



Stationary Glass Metallic Moldings Retention 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. This procedure describes the method to be used in order to test any molding encapsulated, bonded or attached to a stationary glass panel.

1.2 Applicability. This procedure applies to all passenger cars, light duty trucks, and medium duty trucks and buses of 4536 kg gross vehicle mass (weight) rating or less that have a molding encapsulated or attached to a stationary glass panel.

1.3 Remarks. This document is the GM Worldwide Glazing Testing Standard. Its purpose is to establish a common test methodology for glazing systems with Metallic Moldings to ensure that a high quality world class system is consistently developed and produced. This is a living document and any suggestions or revisions will be reviewed and/or updated annually by the Fixed Glass Global Subsystem Leadership Team (GSSLT).

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW3059

GMW3600

GMW14124

2.3 Additional References.

- CG180 5-Phase Document (ID).
- GM Security Guidelines (ID): <https://gmweb.gm.com/HR/Security/Pages/FutureGuide.aspx>.
- Program specific Component Technical Specification (CTS).
- Subsystem Technical Specifications (SSTS).
- Vehicle Technical Specifications (VTS).

(ID) = This document is limited to internal use within General Motors and shall not be accessed outside this company. Contact the GM Lead Engineer for further instructions.

3 Resources

3.1 Facilities. No special facilities required.

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 Force gauge with hook adapter.

3.2.2 Personal Protection Equipment (PPE).

3.3 Test Vehicle/Test Piece. Test samples shall be of production intent design and material for design validation (DV); or, production intent design and materials manufactured with production processes (home line) for product

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validation (PV). Any changes to the components or material, e.g., design, fit, form, function, properties, manufacturing process, and/or location of manufacture require revalidation. GM shall approve validation methods for product/process changes before the supplier is committed to the change.

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3.4 Test Time.

Calendar time:	15 d
Test time:	344 h (340 h chamber + 4 h testing)
Coordination time:	4 h

3.5 Test Required Information. Requirements from the Subsystem Technical Specification (SSTS) or respective specification are necessary in order to execute test methods in this document.

3.5.1 Notification. GM Validation is to be notified of test failures within 24 h period of occurrence.

3.5.2 Five (5) Phase. Supplier to develop five phase document (CG180) for all test failures.

3.5.1 Product Security. Security protocol for the test vehicle must be followed per GM Security Guidelines.

3.6 Personnel/Skills. The test facility shall have sufficient personnel having the necessary education, training, technical knowledge, and experience for performing the required tests. Prior experience in setting up and running similar tests. Experience in the use of the referenced test equipment.

4 Procedure

4.1 Preparation.

4.1.1 Read the proper requirement from the SSTS.

4.1.2 Thoroughly read this GMW and any other associated standards.

4.1.3 Ensure that proper Personal Protection Equipment (PPE) is used during set up and testing.

4.1.4 Ensure that the materials are in compliance to GMW3059 and any regulatory requirements for country of sales.

4.1.5 Confirm Product Security Protocol for the vehicle tested by contacting the Vehicle Performance Manager (VPM). (Vehicles requiring camouflage, etc., must be carefully secured throughout the testing procedure so that no lapse in vehicle security occurs.)

4.1.6 Ensure that ALL components are at the proper release level and signed off by the Designing Engineer (DE) and Validation Engineer (VE) prior to testing.

4.1.7 Ensure that the fixture is in proper working order – proper representation of the body, no damage from previous test.

4.1.8 Ensure that all equipment is in proper working order, equipment is calibrated, counters are working properly.

4.2 Conditions. All conditions specified shall be targeted toward the specified value with any given tolerance ($\pm$) used to compensate for variation. During testing, conditions specified shall not be adjusted within the tolerance unless it is to maintain the particular test condition within the specified tolerance. If such an adjustment is made, it shall be approved by the applicable GM engineer prior to the start of any testing. Unless otherwise specified perform tests in the as received condition without special preconditioning.

4.2.1 Environmental Conditions. If not otherwise specified, tests shall be performed at $T_{\text{Room}} = 23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$. If various temperature ranges for the tests are specified, the procedure shall be constructed, if not otherwise specified, in a way that all tests shall be performed first at $T_{\text{Room}} = 23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$, then at high temperature and lastly at low temperature. If not specified, the test parameter for relative humidity (RH) shall be set at $50\% \pm 5\%$ and voltage set to U_{NOM} .

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. Such deviations shall be approved by the GM Validation Engineer and specified on the GM1829 Analysis Development and Validation Plan and Report and test reports.

4.3 Instructions.

4.3.1 Purpose. This test is used to ensure the moldings on stationary glass meet the Program Specific SSTS Requirements.

4.3.2 Test Equipment. See 3.2.

4.3.3 Test Samples. See 3.3, as received components.

4.3.4 Test Preparation Using an as received component, divide the molding into 5 sections or points of strength (Figure A1). These points shall be aligned with the attachment points between the molding and in the encapsulation. Figure A4 gives examples of retention test locations.

4.3.5 Attach screws in 50 mm increments. Place first screw 2.0 cm from the edge of part.

4.3.6 Attach cable between the screws that straddle the attachment points.

4.3.7 Using a force gauge with hook adapter, apply a load perpendicular to the surface to the component until failure. Figures A2 and A3.

4.3.8 Calculate the average, standard deviation, minimum and maximum values.

4.3.9 Photograph all failure modes.

4.3.10 Record data in a data sheet (see Figure A5 in Appendix A for an example).

4.4 Conditioned Components.

4.4.1 Test Samples. Condition the parts using GMW14124 Cycle "C". Repeat twice before performing the rest of the procedure.

4.4.2 Repeat 4.3.4 through 4.3.10 for conditioned components.

4.5 Test Requirements. Must meet requirements in the program specific SSTS/CTS. Raw data and averages must be provided.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. Not applicable.

5.3 Test Documentation. (Required)

5.3.1 Evaluation Reports. The supplier shall write evaluation reports to document the results of all validation activities and shall make the test results and evaluation reports available to GM engineers upon request. See GMW3600. All test reports are to be in English and available two (2) weeks after test completion.

The following is also required for all test reports:

- Procedure number and section numbers on all test reports.
- Requirement being met and SSTS requirement number.
- Test equipment: Serial numbers and calibration information.
- Part traceability – include cavity number, serial number, tool number, engineering change level (ECL), etc. to specifically identify the part.
- All test parameters for environment.
- Any authorized deviations to the plan.
- Road map as required.
- Dimensional data on the test part as required.

5.3.2 Photos. Photos of the test fixture, test setup and test sample shall be added to the test report. If digital equipment cannot operate in extreme cold environment – photos through chamber windows are permissible.

5.3.3 Videos. Test videos are to be stored in GDM for a minimum of three (3) months after Start of Regular Production (SORP). Name the video files using the format: "2011 D1SB-N AIP Water Management Wiper Motor Results 23July10" and reference the file in GM Evaluation Report. Test results and still pictures of concerns from videos are to be documented on a GM Evaluation Report.

5.3.4 A 5 Phase Document (CG180) for all test failures within 24 h period of occurrence.

5.4 Samples/Components. Samples of components or material released to this standard shall be tested for conformity with the requirements of this standard and approved by the responsible GM Department prior to the