



Pile Distortion - Environmental

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. This test shall be used to determine the ability of pile fabrics to resist appearance change due to environmental conditions of heat and humidity under a load.

1.2 Applicability. This test is applicable to pile fabrics used for seating or other applications where crushing tendencies need to be evaluated.

1.3 Remarks. This test procedure assesses the ability of a pile fabric to retain its appearance after a weight is placed in a localized area for a prescribed period of time while exposed to a moderately high temperature and humid environment.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW3221

GMW14231

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 Glass Plate. One (1) glass plate having the approximate dimensions of 100 mm × 100 mm × 5 mm.

3.2.2 Weight. One kilogram (1 kg) ± 0.01 kg weight having a flat base of 40 mm ± 5 mm in diameter.

3.2.3 Brush. Soft toothbrush or equivalent.

3.2.4 Cutting dies or shears for preparation of test specimens.

3.2.5 Apparatus for conditioning to the appropriate requirements as described in GMW3221 Code A, unless otherwise specified in the relevant materials specification.

3.3 Test Vehicle/Test Piece. Not applicable.

3.4 Test Time.

Calendar time:	2 days
Test hours:	6 hours
Coordination hours:	5 hours

3.5 Test Required Information.

 Not applicable.

3.6 Personnel/Skills.

 Personnel trained in accordance with the laboratory accreditation and Standard Operating Procedure requirements.

4 Procedure

4.1 Preparation.

4.1.1 At least one (1) test specimen $80 \text{ mm} \pm 5 \text{ mm} \times 80 \text{ mm} \pm 5 \text{ mm}$ shall be prepared.

4.1.2 Unless otherwise specified in the relevant materials specification, conditioning shall be performed according to GMW3221 Code A.

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. Such requirements shall be specified on component drawings, test certificates, reports, etc.

4.3 Instructions.

4.3.1 Pre condition the weight and glass plate for a minimum of 2 h in a conditioning chamber which has been stabilized at $50 \text{ }^{\circ}\text{C} \pm 3 \text{ }^{\circ}\text{C}$ and $35\% \pm 5\%$ relative humidity (RH).

4.3.2 Inside the conditioning chamber, place the test specimen face side up on the glass plate and place the weight centrally on the test specimen.

4.3.3 Condition the assembly in this environment for $6 \text{ h} \pm 0.25 \text{ h}$.

4.3.4 Remove the weight from the test specimen and remove the test specimen from the conditioning chamber.

4.3.5 Cool the test specimen at ambient laboratory conditions for a minimum of 2 h.

4.3.6 Using a soft toothbrush, brush the entire test area 2 to 3 strokes against the pile direction.

5 Data

5.1 Calculations. Determine the degree of difference between the tested area and the surrounding area. Use the following descriptions to determine the rating.

- 10 = No change.
- 8 = Slight pile distortion.
- 6 = Moderate. Noticeable pile distortion that can be removed when the surface of the test specimen is brushed.
- 4 = Significant. Very noticeable pile distortion that remains after the surface of the test specimen is brushed.
- 2 = Severe. Excessive pile distortion. Permanent, unacceptable change in appearance.

5.1.1 Evaluate the sample from all four (4) principal directions (down the nap, into the nap, across the nap from left, and across the nap from right).

5.2 Interpretation of Results. Not applicable.

5.3 Test Documentation. Results are reported on the laboratory data form included with GMW14231.

5.3.1 Report the worst rating of those from the four (4) principal directions.

5.3.2 In reporting the test results, include the tested specimen and mark the specimen indicating the direction used in determining the result.