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Test Method for Colorfastness to Solvent Spotting

1. Purpose and Scope

1.1 This test method is designed to measure the degree of color migration that occurs when a fabric is spotted with a drycleaning solvent.

1.2 Previous versions of this test method were based on perchloroethylene (often referred to as tetrachloroethene). However, due to environmental, health and safety issues related to perchloroethylene, drycleaner associations and test method organizations have been reviewing, evaluating, and approving alternatives.

1.3 The present recognized alternatives for cleaning of textile fabrics and garments by organizations include hydrocarbon solvents, dibutoxymethane, decamethylpentacyclosiloxane, and simulated wetcleaning. These solvent alternatives will be referred to as “solvent of choice” (see 11.2).

1.4 For users of this test method with perchloroethylene to evaluate the degree of color migration of disperse dyes, these proposed alternatives (see 1.3 and 5.5) are noticeably less effective. At this time, only acetone was found to be comparable to perchloroethylene for disperse dye migration.

1.5 During this period of transition away from perchloroethylene, brands, wet processors of dyed and finished fabrics, and testing laboratories should mutually agree on the “Solvent of Choice” to use when evaluating for solvent spotting of textile products using this test method.

2. Principle

2.1 A specimen, attached to a piece of white blotting paper, is placed face side up on a glass plate. The solvent of choice is placed on the center of the specimen. The test is carried out at room temperature. The staining of the blotting paper is evaluated.

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 **migration**, *n.*—the nonuniform movement and distribution of dyes, pigments, finishes or other materials from one part of a material to another.

3.3 **spotting**, *n.*—*in cleaning*, application of solvent or solution to a material prior to or after commercial scouring, laundering, or drycleaning to remove or enhance removal of soil or stains in a local area.

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 All chemicals should be handled with care.

4.3 Test should be run in a well ventilated area such as under a hood.

4.4 An eyewash/safety shower should be located nearby, and an organic vapor respirator should be readily available for emergency use.

4.5 Exposure to chemicals used in this procedure must be controlled at or below levels set by governmental authorities (e.g., Occupational Safety and Health Administration’s [OSHA] permissible exposure limits [PEL] as found in 29 CFR 1910.1000; see web site: www.osha.gov for latest version). In addition, the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) comprised of time weighted averages (TLV-TWA), short term exposure limits (TLV-STEL) and ceiling limits (TLV-C) are recommended as a general guide for air contaminant exposure which should be met.

5. Apparatus, Materials and Reagents

5.1 Pipette, graduated to deliver 1.5 mL.

5.2 Plate, glass.

5.3 AATCC 9-Step Chromatic Transference Scale (AATCC EP8) (see 11.1).

5.4 White AATCC Textile Blotting Paper (see 11.1).

5.5 The present solvent of choice is represented in 11.2.

6. Test Specimen

6.1 Piece of dyed fabric, 25 × 25 mm (1 × 1 in.).

7. Procedure

7.1 Attach test specimen to the center of a 150 × 150 mm (6 × 6 in.) piece of white blotting paper. Make sure the sample is flat against the blotting paper. If necessary, staple the edges of the fabric down to keep the sample flat on the blotting paper.

7.2 Place blotting paper on the glass.

7.3 Apply 1.5 mL of solvent of choice (by pipette) on the center of the test specimen.

7.4 Let stand in air until dry; then evaluate the staining on the blotting paper.

8. Evaluation Method for Staining

8.1 Rate the degree of stain on the blotter using the AATCC 9-Step Chromatic Transference Scale (AATCC EP8) or Instrumental Assessment of Degree of Staining (AATCC EP12) and record the numerical rating that corresponds to the appropriate one on it.

9. Report

9.1 Cite the test method used and any modifications.

9.2 Report the staining grade assigned (see 8.1).

10. Precision and Bias

10.1 *Precision.* Precision for this test method has not been established. Until a precision statement is generated for this method, use standard statistical techniques in making any comparisons of test results for either *within-laboratory* or *between-laboratory* averages.

10.2 *Bias.* Colorfastness to solvent spotting can be defined only in terms of a test method. There is no independent method for determining the true value. As a means of estimating this property, the method has no known bias.

11. Notes

11.1 Available from AATCC, P.O. Box 12215, Research Triangle Park NC 27709; tel: +1.919.549.8141; fax: +1.919.549.8933; e-mail: ordering@aatcc.org; web site: www.aatcc.org.

11.2 The solvent of choice may include hydrocarbon solvents (CAS 64742-48-9), dibutoxymethane (CAS 2568-90-3), decamethylpentacyclosiloxane (CAS 541-02-6), and simulated washing (to be determined by users).

12. History

12.1 Revised in 2022 to provide replacement chemistries for perchloroethylene, and title change.

12.2 Editorially revised 2020 to add History section and change Jurisdiction.

12.3 Editorially revised 2019; reaffirmed 2017; revised 2016; editorially revised and reaffirmed 2010; reaffirmed 2005; editorially revised 2002, and 2001; reaffirmed 2000; editorially revised and reaffirmed 1995; reaffirmed 1990. Editorially revised, 1986. Editorially revised and reaffirmed 1985 and 1981.

12.4 Developed in 1985 by Committee RA92. Jurisdiction transferred to Committee RA87 in 2020.