

RTV160, RTV 162 and RTV 167

Electronic Grade Silicone Adhesive Sealants

Product Description RTV160, RTV162 and RTV167 adhesive sealants from Momentive performance materials are one-component, ready-to-use electronic grade silicone sealants. They cure to a tough, resilient silicone rubber on exposure to atmospheric moisture at room temperature. These electronic-grade silicone adhesive sealants differ somewhat in physical properties including consistency.

RTV160 - white flowable paste

RTV162 - white paste

RTV167 - grey, high strength paste

Key Performance Properties

- Non-corrosive to electronic metals, including copper and brass
- Low odour cure, releasing an alcohol vapour from the sealant surface during cure
- UL Recognition. RTV160, RTV162 and 167 are recognized by Underwriters Laboratories, Inc. under their Component Recognition Program (UL File No. E-36952). Retains elastomeric properties for long periods at temperatures from -60°C to 200°C and for short periods up to 260°C.
- One component
- Cure at room temperature
- Excellent electrical insulation properties
- Excellent resistance to moisture, dust, dirt, UV, ozone and chemicals

Typical Product Data

Typical uncured properties		RTV160	RTV162	RTV167
Colour		White	White	Grey
Consistency		Flowable liquid	Spreadable paste	Spreadable paste
Viscosity	mPa·s	38000	-	-
Specific gravity	g/cm ³	1.04	1.09	1.12
Application rate	g/min	-	350	180
Tack-Free-Time	hrs	4	4	4



Typical Product Data

Cured Properties		RTV160	RTV162	RTV167
Mechanical				
Hardness	Shore A	25	35	37
Tensile Strength	MPa	1.9	3.8	5.6
Elongation	%	230	400	600
Peel Strength ⁽²⁾	kN/m	2	7.2	10
Electrical				
Dielectric Strength	kV/mm	20	18	20
Dielectric Constant @ 60 Hz		2.8	2.8	2.8
Dissipation Factor @ 60 Hz		0.001	0.001	0.0026
Volume resistivity	ohm·cm	4x10 ¹⁴	3x10 ¹⁵	3x10 ¹⁵
Thermal				
Brittle Point	°C	-60	-60	-60
Maximum continuous operating temperature	°C	200	200	200
Maximum intermittent operating temperature	°C	260	260	260
Additional information				
Thermal Conductivity	W/m·K	0.21	0.21	0.21
Coefficient of expansion	m/m·K	27x10 ⁻⁵	27x10 ⁻⁵	27x10 ⁻⁵

(1) Cure time 7 days at 25C (77F), 50% relative humidity.

(2) 2.5 x 20 cm stainless steel screen at 180° pull angle.

(3) Information is provided for customer convenience only. Properties are not tested on a routine basis.

Specifications Typical product data values should not be used as specifications. Assistance and specifications are available by contacting Momentive performance materials Technical Service RTV1 and RTV2.

MILITARY SPECIFICATIONS

RTV162 and RTV167 sealants meet the physical requirements of MIL-A-46146. Testing is performed in accordance with current Momentive performance materials quality test methods, laboratory conditions, and procedures, frequency and sampling, which are not necessarily identical with the methods, conditions, procedures, frequency and sampling stated or referenced in MIL-A-46146. Any certification will be limited to listed properties and will not imply or state conformity to any other aspect of MIL-A-46146, including but not limited to marking, packaging, bar coding, testing, or sampling. Contact Momentive performance materials for a comparison review.

Instructions for Use APPLICATIONS

RTV160, RTV162 and RTV167 are recommended for use in aerospace, automotive, appliance and other industries, which incorporate electronic components into a finished product. Electronic and integrated circuits, semiconductors and copper connections are typical applications. RTV160 adhesive sealant is recommended for insulating, encapsulating and coating in thin sections [less than 6mm], where flow into small crevices or hard-to-reach places is desired. RTV162 adhesive sealant is recommended for sealing and bonding of electronic components onto printed circuit boards and protecting copper connections on electronic parts assemblies. RTV167 adhesive sealant is recommended for sealing and bonding where high strength would be required.

SURFACE PREPARATION

RTV160, RTV162 and RTV167 adhesive sealants will bond to many clean surfaces without the aid of primers. These surfaces normally include many metals, glass, ceramic, silicone rubber and some rigid plastics. These adhesive sealants will also bond to some organic rubbers and flexible plastics not containing fugitive plasticizers (those that migrate to the surface impairing adhesion). An evaluation should be made to determine bond strength for each specific application.

For difficult-to-bond substrates, use of a primer is suggested. SS4004P, SS4044P and SS4179 primers are recommended for use with RTV160, RTV162 and RTV167 sealants.

Where adhesion is required, surfaces should be thoroughly cleaned with a suitable solvent to remove dirt, oil and grease. The surface should be dry before applying the adhesive sealant.

When solvents are used, proper safety precautions must be observed.

CURE TIME CYCLE

RTV160, RTV162 and RTV167 adhesive sealants may be applied directly to a clean or primed substrate. The adhesive sealant begins to cure on exposure to moisture in the air at room temperature. Where broad surfaces are to be bonded the sealant should be applied in a thin, less than 6mm diameter bead or ribbon around the edge of one of the surfaces.

The cure process begins with the formation of a skin on the exposed surface of the sealant and progresses inward through the material. At 25°C and 50% relative humidity, these products will form a surface skin, which is tack-free to the touch in about 4 hours. Once the tack-free skin has begun to form, further tooling of the adhesive sealant is not advisable.

High temperatures and high humidity will accelerate the cure process low temperatures and low humidity will slow the cure rate.

As the adhesive sealant cures, alcohol vapours are released from the sealant surface. This by-product of cure has a slight, but non-objectionable odour, which will completely disappear after curing is completed.

A 3mm section of adhesive sealant will cure through in approximately 48 hours at 25°C and 50% relative humidity. Since cure time increases with thickness, use of RTV160, RTV162 and RTV167 sealants should be limited to section thicknesses of 6mm or less.

Tubes may be squeezed by hand or with the aid of mechanical wringers, which allow more complete removal of material from the tube. The sealant may be dispensed from caulking cartridges by using simple mechanical caulking guns or air-operated guns. Air-operated guns will allow greater control and application speed. Both tubes and cartridges are easy to use, can be put into production quickly and require minimum capital investment.

Note: Do not exceed 3 bar when used in air-powered caulking guns. Bulk containers offer the most economical packaging for volume production.

Bulk dispensing systems are air-operated extrusion pumps coupled to hand or automated dispensing units

CLEAN UP AND REMOVAL

Before cure, solvent systems such as naphtha or methyl ethyl ketone (MEK) are effective.

Handling and Safety

Material Safety Data Sheets are available upon request from Momentive performance materials. Similar information for solvents and other chemicals used with the Momentive performance materials products should be obtained from your supplier. When solvents are used, proper safety precautions must be observed.

Storage and Warranty Period

The shelf life will be indicated by the 'use before date' on the associated documents with a minimum of 6 months when stored in the original unopened containers between 2 and 10 °C for RTV162 and RTV167. For the RTV160 : storage at -18 °C

Availability

RTV160 is available in 310 ml cartridges and 18,1kg pails.

RTV162 is available in 82,8 ml tubes, 310 ml cartridges, 18,1kg pails and 204,1 kg drums

RTV167 is available in 82,8ml tubes and 310ml cartridges.



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