

Test Method for Carpet: Liquid Penetration by Spillage

Developed in 2016 by AATCC Committee RA57; reaffirmed and editorially revised 2019.

1. Purpose and Scope

1.1 This test method is intended to simulate the actual use of carpets in the field, and evaluates the propensity of the face and back of carpets to be penetrated by a spilled liquid.

1.2 Unless specifically agreed by interested parties, this method is not intended for the evaluation of seams/joints of the carpet. This test method is used to evaluate whether or not a carpet (face and backing) is penetrated by a spilled liquid through the carpet face and backing. The method does not assess seams/joints unless reported. This method is intended to simulate the actual use of carpet in the field.

2. Principle

2.1 A colored liquid is spilled from a specified height onto the pile side of a carpet. The test liquid is allowed to stand, undisturbed, on the specimen for approximately 24 h.

2.2 The specimen is evaluated for liquid penetration.

3. Terminology

3.1 **blotting paper**, *n.*—any absorbent cloth-like material that is white in color, and will readily absorb small droplets of liquid.

3.2 **carpet backing**, *n.*—materials (fabrics, yarns or chemical compounds) in the carpet other than the face yarns.

3.3 **carpet composite**, *n.*—the finished carpet product, including: face fibers, primary backing, adhesive coating, and secondary backing (if applicable).

3.4 **liquid spillage resistance**, *n.*—for carpet, the ability to prevent the penetration of liquids through the carpet composite.

3.5 **primary backing**, *n.*—for tufted carpet, the substrate into which yarns are inserted.

3.6 **seam**, *n.*—for carpet, a line formed by the junction of any two carpet composite edges.

3.7 **secondary backing**, *n.*—a substrate fabric attached to the back of a carpet with an adhesive binder.

3.8 **spill**, *adj.*—The unintended falling of liquid onto a carpet face.

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 used 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 practice should be followed. Wear safety glasses in all laboratory areas.

4.2 All chemicals should be handled with care.

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

4.4 Ground all electrical equipment.

5. Uses and Limitations

5.1 This test method is not applicable to liquid penetration due to flooding, sub floor leakage, etc. It is not designed to classify a carpet as liquid impervious or to assess the long term effects of liquids on product deterioration or degradation.

5.2 The test is not intended to evaluate broad loom or modular carpet seams unless the seams are specifically tested as agreed between the buyer and seller.

6. Apparatus and Materials (see 14.1)

6.1 Glass or plastic laboratory funnel with a 35 ± 2 mm (1.43 ± 0.08 in.) length tube. The tube inside diameter should be 10 ± 2 mm (0.40 ± 0.08 in.).

6.2 Methylene Blue dye stuff.

6.3 Glassine paper or equivalent (see 14.2)

6.4 Splash ring guard, at least 150 mm (6 in.) in diameter (not to exceed width of the specimen), with a minimum height of 127 mm (5.0 in.), and made from a non-absorbent material.

6.5 White blotting paper or equivalent (see 14.2).

6.6 Funnel and funnel holding device, capable of centering the funnel over the specimen at a height of $100 \text{ cm} \pm 0.3 \text{ cm}$ (39.4 ± 0.125 in.).

7. Reagents

7.1 Methylene Blue 0.1% aqueous, diluted with de-ionized water. Prepare

enough to apply 100 mL of solution to every specimen to be tested.

8. Preparation of Test Specimens

8.1 Cut three specimens with a minimum dimensions of 300×300 mm (12.0×12.0 in.) from the test sample, one from each side of the full width of the carpet, at least 300 mm (12.0 in.) from the edge, and one specimen from the approximate center of the carpet width.

8.2 Prior to testing, remove any loose tufts or fibers from the specimens.

9. Conditioning

9.1 Prior to testing, condition test specimens as directed in ASTM D1776, Standard Practice for Conditioning and Testing Textile (see 14.3). After testing, the test specimens shall sit undisturbed for 24 ± 2 h in the standard atmosphere for textiles, prior to evaluation.

