GE Bayer Silicones

RTV102, RTV103, RTV106, RTV108, RTV109, RTV112, RTV116 and RTV118

One-Component Acetoxy Adhesive Sealants

Product Description

RTV102, RTV103, RTV106, RTV108, RTV109, RTV112, RTV116 and RTV118 one-component, ready-to-use adhesive sealants are extremely versatile. They cure to a tough, durable, resilient silicone rubber on exposure to atmospheric moisture at room temperature. Acetic acid vapours are released from the sealant surface as a by-product of cure.
RTV102, RTV103, RTV108 and RTV109 sealants are standard strength paste consistency products which can be applied to vertical and overhead surfaces where pourable/self-leveling sealants are not practical.
RTV112 and RTV118 sealants are self-leveling products which are preferable to paste-consistency sealants when flow into small crevices and hard-to-reach places is desired.
RTV106 sealant is paste-consistency sealant. RTV116 sealant is a self-leveling sealant. Both RTV106 and RTV116 sealants are standard strength high-temperature sealants.
Since all these 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 recommended.

Key Performance Properties

- Capability to cure at room temperature and ambient humidity
- Self adhesion properties
- Low temperature flexibility
- High temperature performance
- Excellent weatherability and ozone and chemical resistance
- Excellent electrical insulation properties

Applications

Product	Features	Potential Applications	UL	Food Contact
RTV102 White RTV103 Black RTV108 Translucent RTV109 Aluminium	General purpose pastes	General purpose bonding, sealing, formed-in-place gaskets. Can be applied to vertical or overhead surfaces.	File 36952	FDA 21 CFR 177.2600 USDA NSF International Std. No. 51
RTV106 Red	High temperature paste	Sealing heating elements, gasketing and other critical bonding and sealing applications where parts must perform at high temperatures. Can be applied to vertical or overhead surfaces.	File 36952	FDA 21 CFR177.2600 USDA NSF International Std. No. 51
RTV116 Red	High temperature	Thin section potting, filling small surface voids,self leveling protective coating, where high temperature performance is required.	File 36952	FDA 21 CFR 177.2600 USDA NSF International Std. No. 51
RTV112 White RTV118 Translucent	General purpose	Thin section potting, self leveling protective coatings. Will flow into small crevices and hard to reach places.	File 36952	FDA 21 CFR 177.2600 USDA NSF International Std. No. 51

These sealants were not designed for and should not be used for applications intended for permanent implantation into the human body.
These sealants are not for use in delicate electrical and electronic applications in which corrosion of copper, brass or other sensitive metals is undesirable.

Typical Product Data

Uncured Properties		RTV102 RTV103 RTV108 RTV109	RTV106	RTV116	RTV112 RTV118
Consistency		Paste	Paste	Self leveling	Self leveling
Viscosity	mPa·s	–	–	25 000	20 000
Application Rate	g/min	400	400	–	–
Density	g/cm³	1.05	1.07	1.09	1.05
Tack-Free-Time	min.	20	20	30	20

Typical Product Data

Cured Properties		Cure time: 3 days at 25°C and 50% relative humidity			
		RTV102,RTV103, RTV108, RTV109	RTV106	RTV116	RTV112, RTV118
Mechanical:					
Tensile Strength	MPa	2.8	2.6	2.5	2.3
Elongation	%	450	400	350	325
Hardness	Shore A	30	30	20	25
Tear Strength	N/mm	8	7	–	–
Shear Strength[1)]	MPa	1.4	1.4	0.7	0.7
Peel Strength[2)]	N/mm	7	7	3	3
Electrical:					
Dielectric Strength	kV/mm	20	20	16	16
Dielectric Constant @ 60 Hz		2.8	2.8	2.8	2.8
Dissipation Factor @ 60 Hz		0.001	0.001	0.001	0.001
Volume Resistivity	Ohm.cm	$3x10^{15}$	$3x10^{14}$	$2x10^{14}$	$6x10^{14}$
Thermal:					
Maximum Continuous Operating Temperature	°C	200	260	260	200
Maximum Intermittent Operating Temperature	°C	260	315	315	260
Additional Information[3)]:					
Linear Shrinkage	%	1.0	1.0	1.0	1.0
Thermal Conductivity	W/m·K	0.21	0.21	0.21	0.21
Coefficient of Expansion	1/°K	$27x10^{-5}$	$27x10^{-5}$	$27x10^{-5}$	$27x10^{-5}$

