



Silicone Foams

1 Scope

1.1 Material Description. This specification covers silicone foam materials used for sealing various components within vehicles. These silicone foam materials are recommended for applications where the operating temperature range is -55 °C to +200 °C. Materials can be produced in continuous rolls, sheets, or cast bun blocks.

1.1.1 Material Class and Type. Products qualified to this specification shall be identified by Class (cell structure) and Type, compression force deflection ranges per ISO 3386-1 (foams with density < 250 kg/m³) or ISO 3386-2 (foams with density ≥ 250 kg/m³) at 25% deflection.

1.1.1.1 Material Class Definition.

- **Class I:** Open Cell Foam.
- **Class II:** Closed Cell Foam.

1.1.1.2 Material Type Definition.

- **Type 0:** This is a very low modulus (ultra-soft cellular) foam, which can be easily compressed and used as noise isolation and as an air, dust, and fluid seal.
- **Type 1:** This is a low modulus (soft cellular) foam, which can be easily compressed and used as noise isolation and as an air, dust, and fluid seal.
- **Type 2:** This is a medium modulus (medium cellular) foam, which can be easily compressed and used as noise isolation and as an air, dust, and fluid seal.
- **Type 3:** This is a firm modulus (firm cellular) foam, which can be easily compressed and used as noise isolation and as an air, dust, and fluid seal.
- **Type 4:** This is a very firm modulus (extra-firm cellular) foam, which can be easily compressed and used as noise isolation and as an air, dust, and fluid seal.

1.1.1.3 Certain applications may require the use of an adhesive. If an adhesive (ADH) is required, an ADH suffix shall be added after the basic specification and type number (e.g., GMW16392 Class II Type 2 – ADH). If an adhesive is specified, the adhesive backed material shall meet the applicable adhesive requirements (see Table 2).

1.1.1.4 Annual Certification Testing. Upon approval and listing of a material to this specification in the GM Materials Approved Source List, only the following tests shall be required for Annual Certification Testing: Density, Compression Force Deflection, Compression Set, Tensile Strength, and Elongation.

1.2 Symbols. Not applicable.

1.3 Applicability. This material is used as a primary seal for air, dust, and automotive fluids, where exposure to high temperatures and/or low compression set is required.

1.4 Remarks. None.

2 References

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

2.1 External Standards/Specifications.

ISO 845	ISO 3386-1	ISO 3386-2	ISO 6916-1
ISO 1798			

2.2 GM Standards/Specifications.

GMW3059

GMW14270

GMW16443

GMW17650

GMW3221

GMW14892

2.3 Additional References.

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. Batch testing shall be performed for density, thickness, and compression deflection.

3.1.1 Unless otherwise stated in the relevant test procedures, the thickness of material tested shall be $6.0 \text{ mm} \pm 0.5 \text{ mm}$.

3.2 All materials supplied to this standard must comply with GMW3059, **Restricted and Reportable Substances**, including the requirement to submit a full material composition disclosure to GM via the International Material Data System (IMDS).

3.3 Material and Performance Requirements. Material requirements are summarized in Tables 1 and 2. A minimum of six (6) lots shall be tested to Table 1 (except Water Impermeability, one (1) lot only) for material certification. Adhesion requirements (Table 2) shall be the responsibility of the party applying the adhesive, and must demonstrate adhesion to the production intent substrate. One (1) lot shall be tested to Table 2, and this data shall be included in the part level Production Part Approval Process (PPAP) submission.

Table 1: Material Properties

Property	Test Method	Unit	Value
Density			
All Classes, All Types	ISO 845	kg/m ³	To be reported
Compression Deflection ^{Note 1}			
All Classes, Type 0	ISO 3386-1 or ISO 3386-2	kPa	17.2 maximum
All Classes, Type 1	Values shall be determined at 25% compression.	kPa	7 to 41
All Classes, Type 2	Additionally, compression deflection curves (and respective data points) from 0% to approximately 90% compression shall be submitted for each product prior to approval.	kPa	41 to 97
All Classes, Type 3		kPa	82 to 138
All Classes, Type 4		kPa	110 to 179
Compression Set			
All Classes, All Types	ISO 6916-1, +100 °C ± 1 °C, 24 h (+0/-2) h, 50% compressed, 30 minute recovery	%	10 maximum
Tensile Strength			
All Classes, Types 0, 1	ISO 1798, Type 1 Die	kPa	138 minimum
All Classes, Types 2, 3, 4		kPa	165 minimum
Elongation			
All Classes, Types 0, 1	ISO 1798, Type 1 Die	%	60 minimum
All Classes, Type 2		%	50 minimum
All Classes, Types 3, 4		%	35 minimum