9.2 Perform test in standard atmosphere for textiles.

10. Procedure

10.1 Position laboratory funnel with the aperture of funnel $100 \text{ cm} \pm 0.3 \text{ cm}$ (39.4 ± 0.125 in.) above a flat, level surface on which the test specimen will be placed (see Fig. 1).

10.2 Place the test specimen face up on the level surface. Locate the funnel aperture above the approximate center of the specimen.

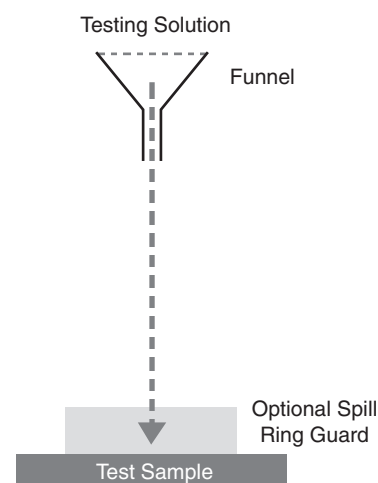


Fig. 1—Relative position of spillage equipment.

10.2.1 Place splash ring guard (optional) (optional) on the specimen, with center of guard coinciding with center of test specimen. Ensure that the splash ring makes good contact with the test specimen.

10.3 Prepare a separate flat, level surface covered with the glassine paper (or other non-absorbent paper). The paper should have sufficient coverage to capture any liquid transfer from the test specimen.

10.4 Pour 100 ± 1 mL of the 0.1% Methylene Blue test solution through the funnel and on to the test specimen. Allow the solution to completely soak into its face or allow a minimum of 30 min. before removing the ring. If the test specimen will be moved to a holding area, carefully remove the test specimen, maintaining the horizontal orientation so no liquid runs over the edge. Transfer the test specimen to a flat, level surface that is covered with glassine paper (see 14.5). The specimen(s) will remain undisturbed in the conditioned atmosphere for 24 ± 2 h.

10.5 Repeat 10.4 until all specimens have been tested.

10.6 After the 24-hour exposure time (10.4), remove any liquid standing from the face of the test specimen by use of blotting paper (see 14.2).

11. Evaluation

11.1 Carefully, raise the test specimen

off of the glassine paper, and observe if the test solution has transferred to the glassine paper, or if the back of the test specimen has been stained by the solution. both the paper and the secondary backing for any visible signs of liquid penetration.

11.2 Use blotting paper to assess if any liquid has migrated through to the back. Place the test specimen face-up, for at least 10 seconds, on a piece of blotting paper. Lift specimen and observe blotting paper for visible signs of liquid penetration through the specimen.

11.3 A transfer of liquid to the glassine or blotting paper also constitutes liquid penetration of the test specimen.

12. Report

12.1 Include in the report the identification information of the carpet samples being assessed. Indicate that the evaluation was accomplished using AATCC TM205-2016e.

12.2 For each specimen evaluated, report whether the specimen exhibited liquid penetration, as determined in 11.1, 11.2 or 11.3.

12.3 Report the specimen size used in the testing.

12.4 Report any deviation from the test method.

12.5 Report if a Spill Ring was used

during testing.

13. Precision and Bias

13.1 Precision and Bias statements are not applicable because data is not generated by this test method.

14. Notes

14.1 For potential equipment information pertaining to this test method, please visit the online *AATCC Buyer's Guide* at www.aatcc.org/bg. AATCC provides the possibility of listing equipment and materials sold by its Corporate members, but AATCC does not qualify, or in any way approve, endorse or certify that any of the listed equipment or materials meets the requirements in its test methods.

14.2 Available from AATCC, P.O. Box 11215, Research Triangle Park NC 27709; tel: +1.919.549.8141; fax: +1.919.549.8933; ordering@aatcc.org; www.aatcc.org.

14.3 Available from ASTM International, 100 Barr Harbor Dr., West Conshohocken PA 19428; tel: +1.610.832.9500; fax: +1.610.832.9555; www.astm.org.

14.4 When a carpet pile yarn is adequately treated, is properly treated it is not unusual for a liquid to stand on the face of the specimen.

14.5 If the test solution runs over the edge while a test specimen is being moved, the test specimen should be discarded and the specimen retested.