



Exterior Systems Vehicle Dimensional Stability 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 ensure plastic exterior components can withstand extreme heat and cold from environmental exposure as well as evaluate the effects of expansion and contraction on the system.

1.2 Applicability. This test applies to all components mounted on the exterior of the vehicle. (See Table 1.)

Table 1: Typical Exterior Parts

Air Inlet Grille/Cowl	Outside Rearview Mirror
Assist Step	Rocker Molding/Sill Plates
Body Side Molding	Roof Mounted Antennas
Cargo Box Trim	Specialty and Other Parts ^{Note 1}
Convertible Tonneau Cover (both closed and stowed positions)	Spoiler/Air Deflector
Decorative Front End Trim	Sunroof - Glass Encapsulation/Weatherstrip
Decorative Rear End Trim	Roof Carrier
Door Handle	Roof Trim
Emblem/Decal/Nameplate	Upper Side Trim
Fascia	Wheel House Liner
Front and Rear Lamp (not illuminated)	Wheel House Opening Molding/Mud Guard
Fuel Filler Door	Window Molding
Grille	

Note 1: Specialty and other parts refer to any dealer-installed and new part designs not listed.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW14264 GMW15308

2.3 Additional References.

- CG583 Development/Validation Test and Vehicle Review
- Master Process Documents (MPD)
- Subsystem Technical Specifications (SSTS)

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3 Resources

3.1 Facilities. Environmental chamber or chambers large enough to accommodate the vehicle and capable of maintaining the specified temperatures.

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 Torque Wrench.

3.3 Test Vehicle/Test Piece. The test parts must be in design position with design intent attachment method on test vehicle or test fixture installed per Master Process Documents (MPD) or as described by the Design or Validation Engineer.

3.3.1 For validation the parts must be the production version that will be sold to customers, including attachments, and must have all production released interfacing parts. Adhesively attached parts must be evaluated with a compatible painted surface interface.

3.4 Test Time.

Calendar time: 2 d to 3 d based on chamber capability.

Test time:

- 3.0 h hot 80 °C ± 3 °C
- Cool to Ambient 23 °C ± 5 °C
- 3.0 h cold -30 °C ± 3 °C
- Warm to Ambient 23 °C ± 5 °C
- 3.0 h hot 80 °C ± 3 °C
- Cool to Ambient 23 °C ± 5 °C
- 3.0 h cold -30 °C ± 3 °C
- Warm to Ambient 23 °C ± 5 °C

Coordination time: 3.0 h

Notes: If the Subsystem Validation Engineer (SVE) and Design Release Engineer (DRE) agree:

- The first hot cycle can be replaced with Exterior Systems Solar Exposure. Test per (GMW15308).
- It is acceptable and may be desirable to start with cold cycle.
- Install adhesively attached Moldings in the prescribed time prior to test to simulate Assembly Plant time prior to environmental exposure (this is intended for cold cycle first).
- Modify hot or cold temperatures and time in chamber based on components. (Tires must be removed when testing above 80 °C.)

3.5 Test Required Information. Take photographs (as necessary) and measurements of the parts to be tested as installed before, during, and/or after the test. Take the photographs at the appropriate distance and angle to emphasize and make clear the gaps, flushness, and parallelism of the test parts. Temperature and gap measurements must be taken during the course of the test. Also, a static review must be completed with the GM SVE and DRE.

3.6 Personnel/Skills. Test personnel shall include the SVE and DRE along with a test lab technician or test engineer.

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