



RTV162

RTV160, RTV162 and RTV167 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 - gray, high strength paste

- Key Performance Properties**
- Non-corrosive to electronic metals, including copper and brass
 - Low odor cure, releasing an alcohol vapor 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). Refer to Momentive Performance Materials Publication (4320) for additional information.
 - Retains elastomeric properties for long periods at temperatures from -60C (-75F) to 205C (400F) and for short periods up to 260C (500F).
 - 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
Color	White	White	Gray
Consistency	flowable liquid	spreadable paste	spreadable paste
Viscosity, poise	380	?	?
Specific Gravity	1.04	1.09	1.12
Application Rate, gm/min.	?	350	180
Tack-Free Time, hours	4	4	4
Cured Properties⁽¹⁾			
Mechanical			

Hardness, Shore A	25	35	37
Tensile Strength, kg/cm ² (lb/in ²)	19 (275)	38.2 (550)	56 (800)
Elongation, %	230	400	600
Peel Strength, kg/cm (lb/in) ⁽²⁾	2 (10)	7.2 (40)	10 (80)
Electrical⁽³⁾			
Dielectric Strength, kv/mm (v/mil)	20 (500)	18 (450)	20 (500)
Dielectric Constant @ 60 Hz	2.8	2.8	2.8
Dissipation Factor @ 60 Hz	.001	.001	.0026
Volume Resistivity, ohm-cm	4x10 ¹⁴	3x10 ¹⁵	3x10 ¹⁵
Thermal⁽³⁾			
Brittle Point, °C (°F)	-60 (-75)	-60 (-75)	-60 (-75)
Maximum continuous operating temperature, °C (°F)	204 (400)	204 (400)	204 (400)
Maximum intermittent operating temperature, °C (°F)	260 (500)	260 (500)	260 (500)
Additional Information ⁽³⁾			
Thermal Conductivity, cal/sec/cm ² , °C/cm	.0005	.0005	.0005
(Btu/hr/ft ² , °F/f)	(.12)	(.12)	(.12)
Coefficient of Expansion	27x10 ⁻⁵	27x10 ⁻⁵	27x10 ⁻⁵
cm/cm, °C (in/in, °F)	(15x10 ⁻⁵)	(15x10 ⁻⁵)	(15x10 ⁻⁵)

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

(2) 1 in. x 8 in. 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 at 800/255-8886

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 (1/4TM)], 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. SS4004, SS4044 and SS4179 primers are recommended for use with RTV160, RTV162 and RTV167 sealants. Complete information and usage instructions for these primer products are contained in a separate product data sheet, (CDS#1532).

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 ($\frac{1}{4}$ in.) 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 25C (77F) 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 vapors are released from the sealant surface. This by-product of cure has a slight, but non-objectionable odor which will completely disappear after curing is completed.

A 3mm ($\frac{1}{8}$ in.) section of adhesive sealant will cure through in approximately 48 hours at 25C (77F) 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 ($\frac{1}{4}$ in.) or less.

PACKAGING AND DISPENSING

RTV160, RTV162, RTV167 adhesive sealants are supplied in caulking

cartridges and bulk containers. RTV162 and RTV167 are also available in collapsible squeeze tubes.

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 45 psig 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. Specific details on dispensing systems and manufacturers are available in a separate Momentive Performance Materials RTV Silicone Sealant Equipment Guide, (CDS1541).

Recommendations for pump selection and assistance in converting lines from other silicone systems to the RTV160, RTV162 and RTV167 alkoxy cure system sealants are available from Momentive Performance Materials.

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 our products should be obtained from your suppliers.

Storage and Warranty Period The warranty period is 6 months from date of shipment from Momentive Performance Materials if stored in the original unopened container at or below 50°F.

Availability Products may be ordered from Momentive Performance Materials, Waterford, NY 12188, the Momentive Performance Materials Sales office nearest you, or where appropriate an authorized Momentive Performance Materials silicone product distributor.

Government Requirement Prior to considering use of a Momentive Performance Materials product in fulfilling any Government requirement, please contact the Government and Trade Compliance office at 413-448-4624.

CDS4500

Patent Status

Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute the permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent. Patent Information to be determined for product by client.

