



Exhaust System Isolator Requirements and Tests

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 contains the general requirements and associated tests regarding exhaust system isolators. Exhaust system isolators are used to attach the exhaust system to the vehicle and provide isolation from exhaust system structure borne noise and vibration.

1.2 Applicability. Materials covered by this specification are divided into three (3) types.

1.2.1 Type A. Ethylene Propylene Diene Monomer (EPDM) rubber (M-class) for 125 °C continuous temperatures.

1.2.2 Type B. Vinyl Methyl Silicone (VMQ) for 150 °C continuous temperatures.

1.2.3 Type C. Drawing defined (e.g., using SAE J200 or ASTM D2000 line callout).

2 References

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

2.1 External Standards/Specifications.

ASTM D2000	ISO 1431-1	ISO 23529	SAE J200
ISO 188	ISO 7619-1		

2.2 GM Standards/Specifications.

GMW3059	GMW14203	GMW14566	GMW14739
GMW3116	GMW14473	GMW14682	GMW16331

2.3 Additional References.

- Appendix C2 of the Engineering Statement of Requirements (eSOR): Exhaust Subsystem Technical Specification (SSTS)
- Global General Assembly Manufacturing Bill of Process (BOP)
- Relevant Part Math Data
- Vehicle Technical Specification (VTS)

3 Test Preparation and Evaluation

3.1 Resources. According to the relevant test procedure, as listed in Section 4.

3.1.1 Facilities. According to the relevant test procedure, as listed in Section 4.

3.1.1.1 Calibration. The test facilities and equipment shall be in good working order and shall have a valid calibration label.

3.1.1.2 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.

3.1.2 Equipment. According to the relevant test procedure, as listed in Section 4.

3.1.3 Test Vehicle/Test Piece. According to the relevant test procedure, as listed in Section 4.

3.1.4 Test Time. According to the relevant test procedure, as listed in Section 4.

3.1.5 Test Required Information. According to the relevant test procedure, as listed in Section 4.

3.1.6 Personnel/Skills. According to the relevant test procedure, as listed in Section 4.

3.2 Preparation. According to the relevant test procedure, as listed in Section 4.

3.3 Conditions.

3.3.1 Environmental Conditions. According to the relevant test procedure, as listed in Section 4.

3.3.2 Test Conditions. Deviations from the requirements of this standard shall have been agreed upon by GM Design Release Engineer (DRE) and Validation Engineer prior to start of testing. Such requirements shall be specified on component drawings, test certificates, reports, etc.

3.4 Instructions. According to the relevant test procedure, as listed in Section 4.

3.5 Data. According to the relevant test procedure, as listed in Section 4.

3.6 Safety.

This Engineering Standard may involve safety requirements for hazardous materials, the method of operations and equipment. This standard does not propose to address all the safety issues associated with its use. It is the responsibility of the user of this standard to ensure compliance with all appropriate safety and health practices. This would include any specific training that may be required. The safety and health standards include site specific rules and procedures, company rules and procedures, and Government Standards. Contact shall be made with the appropriate site Safety and Health personnel for further direction and guidance in these matters.

3.7 Documentation. 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 start of delivery of production level components or materials.

Any change to the component or material, e.g., design, function, properties, manufacturing process and/or location of manufacture requires a new release of the product. It is the sole responsibility of the supplier to provide the customer, unsolicited, with documentation of any change or modification to the product/process, and to apply for a new release.

If not otherwise agreed to, the entire verification test shall be repeated and documented by the supplier prior to start of delivery of the modified or changed product. In some cases, a shorter test can be agreed to between the responsible GM department and the supplier.

3.7.1 Test Results. The test results shall be compiled in a test report.

4 Requirements and Procedure

4.1 Dimensioning.

4.1.1 Component/Assembly Dimensions. See part math data. Verify components are dimensionally accurate.

4.1.2 Identification and Requirements. The GM trademark and part number to GMW16331, the material designation to GMW3116 and SAE J200 shall appear on the production parts at the position identified in the part math data.

4.2 Functional Tests.

4.2.1 Noise and Vibration Test. Vehicle level noise and vibration testing per Vehicle Technical Specification (VTS) and Appendix C2 of the Engineering Statement of Requirements (eSOR).

4.2.2 Installation Force. Isolator installation force shall not exceed 80 N (18 lbs) at 10 mm/sec $\pm$ 5 mm/sec at 23 °C $\pm$ 3 °C. Production intent exhaust hanger rod shall be utilized during the testing. Isolator test samples with poa lubricant must be pre-aged 15 days to 30 days prior to testing - representing shipping days from supplier to GM Manufacturing location. Test apply rate, direction, required aging and any deviations to the maximum installation force must be approved by the GM DRE and GM Validation Engineer prior to start of testing. Refer to the Global General Assembly Manufacturing Bill of Process (BOP) for further information.

4.2.3 Removal Force (if applicable). Isolator removal force shall be a minimum of 200 N (45 lbs) at 10 mm/sec $\pm$ 5 mm/sec at 23 °C $\pm$ 3 °C. Production intent exhaust hanger rod shall be utilized during the testing. Applicable isolators, test removal rate, direction, and any deviations to the minimum removal force must be approved by the GM DRE and GM Validation Engineer prior to start of testing.