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RTV157 - RTV 159

RTV157 and RTV159
High Strength Silicone Adhesive Sealants

Product Description

RTV157 and RTV159 are one-component, ready-to-use, high strength silicone rubber adhesive sealants. They cure to tough resilient silicone rubber on exposure to atmospheric moisture at room temperature. RTV159 sealant also provides high temperature performance. Both of these products release acetic acid vapours as a by-product of cure. RTV157 and RTV159 sealants are paste consistency products which can be applied to horizontal, vertical and overhead surfaces in applications requiring high strength and temperature performance. Since these adhesive sealants utilize a moisture cure system, they must not be used in thicknesses of greater than 6mm. Where section depths exceed 6mm, GE Bayer Silicones one-component, addition cure or two-component silicone rubber compounds are suggested.
These sealants were not designed for and should not be used for applications intended for permanent implantation into the human body.

Key Performance Properties

- High strength
- High temperature performance
- Low temperature flexibility
- One-component
- Room temperature cure
- General primerless adhesion
- Excellent electrical insulation properties
- Excellent weatherability, ozone, and chemical resistance

Typical Product Data

UNCURED PROPERTIES:	**RTV157**	**RTV159**
Consistency	Paste	Paste
Colour	Grey	Red
Application Rate, g/min.	155	175
Density, g/cm^3	1.09	1.09
Tack-Free Time, minutes	45	45
CURED PROPERTIES:(1)	**RTV157**	**RTV159**
Mechanical:		
Hardness, Shore A	28	28
Elongation, %	825	825
Tensile Strength, MPa	6.9	7.2
Tear Strength, kN/m	16	17
Peel Strength, kN/m(2)	10.7	10.7
Electrical:		
Dielectric Strength, kV/mm	20.7	19.7
Dielectric Constant	2.9	2.6
Dissipation Factor	0.0009	0.0007
Volume Resistivity, ohm.cm	7.5 x 1014	1.1 x 1015

Thermal: [3]		
Brittle Point, °C	-60	-60
Maximum Continuous Operating Temperature ,°C	204	260
Maximum Intermittent Operating Temperature, °C	260	315
Additional Information: [3]		
Linear Shrinkage, %	1.0	1.0
Thermal Conductivity,W/m.K	0.21	0.21
Coefficient of Expansion cm/cm, °C	27 x 10-5	27 x 10-5

(1) Cured 3 days at 25°C and 50% relative humidity.
(2) Cured 7 days at 25°C and 50% relative humidity. Substrate was alclad aluminum.
(3) Information is provided for customer convenience only. These 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 GE Bayer Silicones Technical Service RTV1 and RTV2.

PATENTS

RTV157 and RTV159 sealants are within the scope of Patents 3,438,930, 3,54,1,044 and 3,635,743.

Instructions for Use

Surface Preparation

RTV157 and RTV159 sealants will bond to many clean surfaces without the aid of primers. These surfaces typically include many metals, glass, ceramic, silicone rubber and some rigid plastics. These adhesive sealants will also produce fair bonds to organic rubber and to some flexible plastics not containing fugitive plasticizers (which 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. Primers SS4004P, SS4044P, and SS4179 are recommended for use with these sealants. Where adhesion is required, surfaces should be thoroughly cleaned with a suitable solvent to remove dirt, oil and grease. The surface should be wiped dry before applying the adhesive sealant.

When solvents are used, proper safety precautions must be observed. All solvents must be considered toxic and must be used only in well ventilated areas.

Exposure to high vapour concentration must be avoided, when flammable solvents are used, storage, mixing and use must be in areas away from heat, sparks or other sources of ignition.

Application and Cure Time Cycle

RTV157 and RTV159 sealants may be applied directly to clean or primed substrates. Where broad surfaces are to be mated, the sealant should be applied in a thin, less than 6mm diameter, bead or ribbon around the edge of the surface to be bonded.

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, RTV157 and RTV159 sealants will form a tack-free surface skin in about 30 to 60 minutes. Once the tack-free skin has begun to form, further tooling of the adhesive sealant is not advisable.

As the adhesive sealant cures, acetic acid vapours are released from the sealant surface. The odour of acetic acid will completely disappear when curing is completed.

Because these adhesive sealants cure by reacting with atmospheric moisture, higher temperatures and humidity will accelerate the cure process lower temperatures and humidity will slow the cure rate.

Exact cure time will depend on temperature, humidity, sample thickness and sealant configuration. Since cure times increase with thickness, use of these adhesive sealants should be limited to section thicknesses of 6mm or less.

Bond Strength Development

In addition to the effects of temperature and relative humidity, development of maximum bond strength will depend on joint configuration, degree of confinement, sealant thickness and substrate porosity. Normally, sufficient bond strength will develop in 12 to 24 hours to permit handling of parts. Minimum stress should be applied to the bonded joint until full adhesive strength is developed, generally considered to be 7 days at 23C / 50% RH. Eventually, the adhesive strength of the bond will exceed the cohesive strength of the silicone. Always allow maximum cure time available for best results.

PACKAGING AND DISPENSING

RTV157 and RTV159 adhesive sealants are supplied ready-to-use in collapsible aluminum squeeze tubes, caulking cartridges and in bulk containers.

Collapsible aluminum tubes may be squeezed by hand or with the aid of mechanical wringers which allow more complete removal of material from the tube. Air-operated dispensing guns may also be used with aluminum tubes and offer the advantages of improved control and faster application for production line use. 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 minimal capital investment.

Bulk containers require a larger initial investment in dispensing equipment, but offer the most economical packaging for volume production. Bulk dispensing systems are air-operated extrusion pumps coupled to hand or automated dispensing units. Pumps which are specifically designed for pumping one-component RTV silicone rubber have TEFLON® seals, packings, and TEFLON® lined hoses to prevent moisture permeation and pump cure problems.

CLEANUP AND REMOVAL

Before curing, solvent systems such as naphtha or methyl ethyl ketone (MEK) are most effective. Refer to solvent use warnings in the section on surface preparation.

After cure, selected chemical strippers which will remove the silicone rubber are available from other manufacturers. Specific product information may be obtained on request.

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Handling and Safety

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

Storage and Warranty Period

The warranted shelf life will be indicated by the ' use before date' on the associated documents with a minimum of 4 months when stored in the original unopened containers below 25° C.

Availability

RTV157 is available in 204 kg drums, 18.1 kg pails, 170 g Semco cartridges and 85 gram tubes.