



Flexible and Semi-Rigid Two-Component Moldable Cellular Polyurethane Systems

1 Scope

1.1 Material Description. This specification defines the requirements for flexible and semi-rigid two component moldable cellular polyurethane (PU) systems. Materials meeting the requirements of this standard will be comprised of two (2) classes and several material types, as defined in Table 1.

1.1.1 Class I: Flexible or semi-rigid two component moldable cellular PU systems without an integral skin layer.

Note: These materials may still have a surface skin that is created using a secondary process, but must be specified on the engineering drawing or math data file.

1.1.2 Class II: Flexible or semi-rigid two component moldable cellular PU systems with an integral skin layer.

Note: Class II materials are intended for water sealing, and/or wear and abrasion resistance.

1.1.3 Material type will be determined according to the density range. See Table 1.

Table 1: Material Type and Related Density Range

Material Type	Density (kg/m³)
Type I	< 50.00
Type II	50.01 to 100.00
Type III	100.01 to 150.00
Type IV	150.01 to 250.00
Type V	> 250.01

1.2 Symbols. Not applicable.

1.3 Applicability. Typical applications include hood muckets, front of dash seals, engine covers, and other suitable applications for use as air, dust, light, and water seals or isolators and squeak and rattle protection.

1.4 Remarks. Surface appearance and dimensions will be specified on the engineering drawing or math data file as agreed between engineering and the supplier.

2 References

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

2.1 External Standards/Specifications.

ISO 845	ISO 1856	ISO 8067	ISO/IEC 17025
ISO 1798	ISO 3386	ISO 23529	

2.2 GM Standards/Specifications.

GMW3059	GMW3235	GMW14357	GMW15634
GMW3205	GMW3259	GMW14358	GMW16853
GMW3232	GMW14270	GMW14444	GMW17650

2.3 Additional References.

- Engineering Drawing or Math Data File
- Relevant Test Procedures
- Safety and Industrial Hygiene (S&IH) Technical Standard (TS), S&IH TS 3.4-160-02

3 Requirements

3.1 Requirements on Test Specimens. Unless otherwise specified, the shape, size, and number of test pieces shall be in accordance with the relevant test procedures. Specimen conditioning shall be as specified in the relevant test procedures. The minimum time between manufacturing and testing shall be 72 h.

Unless otherwise stated, ambient temperature test conditions shall be held to $+23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$; all other temperatures shall be held to $\pm 3\text{ }^{\circ}\text{C}$. Unless otherwise stated, mechanical properties in delivery state and after heat or fluid immersion, are to be tested at $+23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ and with the same test procedures.

3.2 Emissions Testing of Interior Materials and Parts. For all Code E designated parts per GMW14444, reference GMW16853 for emissions testing of interior materials and parts.

3.3 Shelf Life. The material shall be packed to prevent permanent deformation when shipped or stored. It must meet all requirements of this specification after six (6) months of storage at $+50\text{ }^{\circ}\text{C}$.

3.4 Material and Performance Requirements. Material requirements are summarized in Table 2. All materials are required to test a minimum of six (6) lots to Table 2 requirements except for water impermeability (one (1) lot only).

3.5 Test Laboratory. Test shall be performed at an ISO/IEC 17025 accredited laboratory, or a facility approved by GM materials engineering.

3.6 Annual Certification Testing. All materials approved to this specification shall be listed in the GM Materials Approved Source List. After a material has been granted approval, the required testing for annual material certification shall be density, tensile strength, elongation, water absorption, compression set, compression force deflection, and cold resistance.

3.7 Material Composition. All materials approved to this specification must provide the manufacturer's identification number (product codes) of the mixing chemicals (isocyanate and polyol) used and the mixing ratio by weight.

3.8 All materials supplied to this standard must comply with GMW3059, **Restricted and Reportable Substances, including the requirement to obtain a GM-approved International Material Data System (IMDS) submission.**

Table 2: Material Properties (Six (6) Lots)

Property	Test Method	Unit	Value
Density			
Type I	ISO 845	kg/m³	< 50.00
Type II			50.01 to 100.00
Type III			100.01 to 150.00
Type IV			150.01 to 250.00
Type V			> 250.01
Tensile Strength: As-received			