



Determination of Water Spotting Test

1 Introduction

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose. To describe the specimen preparation and steps required to conduct water spotting and change in hand, or haptic, testing on material samples.

1.2 Applicability. This procedure applies to textile materials that may come into contact with water in use whether intentionally, accidentally, or during cleaning.

1.3 Remarks. This procedure describes the test used to create water spotting on the finish of a material specimen in the form of color change, ring formation, or other objectionable appearance changes (once the water has completely evaporated). This procedure also describes the test used to create a change in hand as a result of applying water to the material.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

ISO 3696

2.2 GM Standards/Specifications.

GMW3221

3 Resources

3.1 Facilities.

3.1.1 Calibration. The test facilities and equipment shall be in good working order and shall have a valid calibration label.

3.1.2 Alternatives. Alternative test facilities and equipment may also be used. However, all measuring variables as specified in this standard shall be determined correctly with respect to their physical definition.

3.2 Equipment.

3.2.1 Graduated cylinder.

3.2.2 Glass stirring rod.

3.2.3 Grade 3 Water as defined in ISO 3696.

3.3 Test Vehicle/Test Piece. Test specimen as defined in material specification.

3.4 Test Time.

Calendar time: 2 days

Test hours: 48 hours

Coordination hours: 1 hour

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Personnel trained in accordance with laboratory accreditation requirements.

4 Procedure

4.1 Preparation. Each test requires a specimen approximately 400 mm × 400 mm.

Note: The specimen size shall be increased so that the water is not allowed to completely wick to any edge.

4.2 Conditions.

4.2.1 Environmental Conditions. Not applicable.

4.2.2 Test Conditions. Deviations from the requirements of this standard shall have been agreed upon between the supplier and the GM Materials Engineer. Such requirements shall be specified on component drawings, test certificates, reports, etc.

4.3 Instructions.

4.3.1 Condition the test specimen for a minimum of 24 h to the requirements of GMW3221, Code A, prior to testing.

4.3.2 Based on the material specification, measure the appropriate amount of Grade 3 Water. The water should be at room temperature $22\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$.

4.3.3 Place the specimen flat on a glass, ceramic, or other inert surface and pour the water on the center of the test specimen. For fabric and carpet, use a stirring rod and gently massage the surface to work the water into the specimen until all water is absorbed. There shall be no water remaining above the surface of the fabric or carpet, unless treated with a water repellent finish. In this case, the water may not absorb.

4.3.4 Allow the water to evaporate for a minimum of 24 h in a conditioned environment as specified in GMW3221, Code A.

4.3.5 For napped materials, gently comb the specimen against the nap.

Note: Other than combing a napped material, no additional attempts shall be made to clean the specimen.

4.3.6 Examine the specimen visually (without magnification) for any staining, change in color, change in finish or ring formation as compared to adjacent areas that were not exposed to water.

4.3.7 Record any visual change to the specimen (e.g., staining, ring formation, change in color or finish) in the test certification package associated with the material specification.

4.3.8 Feel a specimen that was not exposed to water with your hand. Feel the specimen in the area that was exposed to water and brushed (if napped).

4.3.9 Record any change in hand (e.g., a permanent noticeable increase in stiffness) in the test certification package associated with the material specification. The specimen may also be evaluated for tackiness or a change in slipperiness, if applicable.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results.

5.2.1 Visual Inspection. The specimens are visually inspected for staining, ring formation, and change in color or finish as compared to adjacent areas that were not exposed to water. The specimens are rated per the requirement levels (and, therefore, compliance to requirements) as specified in the test certification package associated with the material specification.

5.2.2 Tactile Inspection. After exposed and unexposed specimens are felt with the hand, specimens are rated per the requirement levels (and, therefore, compliance to requirements) as specified in the test certification package associated with the material specification.

5.3 Test Documentation. Report any ring formation, staining, change in color, change in finish, change in haptics, or any other deleterious visual changes or tactile changes.

6 Safety

This standard may involve hazardous materials, operations, and equipment. This standard does not propose to address all the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.