



Designation: D2057 – 05 (Reapproved 2022)

Standard Test Method for Colorfastness of Zippers to Laundering¹

This standard is issued under the fixed designation D2057; 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.

1. Scope

1.1 This test method covers the determination of alteration in shade and of staining under conditions similar to that experienced in domestic washing of zipper stringers. This test method is applicable to the textile portion of zipper stringers that utilize tapes made of cotton, linen, or manufactured organic fibers, and to combinations thereof.

1.2 The values stated in SI units are to be regarded as standard. The values given in parentheses after SI units are provided for information only and are not considered standard.

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

[D123 Terminology Relating to Textiles](#)

[D2050 Terminology Relating to Subassemblies Used in the Manufacture of Textiles](#)

[D2051 Test Method for Durability of Finish of Zippers to Laundering](#)

[D2052 Test Method for Colorfastness of Zippers to Dry-cleaning](#)

[D2053 Test Method for Colorfastness of Zippers to Light](#)

[D2054 Test Method for Colorfastness of Zipper Tapes to Crocking](#)

¹ This test method is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.54 on Subassemblies. The method was developed in cooperation with the Slide Fastener Association, Inc.

Current edition approved March 1, 2022. Published March 2022. Originally approved in 1961. Last previous edition approved in 2015 as D2057 – 05(2015). DOI: 10.1520/D2057-05R22.

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.

[D2058 Test Method for Durability of Finish of Zippers to Drycleaning](#)

[D2059 Test Method for Resistance of Zippers to Salt Spray \(Fog\)](#)

[D2060 Test Methods for Measuring Zipper Dimensions](#)

[D2061 Test Methods for Strength Tests for Zippers](#)

[D2062 Test Methods for Operability of Zippers](#)

[D3692 Practice for Selection of Zippers for Care-Labeled Apparel and Household Furnishings](#)

2.2 *AATCC Methods:*

[Method 143 Appearance of Apparel and Other Textile End Products after Repeated Home Launderings](#)³

[Evaluation Procedure 1, AATCC Gray Scale for Color Change](#)³

[Evaluation Procedure 3, AATCC Chromatic Transference Scale](#)³

3. Terminology

3.1 For all terminology related to D13.54, Subassemblies, refer to Terminology [D2050](#).

3.2 For all other terminology used in this standard, see Terminology [D123](#)

4. Summary of Test Method

4.1 Specimens in contact with a multifiber test cloth are laundered in home laundry and drying equipment, with or without bleach, under appropriate temperature conditions to produce the effect of home laundering on zipper color. The alteration in shade and the degree of staining of the multifiber test cloth are graded by reference to the AATCC Gray Scale or to the AATCC Chromatic Transference Scale, as appropriate.

5. Significance and Use

5.1 Test Method D2057 is useful for testing to determine if the degree of alteration in shade is satisfactory for the intended end-use and for determining if unacceptable staining of color into adjacent fabric will occur.

NOTE 1—For guidance in evaluating the results of this method, refer to Practice [D3692](#).

³ Technical Manual of the American Association of Textile Chemists and Colorists, P. O. Box 12215, Research Triangle Park, NC 27709.

5.2 This test method is considered satisfactory for acceptance testing of commercial shipments because the method has been used extensively in the trade for acceptance testing.

5.2.1 If there are differences of practical significance between reported test results for two laboratories (or more), comparative tests should be performed to determine if there is a statistical bias between them, using competent statistical assistance. As a minimum, the test samples should be used that are as homogeneous as possible, that are drawn from the material from which the disparate test results were obtained, and that are randomly assigned in equal numbers to each laboratory for testing. Other materials with established test values may be used for this purpose. The test results from the two laboratories should be compared using a statistical test for unpaired data, at a probability level chosen prior to the testing series. If a bias is found, either its cause must be found and corrected, or future test results must be adjusted in consideration of the known bias.

