



Designation: D5053 – 03 (Reapproved 2023)

Standard Test Method for Colorfastness of Crocking of Leather¹

This standard is issued under the fixed designation D5053; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This test method covers the determination of the degree of color that may be transferred from leather to other surfaces by rubbing under wet (damp) or dry conditions, or both. This test method does not apply to wet blue.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

- 2.1 *ASTM Standards:*²
- D1517 Terminology Relating to Leather
 - D1610 Practice for Conditioning Leather and Leather Products for Testing
 - D2813 Practice for Sampling Leather for Physical and Chemical Tests
- 2.2 *AATCC Methods:*
- AATCC Method 8 Colorfastness to Crocking;
 - AATCC Crockmeter Method³
 - AATCC Chromatic Transference Scale or Gray Scale for Staining³

¹ This test method is under the jurisdiction of ASTM Committee D31 on Leather and is the direct responsibility of Subcommittee D31.04 on Apparel

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Technical Manual of the American Association of Textile Chemist and Colorist, P.O. Box 12215, Research Triangle Park, NC 27709-2215.

3. Terminology

3.1 *Definitions*—For definitions of colorfastness and crocking, refer to AATCC Method 8. For other specific leather terminology, see Terminology D1517.

4. Summary of Test Method

4.1 A specimen of the leather sample fastened to the base of a crockmeter is rubbed with white crock test cloth under controlled conditions. Color transferred to the white cloth is assessed by a comparison with the AATCC chromatic transference scale; an alternative is to use the gray scale for staining as suggested in AATCC Method 8.

5. Significance and Use

5.1 This test method is intended for use on any type of leather.

6. Apparatus

- 6.1 *Apparatus*, as specified in AATCC Test Method 8.^{4,5}
- 6.2 *Test Cloth*, white crock.^{5,6}
- 6.3 *Test Cloth*, black crock.^{5,7}

7. Sampling, Test Specimens, and Test Units

7.1 The minimum size of the test specimen shall be 2 in. by 5 in. (5.1 cm by 12.7 cm). However, where nondestructive testing of skins is desired, the entire skin may be used and tested in any portion of its area. (See Practice D2813 for proper sampling area.)

7.2 All specimens shall be conditioned as prescribed in Practice D1610. Conditioning other than as prescribed shall be noted in the results.

⁴ The sole source of supply of the AATCC crockmeter known to the committee at this time is Atlas Electric Devices Company, 4114 North Ravenswood Avenue, Chicago, IL 60613. Telephone: (312) 327-4520.

⁵ If you are aware of alternative suppliers, please provide this information to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,¹ which you may attend.

⁶ The sole source of supply of test cloth known to the committee at this time is Testfabrics Inc., 200 Blackford Ave., Middlesex, NJ 08846. Telephone: (908) 469-6446. Fax: (908) 469-1147.

⁷ The source of this test cloth is Textile Innovators Corp., 101 Forest St., Windsor, NC 27983, Tel No. 252-794-9703, Fax No. 252-794-9704. Order as TIC 400 Cotton print cloth, Direct Black 22.

8. Procedure

8.1 *Dry Test*—Mount the test specimen flat on the base of the testing machine with its long dimensions in the direction of the motion of the finger. Use white cloth for testing colored leathers, and use black cloth for white or light-colored leathers. Condition the piece of cloth, 2 in.², for at least 2 h in the standard atmosphere. Then place on the end of the finger with the weave of the cloth oblique to the direction of rubbing. Place the finger with the cloth cover on the specimen and operate the machine for ten complete turns of the crank at a rate of one turn per second. When a comparison is required, test a standard specimen in the same manner.

8.2 *Wet Test*—Place a new area of the test specimen and a new piece of cloth on the testing machine as described in 8.1. Before placing the cloth on the finger, wet it with distilled water. Then wring or extract until its moisture content is between 75 % and 100 % of the weight of the cloth before wetting. Carry out the rubbing test as described in 8.1. At the end of the test, remove the cloth and dry in air. When a comparison is required, test a standard specimen in the same manner.

9. Interpretation of Results

9.1 If no comparison is specified, classify the colorfastness of the specimen as follows:

9.1.1 *Good*—No appreciable staining of either the wet or dry cloth.

9.1.2 *Fair*—Appreciable staining of wet cloth but no appreciable staining of dry cloth.

9.1.3 *Poor*—Appreciable staining of dry cloth.

9.2 If a comparison standard is used, compare the cloth used on the test specimen with the cloth used on the standard specimen.

9.3 If the AATCC scale is used for comparison, compare the cloths used on the test specimens with the scale.

10. Report

10.1 State that the specimens were tested as directed in ASTM Test Method (D5053).

10.2 Report the following information:

10.2.1 Whether wet or dry crocking test was utilized, and

10.2.2 Degree of staining for each specimen as the appropriate grade on the AATCC chromatic transference scale.

10.2.3 Indicate whether the AATCC chromatic transference scale or gray scale for staining was used.

11. Precision and Bias

11.1 This test method is adopted from the procedures of the American Leather Chemists Association⁸ where it has long been in use and where it was approved for publication before the inclusion of precision and bias statements were mandated. The original interlaboratory test data is no longer available. The user is cautioned to verify by the use of reference materials, if available, that the precision and bias of this test method is adequate for the contemplated use.

12. Keywords

12.1 colorfastness; crocking; leather

⁸ American Leather Chemists Association, Office of Secretary-Treasurer, Campus Station, Cincinnati, OH 45221.

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