Product Safety, Handling and Storage

Customers considering the use of this product should review the latest Material Safety Data Sheet and label for product safety information, handling instructions, personal protective equipment if necessary, and any special storage conditions required. Material Safety Data Sheets are available at www.momentive.com or, upon request, from any Momentive Performance Materials representative. Use of other materials in conjunction with Momentive Performance Materials products (for example, primers) may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

Limitations

Customers must evaluate Momentive Performance Materials products and make their own determination as to fitness of use in their particular applications.

Typical product data values should not be used as specifications.

Assistance and specifications are available by contacting

Momentive Performance Materials:

North America cs-na.silicones@momentive.com

Latin America cs-la.silicones@momentive.com

Europe/Middle East/Africa cs-eur.silicones@momentive.com

Pacific cs-ap.silicones@momentive.com

DISCLAIMER: THE MATERIALS, PRODUCTS AND SERVICES OF MOMENTIVE PERFORMANCE MATERIALS INC., MOMENTIVE PERFORMANCE MATERIALS USA INC., MOMENTIVE PERFORMANCE MATERIALS ASIA PACIFIC PTE. LTD., MOMENTIVE PERFORMANCE MATERIALS WORLDWIDE INC., MOMENTIVE PERFORMANCE MATERIALS GmbH, THEIR SUBSIDIARIES AND AFFILIATES DOING BUSINESS IN LOCAL JURISDICTIONS (collectively "SUPPLIERS"), ARE SOLD BY THE RESPECTIVE LEGAL ENTITY OF THE SUPPLIER SUBJECT TO SUPPLIERS STANDARD CONDITIONS OF SALE, WHICH ARE INCLUDED IN THE APPLICABLE DISTRIBUTOR OR OTHER SALES AGREEMENT, PRINTED ON THE BACK OF ORDER ACKNOWLEDGMENTS AND INVOICES, AND AVAILABLE UPON REQUEST. ALTHOUGH ANY INFORMATION, RECOMMENDATIONS, OR ADVICE CONTAINED HEREIN IS GIVEN IN GOOD FAITH, SUPPLIERS MAKE NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, (i) THAT THE RESULTS DESCRIBED HEREIN WILL BE OBTAINED UNDER ENDUSE CONDITIONS, OR (ii) AS TO THE EFFECTIVENESS OR SAFETY OF ANY DESIGN INCORPORATING SUPPLIERS PRODUCTS, MATERIALS, SERVICES, RECOMMENDATIONS OR ADVICE. AFOREMENTIONED EXCLUSIONS OR LIMITATION OF LIABILITY ARE NOT APPLICABLE TO THE EXTENT THAT THE END-USE CONDITIONS AND/OR INCORPORATION CONDITIONS CORRESPOND TO THE RECOMMENDED CONDITIONS OF USE AND/OR OF INCORPORATION AS DESCRIBED BY SUPPLIER IN ITS PRODUCT DATA SHEET AND/OR PRODUCT SPECIFICATIONS. EXCEPT AS PROVIDED IN SUPPLIERS STANDARD CONDITIONS OF SALE, SUPPLIERS AND THEIR REPRESENTATIVES SHALL IN NO EVENT BE RESPONSIBLE FOR ANY LOSS RESULTING FROM ANY USE OF ITS MATERIALS, PRODUCTS OR SERVICES DESCRIBED HEREIN.

Each user bears full responsibility for making its own determination as to the suitability of Suppliers materials, services, recommendations, or advice for its own particular use. Each user must identify and perform all tests and analyses necessary to assure that its finished parts incorporating Suppliers products, materials, or services will be safe and suitable for use under end-use conditions. Nothing in this or any other document, nor any oral recommendation or advice, shall be deemed to alter, vary, supersede, or waive any provision of Suppliers Standard Conditions of Sale or this Disclaimer, unless any such modification is specifically agreed to in a writing signed by Suppliers. No statement contained herein concerning a possible or suggested use of any material, product, service or design is intended, or should be construed, to grant any license under any patent or other intellectual property right of Suppliers or any of its subsidiaries or affiliates covering such use or design, or as a recommendation for the use of such material, product, service or design in the infringement of any patent or other intellectual property right.

Copyright 2003-2009 Momentive Performance Materials Inc. All rights reserved.