GM WORLDWIDE ENGINEERING STANDARDS	Test Procedure	GMW16190

Determination of Cantilever Sag Resistance

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 procedure shall be used for determining the sag resistance of non-homogenous composite materials intended for interior applications.

1.2 Applicability. Interior trim of cars and trucks.

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

3.2.2 A cantilever sag support apparatus (Appendix A, Figure A1) consisting of two flat plates that can be held in place by hand tightened screws. Flat plates shall be able to hold in place 25 mm ± 1 mm depth, and minimum 50 mm in width (Appendix A, Figure A2).

3.2.3 Use a scale (in millimeters) that is calibrated to at least 0.5 mm.

3.2.4 Cutting die or shears for preparation of the test specimens.

3.2.5 Environmental chamber.

3.3 Test Vehicle/Test Piece. Not applicable.

3.4 Test Time.

Calendar time:	2 days
Test hours:	24 hours
Coordination hours:	48 hours

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Not applicable.

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4 Procedure

4.1 Preparation. Test specimens shall be taken as directed in material specification or referring documentation. If not stated, sample material as in 4.1.1 thru 4.1.4.

4.1.1 If cutting samples and there is machine direction, cut samples in the machine direction and perpendicular to the machine direction. If a machine direction cannot be determined, cut samples in a chosen direction and a direction perpendicular to the chosen direction. The material specification may define that the separate specimens are required to be deflected in both directions.

4.1.2 The size of the test specimen shall be 75 mm ± 1 mm in width by 300 mm ± 1 mm in length.

4.1.3 For each condition, a minimum of three test specimens from each direction shall be tested.

4.1.4 Unless otherwise specified in the relevant material specification, condition specimens for a minimum of 24 h to the requirements of GMW3221 Code A prior to testing.

4.2 Conditions.

4.2.1 Environmental Conditions. Test within environmental chamber at 85 °C unless otherwise specified in the material specification.

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 The test specimen shall be secured between flat plates. Do not compress. Plates shall be level relative to each other; a shim of the material can be used to level the apparatus. Two flat plates should be suspended by more than 100 mm for measurements and fully stable to handle specimen weight. Orient specimens as specified by material specification. Requirements may include appearance side on top or bottom, when mounting the specimen in the fixture.

4.3.2 Secure test specimen in cantilever sag fixture.

4.3.3 Place in prescribed environment, and measure height of specimen opposite secured end from the lowest point of the bottom edge of the specimen to the base of apparatus or fixed point.

4.3.4 At end of environment, measure height of specimen opposite secured end from the lowest point of the bottom edge of the specimen to the base of apparatus or fixed point.

4.3.5 Sag rounded to the nearest 1 mm.

4.3.6 Record the difference in height (sag).

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. Not applicable.

5.3 Test Documentation.

5.3.1 Report the average change in measurement (difference between initial and after environmental exposure).

5.3.2 Record in the test report any other change in shape of the test specimen other than sag (e.g., twist, bow, rise, etc.)

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.

Sag: Difference between the starting and ending measurements at the sample's edge furthest away from being supported.

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