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Multifiber Adjacent Fabrics: Evaluation of

Developed in 2005 by AATCC Committee RA59; reaffirmed 2006, 2007, 2012, 2017; editorially revised 2008, 2013, 2016; revised 2018.

1. Purpose and Scope

1.1 This procedure is intended to permit the qualification of candidate multifiber test fabrics, by comparing the staining of their components with that of a control multifiber fabric, under controlled conditions.

2. Principle

2.1 The staining properties of individual components of candidate multifiber test fabrics are evaluated by comparing the shades obtained on them and on the components of a control fabric, using a soap solution and each of four different dye baths. The bath containing the yellow disperse dye, Terasil Yellow 2GE 200%, stains the secondary acetate and polyamide components (of the control fabrics and fabrics under test); the bath containing the orange acid dye, Irgalan Orange RL-KWL 250%, stains the polyamide components; the bath containing the blue direct dye, Solophenyl Blue GL 250%, stains the cotton components; and, the bath containing the navy disperse dye, Terasil Navy Blue BGLN 200%, stains the polyester and polyamide components. Evaluations of the stained components are conducted by colorimetric measurements to eliminate the subjectivity of visual evaluations.

3. Safety Precautions

NOTE: These safety procedures are for information purposes only. The precautions are ancillary to the testing procedures and not intended to be all inclusive. It is the user's responsibility to use safe and proper techniques in handing materials in this procedure. 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.

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

3.2 All chemicals should be handled with care.

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

4. Uses and Limitations

4.1 The procedure was tested on multifiber test fabrics containing 15 mm wide fiber stripes. Multifiber test fabrics containing narrower fiber stripes may also be evaluated as long as the aperture on the spectrophotometer used will accommodate the smaller size.

4.2 This procedure was developed using Staining Scale Rating (SSR) values as calculated in ISO 105-A04 (see 15.1). These calculated SSR values are used to assign the reported Gray Scale for Staining (see 15.2). This reported value is based upon a range that is broader than would be found by using the calculated SSR values between 4 and 3 (see 15.2).

5. Apparatus and Materials (see 15.3)

5.1 Accelerated laundering machine.

5.1.1 A laundering machine for rotating closed canisters in a thermostatically controlled water bath at 40 ± 2 rpm.

5.1.2 Stainless steel lever lock canisters Type 1, 500 mL (1 pt), 75 × 125 mm (3.0 × 5.0 in.)

5.1.3 Stainless steel lever lock canisters Type 2, 1200 mL, 90 × 200 mm (3.5 × 8.0 in.).

5.1.4 Adapter plates for holding canisters (see 5.1.3) on laundering machine shaft.

5.1.5 Teflon fluorocarbon gaskets (see 11.5 and 15.4).

5.2 Spectrophotometer geometry d/0° specular included, small area view; calculation

$D_{65}/10°$; tolerance ΔE_{cmc} 0.5

5.3 pH meter accurate to ± 0.01.

5.4 Balance with a weighing accuracy of ± 0.001g.

5.5 Control Multifiber Fabric (see 15.6)

6. Reagents

6.1 Soap, specified in ISO 105-C02 (see 15.1 and 15.3).

6.2 Terasil Yellow 2GE 200% (see 15.5).

6.3 Irgalan Orange RL-KWL 250% (see 15.5).

6.4 Solophenyl Blue GL 250% (see 15.5).

6.5 Terasil Navy Blue BGLN 200% (see 15.5).

6.6 Distilled or Deionized water.

7. Specimens

7.1 Multifiber fabric, to be used as a control (see 15.6); Weight: (3.00 ± 0.1) g.

7.2 Multifiber fabric under test; Weight: (3.00 ± 0.1) g; approximately 100 × 100 mm.

7.3 Mark the specimens to distinguish between the control specimens and the specimens under test.

8. Preparation of Reagents

8.1 Soap Solution.

8.1.1 Dissolve 50 g soap in 1 L water at 45°C.

8.2 Terasil Yellow 2GE 200% Dispersion.

8.2.1 Dispersion: 2.45 g dye into 1000 mL (see 8.6).

8.2.2 Dilution: 20 mL dispersion into 1000 mL

8.2.3 Test Solution for 0.00049 g/L Terasil Yellow 2GE 200%: 10 mL from first dilution and 100 mL soap solution into 1000 mL (see 8.7).

8.3 Irgalan Orange RL-KWL 250% Solution.

8.3.1 Solution: 1.10 g dye into 1000 mL (see 8.6).

8.3.2 Test Solution for 0.011 g/L Irgalan Orange RL-KWL 250%: 10 mL solution and 100 mL soap solution into 1000 mL (see 8.7).

8.4 Solophenyl Blue GL 250% Solution.

8.4.1 Solution: 0.775 g/L dye into 1000 mL (see 8.6).

8.4.2 Dilution: 20 mL into 1000 mL.

8.4.3 Test Solution for 0.000155 g/L Solophenyl Blue GL 250%: 10 mL from first dilution and 100 mL soap solution into 1000 mL (see 8.7).

8.5 Terasil Navy Blue BGLN 200% Dispersion.

8.5.1 Dispersion: 2.4 g dye into 1000 mL (see 8.6).

8.5.2 Test Solution for 0.024 g/L Terasil Navy Blue BGLN 200%: 10 mL dispersion and 100 mL soap solution into 1000 mL (see 8.7).

8.6 Original Dispersion or Solution. Disperse or dissolve a specified quantity of dye in a 200 mL beaker. Using a funnel, transfer it into a 1 L volumetric flask. Using a spray bottle, spray some water around the sides and to the bottom of the beaker and add it to the flask. Repeat until all the dye is transferred. Fill the flask about 3/4 full with water, close it with a stopper, tip it upside down several times to ensure complete dispersion or solution and fill the flask to the meniscus. Trans-

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