



Sprayable Polyurethane for Sound Barriers and Decouplers

1 Scope

This specification details the requirements of a two-component (2K) sprayable polyurethane sound barrier material that can be used for front of dash applications or other applications where a barrier material or decoupler assembly is required.

1.1 Material Description. Two-component meter-mixed polyurethane (PU) materials which can be applied at varying thicknesses across an area. Expandable polyurethane material may then be applied via injection in order to fabricate a decoupler. Materials must be homogenous and free of voids for maximum acoustic performance.

1.2 Symbols. Not applicable.

1.3 Typical Applications. Any noise and vibration application where a variable thickness barrier or sound decoupler is required.

1.4 Remarks. Not applicable.

2 References

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

2.1 External Standards/Specifications.

ASTM D412	FMVSS 302	ISO 34-1	ISO 868
-----------	-----------	----------	---------

2.2 GM Standards/Specifications.

GMW3059	GMW3221	GMW3259	GMW16534
GMW3154	GMW3232	GMW4217	GMW16853
GMW3205	GMW3235	GMW15635	

2.3 Additional References.

TMC003 Material Safety Data Sheet guidance documents (available at www.gmsupplypower.com).

3 Requirements

3.1 Requirements on Test Specimens. All materials tested to this specification shall be conditioned for 24 h according to GMW3221, Code A.

3.1.1 Specific Gravity. Refer to Table 1 for specific gravity range of the cured PU materials.

Table 1: Specific Gravity Range

Sprayed Dense	55 ± 5.0 kg/m ³
Sprayed Expanded	1500 ± 50 kg/m ³

3.1.2 Tensile Strength (ASTM D412). Tensile strength of cured dense PU material shall be ≥ 1350 kPa when tested per ASTM D412, Method A, Die C.

3.1.3 Elongation (ASTM D412). Elongation of cured dense PU material shall be ≥ 45% when tested per ASTM D412, Method A, Die C.

3.1.4 Tear Strength (ISO 34-1 Method B, Procedure A). This method requires an angle test piece without a nick. Data for both initial tear and tear propagation shall be required.

3.1.5 Hardness (ISO 868). Hardness of dense PU shall be 85 ± 5 Shore A.

3.1.6 Dimensional Stability (GMW4217). Use dry method, 1.5% maximum change.

3.1.7 Low Temperature Flexibility (GMW3154). Polyurethane material shall not break, crack or deteriorate in any fashion after the mandrel test.

3.1.8 Odor (GMW3205). Rating of six (6) minimum. Refer to GMW16853.

3.1.9 Flammability (GMW3232). Must comply with FMVSS 302. Test to GMW3232.

3.1.10 Mildew (GMW3259). There shall be no visible growth or odor of mildew.

3.1.11 Fogging. Refer to GMW16853. Test according to GMW3235, Method A, Code T1: 90% minimum reflectance; or Method B, Y1, T1, P1, 2.0 mg maximum.

3.1.12 Emissions. Refer to GMW16853. Test according to GMW16534. A report on Volatile Organic Compound (VOC) and Semi-volatile Organic Compound (SVOC) emissions shall be submitted.

3.1.13 Carbonyl Emissions. Refer to GMW16853. Test according to GMW15635.

Carbonyl emissions shall be as follows:

- Formaldehyde: ≤ 8 mg/kg
- Acetaldehyde: ≤ 8 mg/kg
- Acrolein: ≤ 8 mg/kg
- Sum of C2 thru C6 Carbonyls: ≤ 20 mg/kg

3.2 Other Requirements.

3.2.1 Parts made from sprayable PU must be flexible enough for aid of installation but be stiff enough to lean and not fold over onto itself.

4 Manufacturing Process

Not applicable.

5 Rules and Regulations

5.1 Legal Regulations. All materials must satisfy applicable laws, rules, regulations and recommendations valid in the country of usage.

5.2 Language. In the event of conflict between the English and domestic language, the English language shall take precedence.

5.3 Inspection and Rejection. Samples of components or materials released to a GM material specification shall be tested for conformity with the requirements of this material specification and approved by the responsible Engineering department prior to commencement of delivery of bulk supplies.

A new approval must be received for any changes, e.g., properties, manufacturing process, location of manufacture, etc. If not otherwise agreed, all testing and documentation normally required for initial release must be completed.

It is the responsibility of the supplier to inform the customer in a timely manner, without solicitation, and to include documentation of all modifications of materials and/or processes and to apply for a new release.

If not otherwise agreed, all release tests shall be repeated and documented by the supplier prior to commencement of delivery of non-conforming bulk supplies. In individual cases, a shorter test can be agreed to between the responsible Engineering department and the supplier.

5.4 Material Safety Data Sheets/Safety Data Sheets (MSDS/SDS). For new product submissions, or when a change in chemical composition of an existing product has occurred, a complete copy of the Material Safety Data Sheet/Safety Data Sheet must be submitted in compliance with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) requirements or other country-specific MSDS/SDS requirements. In addition, product MSDS/SDS submissions must be in compliance with specific country General Motors TMC003 Material Safety Data Sheet/Safety Data Sheet guidance documents where available.

5.5 All materials supplied to this standard must comply with the requirements of GMW3059, **Restricted and Reportable Substances for Parts.**