dry facilities.

6.4 A 9.5 L (10.0 qt) pail.

6.5 1993 AATCC Standard Reference Detergent or 2003 AATCC Standard Reference Liquid Detergent (see 12.3 and 12.7).

6.6 Ballast of 920 × 920 ± 30 mm (36 × 36 ± 1 in.) hemmed pieces of bleached cotton sheeting (Wash load ballast type 1) or 50/50 polyester/cotton plain weave (Wash load ballast type 3) (see Table I).

6.7 Lighting and evaluation area in an otherwise darkened room using the overhead lighting arrangement shown in Fig. 1 (see 12.4). It has been the experience of many observers that light reflected from the side walls near the viewing board can interfere with the rating results. It is recommended that the side walls be painted matte black (85° Gloss less than 5 units) or that blackout curtains be mounted on both sides of the viewing board to eliminate the reflective interference.

6.8 A 500-watt DXC (RFL-2) flood lamp with reflector and light shield (see 12.3), positioned as shown in Fig. 2, for evaluating crease retention.

6.9 Standard AATCC Three-Dimensional Smoothness Appearance Replicas, set of six (see Fig. 3 and 12.3).

6.10 Standard AATCC Photographic Seam Smoothness Replicas prepared for

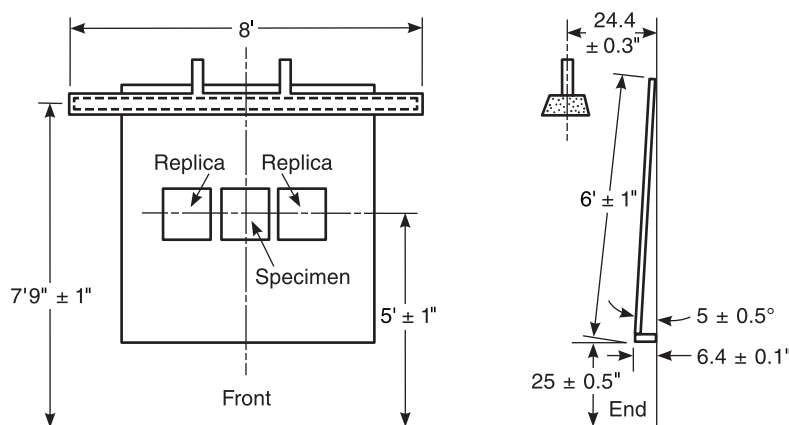


Fig. 1—Lighting equipment for viewing test specimens.

Materials list: (a) Two 8-ft Type F96 CW (Cool White) preheat Rapid Start fluorescent lamps (without baffle or glass). (b) One white enamel reflector (without baffle or glass). (c) One general type swatch mount, spring loaded. Fabricate using light sheet metal (22 ga.). (d) One ¼ in. plywood mounting board painted to match No. 2 gray chip on Gray Scale for Staining.

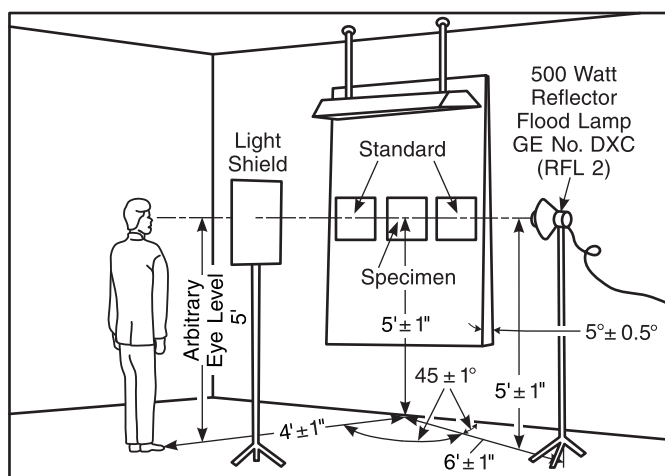


Fig. 2—Lighting and viewing arrangement for crease retention.



Fig. 3—AATCC 3-D smoothness appearance replicas.

rating single- and double-needle seams (see Fig. 4 and 12.3). The reproductions shown in Fig. 4 should not be used for rating.

6.11 Standard AATCC Three-Dimensional Crease Replicas, set of five (see Fig. 5 and 12.3).

6.12 Steam or dry iron with appropriate fabric temperature settings.

6.13 Detergent (for hand wash).

6.14 Scale with at least 5 kg or 10 lb capacity.

7. Test Specimens

7.1 For textile end product tests, select three items for testing.

8. Procedure

8.1 Table II summarizes the alternate washing and drying conditions. Information on the machine and laundering conditions may be found in the AATCC Monograph (M) 6, Standardization of Home Laundry Test Conditions (see www.aatcc.org for the latest version of the monograph).

8.1.1 It is recognized that special cycles or features are available on current washing machines and dryers to achieve improved performance on certain items; i.e., gentle cycles with reduced agitation to protect delicately constructed items, and durable press cycles, with cool-down or cold rinses and reduced spin speeds, to minimize wrinkling. In evaluating appearance retention, however, the more severe *Normal* or *Cotton Sturdy* machine cycle is considered most appropriate. If modifications to any of the cycles (see 8.2) are used, these must be reported in the results (see Section 10).

8.2 Standard washing.

8.2.1 Hand Wash—(see 12.7). Dissolve 20.0 ± 0.1 g of 1993 AATCC Standard Reference Detergent or 30.3 ± 0.1 g of 2003 AATCC Standard Reference Liquid Detergent in 7.57 ± 0.06 L (2.00 ± 0.02 gal) of water at $41 \pm 3^\circ\text{C}$ ($105 \pm 5^\circ\text{F}$) in a 9.5 L (10.0 qt) pail and then add the three textile end product specimens. Wash for 2.0 ± 0.1 min with no twisting or wringing. Rinse once using 7.57 ± 0.06 L (2.00 ± 0.02 gal) of water at $41 \pm 3^\circ\text{C}$ ($105 \pm 5^\circ\text{F}$). Remove the specimens and dry by Procedure C, Drip (see 8.3.3).

8.2.2 Machine Wash—Use specified water level, the selected water temperature for the washing cycle and a rinse temperature of less than 29°C (85°F). If this rinse temperature is not attainable, record available rinse temperature.

8.2.3 Add 66.0 ± 0.1 g of 1993 AATCC Standard Reference Detergent or 100 ± 0.1 g of 2003 Standard Reference Liquid Detergent. In soft water areas this may be reduced to avoid excessive sudsing, but in that case the amount