



Association of Textile, Apparel & Materials Professionals

AATCC takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this test method. Users of this test method are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This test method is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reaffirmed or withdrawn. Your comments are invited either for revision of this test method or for additional procedures and should be addressed to the AATCC Technical Center. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing, you should make your views known to Diana A. Wyman, Technical Director, at the address shown below.

This test method is copyrighted by AATCC, PO Box 12215, Research Triangle Park, NC 27709 USA. Individual reprints (single or multiple copies) of this method may be obtained by contacting AATCC at the above address or tel: 919-549-3526; fax: 919-549-8933, or e-mail: orders@aatcc.org.

AATCC License Agreement: This test method is copyrighted by the American Association of Textile Chemists and Colorists (AATCC), PO Box 12215, 1 Davis Drive, Research Triangle Park, NC USA. All rights reserved.

AATCC grants you a license as follows: The right to download one electronic file of this AATCC test method for temporary storage on one computer for purposes of viewing, and/or printing one copy of the AATCC test method for individual use. Neither the electronic file nor the hard copy print may be reproduced in any way. In addition, the electronic file may not be distributed elsewhere over computer networks or otherwise. The hard copy print may only be distributed to other employees for their internal use within your organization.

This test method is not for resale.

Colorfastness to Ozone in the Atmosphere under Low Humidities

Developed in 1963 by AATCC Committee RA33; revised 1972, 1986, 1987, 2011; reaffirmed 1971, 1975, 1983, 1992, 2002, 2005; editorially revised 1981, 1982, 1983, 1985, 1989, 1995, 2008, 2010; editorially revised and reaffirmed 1997. Partly equivalent to ISO 105-G03.

1. Purpose and Scope

1.1 This test method is intended for determining the resistance of the color of textiles to the action of ozone in the atmosphere at room temperatures with relative humidities not exceeding 67%.

2. Principle

2.1 A test specimen is exposed to ozone in an atmosphere under ambient temperatures (64–82°F) and relative humidities not exceeding 67%. The cycle is repeated (1) until the specimen shows a definite color change or (2) for a prescribed number of cycles.

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.

4. Safety Precautions

NOTE: These safety precautions are for information purposes only. The safety 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 Manufacturer's safety recommendations should be followed when operating laboratory testing equipment. To protect the eyes further, do not look at ozone generator while it is operating.

4.3 Ozone is a sensory irritant. The test cabinet should be vented to the outside

atmosphere in accordance with the manufacturer's specifications. Ozone in even moderate concentrations is injurious to health.

4.4 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 12.1).

5. Uses and Limitations

5.1 Although this test works well for some substrates, it is not suitable for nylon carpets. For nylon carpets, refer to AATCC Method 129, Colorfastness to Ozone in the Atmosphere Under High Humidities.

6. Apparatus and Materials (see 12.2)

6.1 Ozone exposure chamber for ambient temperatures and relative humidities not to exceed 67% (see 12.3).

6.2 Gray Scale for Color Change (AATCC Evaluation Procedure 1) (see 12.4).

7. Test Specimens

7.1 Cut each test specimen at least 10.0 × 6.0 cm (4.0 × 2.375 in.). For subsequent color comparisons, keep the unexposed sample in an airtight container away from light to avoid shade change.

7.2 When a laundered or drycleaned specimen is used, the effects of ozone are based on comparisons with the color of the unexposed laundered or drycleaned specimen. To prepare specimens for testing after laundering or drycleaning, use AATCC Methods 61, Colorfastness to Laundering: Accelerated, and 132, Colorfastness to Drycleaning, respectively.

8. Procedure

8.1 Suspend the test specimens in the exposure chamber (see 12.3). The test apparatus should be located in a room in which the ambient air temperature is 18–28°C (64–82°F) and the relative humidity does not exceed 67%. For reference and

interlab testing, conduct tests in a room or chamber with the standard atmospheric conditions of 21 ± 1°C (70 ± 2°F) and 65 ± 2% RH. Ozone should be present in concentrations of 4.5 ± 1 ppm for 4.5 ± 1 h. This constitutes one cycle (see 12.5).

8.2 Remove those specimens which exhibit a color change at the end of one cycle. One cycle will generally produce a measurable color change in specimens which are ozone sensitive.

8.3 Run additional similar cycles as necessary.

9. Evaluation

9.1 At the end of each cycle immediately compare those specimens which are removed from the exposure chamber with the preserved originals from which they were drawn.

9.2 Rate the effect on color of test specimens after any specified number of cycles by reference to the Gray Scale for Color Change (AATCC Evaluation Procedure 1) or using AATCC Evaluation Procedure 7, Instrumental Assessment of the Change in Color of a Test Specimen, and record the numerical rating that corresponds to the appropriate one on the Gray Scale. Report the number of cycles run (see 12.6).

10. Report

10.1 Report the numerical grade for the change in color of each test specimen, the number of cycles run and the temperature and relative humidity at which the test was performed.

11. Precision and Bias

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

11.2 *Bias.* Colorfastness to ozone in the atmosphere under low humidities can be defined only in terms of a test method. There is no independent method for determining the true values. As a means of estimating these properties, the method has no known bias.

12. Notes

12.1 Available from Publications Office,