



Two-Component, Optically Clear Silicone Rubber for Lighting Applications

1 Scope

1.1 Material Description. This specification describes the material properties of two-component, optically clear silicone rubber for lighting applications.

1.2 Symbols. Identify the elastomer nomenclature per ASTM D1418 or ISO 1629.

1.3 Applicability. Typical applications include inner lens, light pipes, or light guides for interior and exterior lighting applications.

1.4 Remarks. This material is recommended for applications up to 150 °C. Material can be injection or compression molded.

2 References

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

2.1 External Standards/Specifications.

ASTM D395	ASTM D792	ASTM D2240	FMVSS 302
ASTM D412	ASTM D1003	CMVSS 108	ISO 1629
ASTM D573	ASTM D1418	FMVSS 108	SAE J576
ASTM D624			

2.2 GM Standards/Specifications.

GMW3059	GMW3232	GMW14270	GMW15634
GMW3205	GMW3235	GMW14444	GMW16853
GMW3221			

2.3 Additional References.

General Motors S&IH TS 3.4-160-02

3 Requirements

3.1 Requirements on Test Specimens.

3.1.1 Tests shall be conducted using the latest issue of the test methods indicated. Suitable precautions should be taken to ensure that applicable safe limits are not exceeded when conducting test procedures, processes, and/or handling the materials required by this specification.

3.1.2 Test specimens shall be die cut from fan gated injection molded plaques, having a nominal thickness of 3.0 mm ± 0.3 mm. Die cut specimens are to be tested with the long axis of the test specimen perpendicular to the direction of flow. Plaque dimensions must be sufficient to permit this.

3.1.3 All tests shall be performed on specimens 72 h minimum after molding and immediately following a conditioning period of 24 h minimum in a controlled atmosphere per GMW3221, Code A unless otherwise specified. All tests shall be performed on un-annealed specimens, unless otherwise noted.

Integrally colored transparent grades used in exterior lighting shall meet 3-year weathering resistance as specified in Table 1.

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.

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.

3.3 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 Material and Performance Requirements. Material requirements are summarized in Table 1

Table 1: Compound Properties

Property	Standard	Units	Requirement
Density	ASTM D792	g/cm ³	Report
Hardness	ASTM D2240	Shore A	72 ± 5
Tensile Strength	ASTM D412	MPa	> 6
Elongation	ASTM D412	%	> 40%
Heat Age	ASTM D573 72 h at 175 °C	Change in Hardness, points Change in elongation, % Change in tensile strength, %	Report
Heat Age	ASTM D573 1000 h at 150 °C	Change in Hardness, points Change in elongation, % Change in tensile strength, %	±15 ±30% ±30%
Compression Set	ASTM D395, method B • +23 °C ± 2 °C, 24 h +0 h/-2 h, 50% compressed • +70 °C ± 2 °C, 24 h +0 h/-2 h, 50% compressed • +150 °C ± 2 °C, 24 h +0 h/-2 h, 50% compressed	%	< 10% < 10% Report
Tear Resistance	ASTM D624, die B	kN/m	> 9
Luminous Transmittance	ASTM D1003 Procedure B	Minimum %	≤ 90
Haze		Maximum %	≤ 3%
Thermally aged optical properties	1000 h at 150 °C	Change in Luminous Transmittance Change in Haze, %	±10% ±10%
3-year Weathering Resistance (Florida and Arizona Exposure)	SAE J576 (per FMVSS 108 and CMVSS 108)	As specified	Must comply with requirements for inner lens
Emission Testing of Interior Materials	Per GMW16853 default requirements	Fogging, odor, and SVOC/VOC	
Odor	GMW3205 Coding B	Rating	≥ 7
Fogging, Gravimetric	GMW3235-B-Y3	Mg	Requirement per GMW16853
Emissions	GMW15634 Volatile Organic Compound (VOC) value Semi Volatile Organic Compound (SVOC) value	µg/g µg/g	Requirement per GMW16853
Flammability	Must comply with FMVSS 302. Test to GMW3232 Burn Rate	mm/minute	100 Maximum