



Procedure for Determining Laminate Curl Properties of Foam Laminated Materials

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 standard determines the tendency of a laminated material to curl due to tension differences when laminated.

1.2 Applicability. This procedure applies to foam laminated trim materials.

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

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 Sharp knife.

3.2.2 Ruler graduated in millimeters.

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

3.3 Test Vehicle/Test Piece.

3.4 Test Time.

Calendar time: Not applicable

Test hours: 1 hour

Coordination hours: Not applicable

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Appropriate laboratory personnel.

4 Procedure

4.1 Preparation.

4.1.1 Cut three (3) test specimens, 25 mm ± 1 mm × 300 mm ± 5 mm with the long dimension being cut in the warp or machine direction.

4.1.2 Mark each specimen 250 mm ± 1 mm (L_1) from one (1) end.

4.2 Conditions. Unless otherwise specified in the relevant material specification, conditioning shall be performed according to GMW3221, Code A.

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. Layers of laminated test specimens are partially separated and the difference in the lengths of each layer of the test specimen is measured after a relaxation period.

4.3.1 Using a sharp knife, separate the fabric and scrim (if used) materials from the foam for the 250 mm length.

4.3.2 Allow the separated materials to relax in standard conditions, GMW3221 Code A, for 60 minutes ± 5 minutes.

4.3.3 Measure the difference in the lengths of the test specimen layers by measuring the distance between the end of each fabric layer and the end of the foam (L_2). Measure for both the face fabric and the scrim fabric.

5 Data

5.1 Calculations. Calculate the percent (%) of length difference between each fabric material and the foam using the equation: % of Length Difference = $\frac{L_2}{L_1} \times 100$

Calculate the average percent of length difference for each fabric (face and scrim).

5.2 Interpretation of Results. Not applicable.

5.3 Test Documentation. Report the average calculated percent of length difference for both the face fabric and the scrim fabric.

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.

7 Notes

7.1 Glossary. Not applicable.

7.2 Acronyms, Abbreviations, and Symbols.

Not applicable.

8 Coding System

This standard shall be referenced in other documents, drawings, etc., as follows:

Test to GMW4089