At 100% cohesive failure
At 100% cohesive failure using 2.5 x 20 cm. stainless steel screen at 180° pull angle.
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.

FDA STATUS

RTV102, RTV103, RTV106, RTV108, RTV109, RTV112, RTV116 and RTV118 sealants can be used in food contact applications where FDA regulations apply.

USDA STATUS

RTV102, RTV103, RTV106, RTV108, RTV109, RTV112, RTV116 and RTV118 sealants may be used on equipment, which may contact edible products in official establishments operating under the Federal meat and poultry products inspection program. See USDA letter of Authorization.

NSF INTERNATIONAL STATUS

NSF International lists RTV102, RTV103, RTV106, RTV108, RTV109, RTV112, RTV116 and RTV118 sealants under NSF International Standard No. 51 (Plastic Materials and Components for Use in Food Equipment), as satisfactory for use on food contact surfaces.

UL STATUS

RTV102, RTV103, RTV106, RTV108, RTV109, RTV112, RTV116 and RTV118 silicone rubber adhesive sealants are recognized by Underwriters Laboratories, Inc., under their Component Recognition Program (UL File No. E-36952).

Specifications

Military

MIl-A-46106

Group 1	Type I	General Purpose Paste RTV102, RTV103, RTV108, RTV109
	Type II	General Purpose Flowable RTV112, RTV118
Group III	Type I	High Temperature Paste RTV106
	Type II	High Temperature Flowable RTV116

Instructions for Use

Surface Preparation

RTV102, RTV103, RTV106, RTV108, RTV109, RTV112, RTV116 and RTV118 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 sealant products 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 such as naphtha or methyl ethyl ketone (MEK) 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.

Application and Cure Time Cycle

Paste-consistency products 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.

Flowable products may be applied to clean or primed substrates by pouring directly from the original container or dipping. These products will self-level on a surface, filling small crevices and surface voids. Depth of potted sections should not exceed 6mm.

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, RTV102, RTV103, RTV106, RTV108, RTV109, RTV112 and RTV116 sealants will form a surface skin, which is tack-free to the touch in 15 to 30 minutes. Once the tack-free skin has begun to form, further tooling of the adhesive sealant is not advisable.

Higher temperatures and humidity will accelerate the cure process. Low temperatures and low humidity will slow the cure rate.

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.

A 3mm section of adhesive sealant will cure through in approximately 24 hours at 25°C and 50% R.H. Since cure time increases 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. Eventually the adhesive strength of the bond will exceed the cohesive strength of the silicone rubber sealant itself. Always allow maximum cure time available for best results.

PACKAGING AND DISPENSING

RTV adhesive sealants from GE Bayer Silicones 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.

Note: Do not exceed 3 bar when used in air-powered caulking guns.

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 lined hoses to prevent moisture permeation and pump cure problems.

CLEAN UP 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.

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

RTV102, RTV103, RTV106 and RTV108 are available in 82.8 ml tubes and 310 ml cartridges, further in 18 kg pails and 204 kg drums.

RTV109 is available 300 ml cartridges and in 18 kg pails.

RTV112 is available in 82.8 ml tubes and 304 ml tubes, further in 18 kg pails and 204 kg drums.

RTV116 and RTV 118 are available in 82.8 ml tubes and 304 ml tubes, further in 18 kg pails and 204 kg drums.