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Colorfastness to Crocking: Crockmeter Method

Developed in 1936 by AATCC Committee RA38; revised 1937, 1952, 1957, 1961, 1969, 1972, 1985, 1988, 1996, 2004, 2005, 2007, 2013; reaffirmed 1945; 1989; editorially revised and reaffirmed 1968, 1974, 1977, 1981, 1995, 2001; editorially revised 1986, 2002, 2008 (with title change), 2009, 2010, 2011. Partly equivalent to ISO 105-X12.

1. Purpose and Scope

1.1 This test method is designed to determine the amount of color transferred from the surface of colored textile materials to other surfaces by rubbing. It is applicable to textiles made from all fibers in the form of yarn or fabric whether dyed, printed or otherwise colored.

1.2 Test procedures employing white test cloth squares, both dry and wet with water, are given.

2. Principle

2.1 A colored test specimen is rubbed with a white crock test cloth under controlled conditions.

2.2 Color transferred to the white test cloth is assessed by a comparison with the Gray Scale for Staining (AATCC Evaluation Procedure 2) or the AATCC 9-Step Chromatic Transference Scale (AATCC Evaluation Procedure 8) or Instrumental Assessment of Degree of Staining (AATCC Evaluation Procedure 12), and a grade is assigned.

3. Terminology

3.1 **colorfastness**, *n.*—the resistance of a material to change in any of its color characteristics, to transfer of its colorant(s) to adjacent materials, or both, as a result of the exposure of the material to any environment that might be encountered during the processing, testing, storage or use of the material.

3.2 **crocking**, *n.*—a transfer of colorant from the surface of a colored yarn or fabric to another surface or to an adjacent area of the same fabric principally by rubbing.

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.

5. Uses and Limitations

5.1 This method is not recommended for use for carpets or for prints where the singling out of areas may be too small using this method (see 14.2 and 14.3).

5.2 Since washing, drycleaning, shrinkage, ironing, finishing, etc. may affect the degree of color transfer from a material, the test may be made before, after, or before and after any such treatment.

6. Apparatus and Materials (see 14.1)

6.1 Crockmeter (see 14.3, 14.4 and Fig. 1).

6.2 Crockmeter Test Cloth, cut in 50 mm squares (see 14.5).

6.3 AATCC 9-Step Chromatic Transference Scale (AATCC Evaluation Procedure 8) (see 14.6).

6.4 Gray Scale for Staining (AATCC Evaluation Procedure 2) (see 14.6).

6.5 White AATCC Textile Blotting Paper (see 14.6).

6.6 Specimen Holder for crockmeter (see 14.4).

6.7 In-house poor crocking cloth.

6.8 Crockmeter Verification Cloth. This item may be used in lieu of an in-house poor crocking cloth when such poor in-house crocking cloth is not available.



Fig. 1—Crockmeter.

7. Verification

7.1 Verification checks on the operation of the test and the apparatus should be made routinely and the results kept in a log. The following observations and corrective actions are extremely important to avoid incorrect test results where abnormal crock images can result and influence the rating process.

7.2 Use the Crockmeter Verification Cloth or in-house poor crocking fabric with known behavior and conduct three dry and wet crock tests.

7.2.1 A poor circular image with uneven dye pick-up may indicate the crocking finger needs resurfacing (see 14.7).

7.2.2 A double, elongated image may indicate a loose clip (see 14.7).

7.2.3 A stretched and streaked crock image may be due to mounting the crock square diagonally.

7.2.4 Scuff marks to the sides of the specimen indicate the loops to the wire clips are positioned downwards and are not high enough to prevent rubbing the specimen surface.

7.2.5 A streak in the center of the crock cloth image and in the direction of rubbing may mean the top of the metal base is warped and not flat. This will require a brace insert to square up the tester base.

7.2.6 If specimen holders are used, place the holder over the specimen on the tester base. Move the crocking finger on the crocking arm to the most forward position and observe whether it hits the inside edge of the holder. If this occurs, move the holder slightly forward for all tests. Without correction, this problem will cause a dark area on one side of the crocking image.

7.2.7 Confirm the wet pick-up techniques (see 10.2).

7.2.8 Replace the abrasive paper on the tester base if it is smooth to the touch in the crocking area compared to the adjacent area, or if slippage of the specimen is noticed.

7.2.9 In routine testing, observe if multiple streaks are on the crocking image. Position specimen normally with the long dimension oblique to the warp and filling. If the direction of rubbing falls along a twill line or surface pattern, etc., then streaks may occur. If they do occur, slightly adjust the angle for testing.

8. Test Specimens

8.1 Two specimens are used, one each for the dry and the wet tests.

8.1.1 Additional specimens may be