5.3 The method(s) in this standard along with those in [D2051](#), [D2052](#), [D2053](#), [D2054](#), [D2058](#), [D2059](#), [D2060](#), [D2061](#), and [D2062](#) are a collection of proven zipper test methods. They can be used as aids in the evaluation of zippers without the need for a thorough knowledge of zippers. The enumerated test methods do not provide for the evaluation of all zipper properties. Besides those properties measured by means of the enumerated test methods there are other properties that may be important for the satisfactory performance of a zipper. Test methods for measuring those properties have not been published either because no practical methods have yet been developed or because a valid evaluation of the information resulting from existing unpublished methods requires an intimate and thorough knowledge of zippers.

6. Apparatus

6.1 *Automatic Washing Machine*,⁴ with “normal setting” agitator speed of 179 ± 2 spm, washing time of 12 min, spin speed of 645 ± 15 r/min, final spin cycle of 6 min and rinse temperature less than 29 °C (85 °F).

6.2 *Automatic Tumble Dryer*,⁵ with controlled exhaust temperature that cycles from 61 °C to 71 °C (140 °F to 160 °F) and a cooling period while tumbling 10 min at the end of the drying cycle.

6.3 *AATCC Chromatic Transference Scale*.³

6.4 *Gray Scale for Color Change*.³

7. Reagents and Materials

7.1 *Multifiber Test Fabric No. 10*.⁶

7.2 Any household detergent.

⁴ A Kenmore Automatic Washer has been accepted as the standard machine. Available from Sears, Roebuck and Co. For model number and address of nearest Commercial Sales Department, write AATCC, P. O. Box 12215, Research Triangle Park, NC 27709. Any other washer that is known to give comparable results may be used.

⁵ A Kenmore Electric Dryer has been accepted as the standard. Available from Sears, Roebuck and Co. For model number and address of nearest Commercial Sales Department, write to AATCC, P. O. Box 12215, Research Triangle Park, NC 27709. Any other dryer known to give comparable results may be used.

⁶ Available from Testfabrics, Inc., P. O. Drawer O, Middlesex, NJ 08846.

7.3 Any liquid chlorine household bleach containing 5.25 % sodium hypochlorite.

7.4 Any dry, nonchlorine household bleach based on sodium perborate/sodium carbonate (pH of a 1 % solution should be 10.7 to 11.3).

8. Sampling

8.1 *Lot Sample*—As a lot sample for acceptance testing, take at random the number of individual containers from each shipping carton as directed in an applicable material specification or other agreement between the purchaser and the supplier. Consider individual containers from each shipping carton to be the primary sampling units.

NOTE 2—An adequate specification or other agreement between the purchaser and supplier requires taking into account the variability between shipping cartons and between zippers in a container to provide a sampling plan with a meaningful producer’s risk, consumer’s risk, acceptable quality level, and limiting quality level.

8.2 *Laboratory Sample and Test Specimens*—As a laboratory sample for acceptance testing, take the number of zippers specified in Section 9 at random from each container in the lot sample. Consider the zippers as both the laboratory sample and the test specimens.

9. Number of Specimens

9.1 Unless otherwise agreed upon, as when specified in an applicable material specification, take one zipper at random from each individual container selected for sampling.

10. Test Specimen

10.1 The test specimen shall consist of approximately 7740 mm² (12 in.²) of zipper chain. The specimen need not be a continuous length.

10.2 A 51 mm (2-in.) square of multifiber test cloth No. 10 as specified in AATCC Method 61 shall be sewn or stapled to the stringer length, with the filling stripes running at right angles to the stringer length. The multifiber test cloth shall be attached with a single line of stitching or stainless steel staples midway on the stringer width.

10.3 Duplicate specimens shall be prepared and held for comparison in evaluating the results of the test.

11. Conditioning

11.1 There are no special environmental conditions required.

12. Procedure

12.1 Test each specimen as directed in AATCC Method 143, Paragraph 8 Procedure, using the specimens and enough dummy pieces of undyed cotton sheeting or towels to make a 1.8 kg (4 lb) load using no fewer than 10 dummy pieces.

12.2 Any domestic household detergent may be used in place of the AATCC detergent specified as well as the water temperature and bleach condition from [Table 1](#) of this test method as agreed upon by the purchaser and seller. When chlorine bleach is used, introduce one cup into the washer in the manner directed on the bleach container. When nonchlorine