



Adhesive-Sealer, Silicone Rubber, One Part RTV

1 Scope

1.1 Material Description. This specification details the requirements and properties of Room Temperature Vulcanizing (RTV) silicone rubber compositions that are suitable for use as supplied as an adhesive or sealer. Uses include polycarbonate lens to reflectors (e.g., in composite headlamps), acrylic or polycarbonate lenses to reflectors in exterior signal lighting, attachment of fiber optics to reflectors, etc.

1.2 Symbols. Not applicable.

1.3 Applicability. Typical uses for RTVs are bonding second surface acrylic, adhering cast urethane decorative inserts into mating bezels, assembling decorative trim, sealing electronic module covers to housings, both interior and exterior and for bonding coated polycarbonate headlamp lenses to housings.

1.4 Remarks.

1.4.1 Catalyst, heat, or pressure is not needed to initiate vulcanization. Once applied, the material begins to react with atmospheric moisture and immediately begins curing to a rubber like product.

1.4.2 Adhesion of the material is excellent to most plastics. In some extreme cases, a primer or surface treatment may be required to provide maximum performance.

1.4.3 Most RTVs are compatible with most plastics, however, new applications should reconfirm that the new substrate is not crazed, cracked or otherwise degraded by the RTV.

1.4.4 The cure mechanism is a non-acidic, or neutral cure. By-products of the curing process shall not corrode, stain, or otherwise adversely affect decorated second surface acrylic or other plastic inserts.

1.4.5 Mixing of various RTV materials in the same pumping system could cause cure inhibition. This can be resolved by purging the pumping system with the new material and then monitoring the appearance, color, odor and tack time to ensure uniformity of the adhesive.

2 References

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

2.1 External Standards/Specifications.

ASTM C603	ASTM D412	ASTM D903	ASTM D2240
ASTM C679	ASTM D792	ASTM D2202	

2.2 GM Standards/Specifications.

GMW3059	GMW14270	GMW15735	GMW16853
GMW3221	GMW14444		

2.3 Additional References. None.

3 Requirements

3.1 Requirements on Test Specimens. Reference GMW3221.

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 Stability (GMW15735). Material conditioned using potential storage conditions must be capable of passing all of the requirements of this specification.

3.4.1 Elevated Temperature Stability. As shipped, the adhesive must be capable of withstanding a temperature of 55 °C for 72 h without separation or caking.

3.4.2 Low Temperature Stability. As shipped, the adhesive must be capable of withstanding three cycles of the applicable cycle schedule outlined in GMW15735.

3.5 Material Properties – Uncured Adhesive. See Table 1.

Table 1: Material Properties – Uncured Adhesive

Properties	Values	Test Method
Color	Translucent/Gray/Black	Visual
Extrusion Rate, grams (g)/minute	100 to 500	ASTM C603
Tack Free Time, minutes, maximum	60	ASTM C679
Cure Time, 3.2 mm diameter bead at 25 °C, 50% Relative Humidity (RH), hours, maximum	48	Visual examination of a cross-section of the bead.
Flowability, 3 minutes, millimeters (mm), maximum	6	ASTM D2202

3.6 Material Properties – Cured Adhesive. See Table 2.

Table 2: Material Properties – Cured Adhesive

Properties	Values	Test Method
Specific Gravity at 25 °C	1.00 to 1.50	ASTM D792, Method A
Durometer, Shore A	15 minimum	ASTM D2240
Tensile Strength, (kPa minimum)	1000	ASTM D412, Die C
Elongation (%)	300 minimum	ASTM D412, Die C

Note: % = percent(age), kPa = kilopascal(s).

3.6.1 Cured RTV. Material must be cured for 168 h at 25 °C, 50% RH prior to testing.

3.7 Adhesive Properties. See Table 3.

Table 3: Adhesive Properties

Properties	Values	Test Methods
Peel Strength	1000 N/m	ASTM D903

4 Manufacturing Process

Prior to implementation of any part containing this material into a GM assembly plant, compatibility testing with unique plant specific materials, e.g., lubricants, substrates, etc., and process conditions, e.g., wash and paint systems, etc., is required.