



Micro-Cellular Polyurethane Materials for Air, Dust, Noise, and Water Sealing

1 Scope

This specification defines the requirements of continuous cast Micro-Cellular cellular polyurethane materials based on polyether or polyester chemistry to be used as air, dust, light, and water seals or gaskets. These materials may also be used as isolators, rattle protection, covers for gaps and other suitable applications. These materials are typically die cut or slit-to-width from rolls of cast material, and may have pressure sensitive adhesive applied to one side.

- For molded, cast, and slab polyurethane foam for sound absorbing applications refer to GMW14196: Polyurethane Foams for Acoustic Applications.
- For elastomer polyurethane foams for sealing and vibration handling applications having a minimum of 15% bio-renewable and a minimum of 25% post automotive shredder residue, refer to GMW16515: Flexible Expanded Material for Air, Dust, Water Sealing and Noise Vibration Handling Applications.
- For slab/sheet polyurethane foam for Engine Compartment Sound Absorber (ESCA), refer to GMW16869.

1.1 Material Description. Materials meeting the requirements in this specification will be comprised of two (2) classes and several types.

1.1.1 Classes.

- **Class I:** Micro-Cellular polyurethane materials to be used for air, dust and light seals or rattle isolators.
- **Class II:** Micro-Cellular polyurethane materials to be used for water sealing, and must meet the water sealability requirements of this document at 50% compression.

1.1.1.1 Class II materials may also be used in applications where water sealing is not required (i.e., Class II materials may be used in Class I applications).

1.1.2 Material type will be determined according to the range of compression deflection at 25% compression. See Table 1.

Table 1: Material Type and Related Compression Deflection Ranges

Material Type	Compression Deflection
Type I	< 20 kPa
Type II	10 to 35 kPa
Type III	25 to 55 kPa
Type IV	50 to 100 kPa
Type V	90 to 160 kPa
Type VI	125 to 400 kPa
Type VII	180 to 575 kPa
Type VIII	> 350 kPa

Note: Compression deflection classifications shall be based on the average nominal compression deflection value $\pm$ 10%.

1.1.3 Certain applications may require the use of an adhesive. If an adhesive is required, the adhesive backed material shall meet the specified engineering requirements (eSOR, Math data, drawing).

1.2 Symbols. Not applicable.

1.3 Applicability. Typical applications include: air, dust, and light seals, water seals and gaskets, isolators and rattle protection, covers for gaps, toppers, and other suitable applications.

1.3.1 Remarks. To properly use this specification, the surface appearance (skin/no skin) and dimensions must be specified.

1.3.2 Recycled or Alternate Materials. Recycled polyurethane materials or bio-based materials may be used for parts under this specification.

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 23529
ISO 1798	ISO 3386-1	ISO/IEC 17025	

2.2 GM Standards/Specifications.

GMW3059	GMW3259	GMW14444	GMW16869
GMW3205	GMW14196	GMW15634	GMW17650
GMW3232	GMW14270	GMW16515	
GMW3235	GMW14358	GMW16853	

2.3 Additional References.

- Specified engineering requirements (eSOR, Math data, drawing).

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 methods. The minimum time between manufacturing and testing shall be 72 h.

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 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.

3.4 Shelf Life. The material shall be packed to prevent permanent deformation when shipped or stored. It must meet all requirements of this specification after 6 months of storage at +50 °C.

3.5 Material and Performance Requirements. Material requirements are summarized in Table 2 and Table 3. For initial approval, all materials are required to test a minimum of six (6) lots to Table 2 requirements and one (1) lot to Table 3 requirements.

3.6 Test Laboratory. Test shall be performed at an ISO/IEC 17025 accredited laboratory, or a facility approved by GM Materials Engineering.

3.7 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 (as received), Elongation (as received), Compression Set (as received), Compression Force Deflection, and Cold Resistance.