# Test Method for Colorfastness to Drycleaning

**Developed in 1969 by AATCC Committee RA43. Supersedes AATCC TM85-1968; reaffirmed 1973, 1976, 1979, 1989, 1998, 2003; editorially revised 1981, 1986, 1990, 1995, 2001, 2002, 2008, 2010, 2016, 2019; editorially revised and reaffirmed 1985, 2009, 2013; revised 1993, 2004. Technically equivalent to ISO 105-D01.**

## 1. Purpose and Scope

1.1 This test method is intended for determining the colorfastness of textiles to all kinds to drycleaning.

1.2 The test method is neither suitable for the evaluation of the durability of textile finishes, nor is it intended for use in evaluating the resistance of colors to spot and stain removal procedures used by the drycleaner (see 11.1).

1.3 This test method gives an indication of results to be obtained from three commercial drycleanings.

## 2. Principle

2.1 A specimen of the textile in contact with cotton fabric, multifiber swatch and noncorrodible steel discs is agitated in perchloroethylene (see 11.2) and then dried in air. Any change in color of the specimen is then assessed with the standard Gray Scale for Color Change (AATCC EP1).

2.2 Any staining is assessed by using the Gray Scale for Staining (AATCC EP2) or the AATCC 9-Step Chromatic Transference Scale (AATCC EP8).

## 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 **drycleaning,** n.—the cleaning of fabrics with organic solvents such as petroleum solvent, perchloroethylene or fluorocarbon.

NOTE: The process also includes adding detergent and moisture to the solvent, up to 75% RH, and hot tumble drying to 71°C (160°F).

## 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 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 Perchloroethylene is toxic by inhalation, by repeated contact with the skin and by ingestion; it should be used only in a well vented atmosphere. Toxicology studies with laboratory animals have shown evidence of cancer in rats and mice exposed to perchloroethylene vapors at 100-400 ppm concentrations for prolonged times. Fabric saturated with this solvent should be dried in an adequately ventilated hood. Use chemical goggles or face shield, impervious gloves and an impervious apron when handling perchloroethylene.

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 (see 11.3).

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

4.7 Any perchloroethylene residue must be sent to a permitted waste management facility. Any disposal must be in compliance with federal, state or local regulations.

## 5. Apparatus and Materials (see 11.4)

5.1 An accelerated laundering machine for rotating closed canisters in a thermostatically controlled water bath at 40 ± 2 rpm.

5.2 Standard stainless-steel containers, 7.5 cm diam × 12.5 cm (3 in. diam × 5 in.), of approximately 500 mL (1 pt) capacity, which can be closed using solvent-resistant gaskets.

5.3 Noncorrodible steel discs, 30.0 ± 2.0 mm (1.18 ± 0.08 in.) diam × 3.0 ± 0.5 mm (0.12 ± 0.02 in.) smooth and free from rough edges, weight 20.0 ± 2.0 g (0.7 ± 0.07 oz).

5.4 Undyed cotton twill cloth weighing 270 ± 70 g/m$^2$ (8 ± 2 oz/yd$^2$), free from finishes and cut into swatches 12.0 × 12.0 cm (4.75 × 4.75 in.).

5.5 Multifiber test fabrics (8 mm [0.33 in.] bands) containing acetate, cotton, nylon, silk, viscose rayon and wool. Multifiber test fabrics (8 mm [0.33 in.] bands) and (15 mm [0.6 in.] bands) containing acetate, cotton, nylon, polyester, acrylic and wool (see 11.5).

5.6 Perchloroethylene, commercial drycleaning grade.

5.7 Gray Scale for Color Change (AATCC EP1) (see 11.6).

5.8 Gray Scale for Staining (AATCC EP2) or AATCC 9-Step Chromatic Transference Scale (AATCC EP8) (see 11.6).

5.9 Colorimeter or spectrophotometer.

5.10 Crockmeter Test Cloth.

5.11 Detergent, Perk-Sheen (see 11.7).

## 6. Specimens

6.1 If the textile to be tested is fabric, use three specimens, each 10 × 5 cm (4 × 2 in.) with the longer dimension parallel to the warp or wale direction of the fabric.

6.2 If the textile to be tested is a yarn, knit it into a fabric and use three specimens 10 × 5 cm (4 × 2 in.) with the longer dimension parallel to the wale direction of the fabric.

6.3 Sample preparation.

6.3.1 White cotton fabric, multifiber 8 mm (0.33 in.) bands, of appropriate type. Prepare pieces with a 5 cm (2 in.) square of multifiber cloth or white cotton fabric (as required) sewn, stapled or suitably attached along one 5 cm (2 in.) edge of the test specimen and in contact with the face of the material. When multifiber test cloth is used, attach it so that each of the six fiber stripes is along the 5 cm (2 in.) edge of the specimen with wool on the right. The fiber stripes in the multifiber fabric will be parallel to the lengthwise direction of the test specimen.

6.3.2 Multifiber 15 mm (0.6 in.) bands. Prepare pieces with a 5 × 10 cm (2 × 4 in.) rectangle of multifiber cloth sewn, stapled or suitably attached centered