



RTV 511, RTV 560, RTV 577

RTV511, RTV560, RTV577

Silicone Rubber Compounds for Low Temperature Potting, Encapsulating and Sealing

Product Description

RTV511, RTV560 and RTV577 silicone rubber compounds are low temperature resistant two-part silicone elastomers. They are supplied ready to use with a base compound and DBT (dibutyl tin dilaurate) as the standard curing agent. DBT is suitable for most applications, however, other catalysts are available to facilitate deep section cure, faster cure and automated mixing. RTV560 has the widest useful temperature (highest and lowest) of any silicone elastomer.

Key Performance Properties

- Variable work times and cure rates by adjusting the amount and type of curing agent
- Room temperature cure
- Excellent release properties

Applications

Typical applications include, but are not limited to:

- Cast-in-place heat shielding
- Thermal insulation
- Low and high-temperature resistant bonding
- Potting and encapsulation of electrical assemblies

Typical Product Data

TYPICAL UNCURED PROPERTIES OF RTV BASE COMPOUNDS	RTV511	RTV560	RTV577
Colour	White	Red	White
Consistency	Pourable	Pourable	Paste
Viscosity, mPa.s	16,000	30,000	700,000
Density, g/cm ³	1.21	1.42	1.35
UNCURED PROPERTIES WITH 0.5% DBT CURING AGENT ADDED	RTV511	RTV560	RTV577
Work Time @ 25°C , hours	1.5	2.25	2
Cure Time @ 25°C , hours	24	24	24
TYPICAL CURED PROPERTIES (0.5 wt. % DBT Added, Cured 7 days @ 25C and 50% R.H.)	RTV511	RTV560	RTV577
Mechanical			
Hardness, Shore A Durometer	42	55	48
Tensile Strength, MPA	2.7	4.8	3.1
Elongation, %	170	120	150
Tear Strength, kN/m	3.8	5.5	6.8
Shrinkage, %	1.3	1.0	0.65

Electrical			
Dielectric Strength, kV/mm (1.9 mm thick)	20.5	21.2	18.5
Dielectric Constant @ 1000 Hz	3.6	3.9	3.9
Dissipation Factor @ 1000 Hz	0.005	0.02	0.02
Volume Resistivity, ohm.cm	2×10^{14}	2×10^{14}	5.6×10^{14}
Thermal			
Useful Temperature Range, °C	-115 to 204	-115 to 260	-115 to 204
Thermal Conductivity, W/m.K	.26	.31	.31
Coefficient of Linear Thermal Expansion, cm/cm, °C	22×10^{-5}	20×10^{-5}	20×10^{-5}
Specific Heat, cal/g, °C	0.35	0.35	0.35

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.

Instructions for Use

Mixing

Select a mixing container 4 to 5 times larger than the volume of RTV silicone rubber compound to be used. Weigh out the RTV silicone rubber base compound and add the appropriate amount of curing agent. 0.5% DBT by weight will provide a work time or pot life of 1-2 hours and a cure time of 24 hours. 0.5% DBT is the most commonly used concentration of curing agent for RTV511, RTV560 and RTV577 silicone rubber compounds. The pot life may be lengthened by using less DBT (as little as 0.1%).

Measuring Guide for Curing Agent Addition

RTV Weight	Dibutyl Tin Dilaurate	
	0.1%	0.5%
100 grams	5 drops	25 drops
454 grams	23 drops	115 drops (2.27 grams)

Using clean tools, thoroughly mix the RTV base compound and the curing agent, scraping the sides and bottom of the container carefully to produce a homogeneous mixture. When using power mixers, avoid excessive speeds, which could entrap large amounts of air or cause overheating of the mixture, resulting in shorter pot life.

Deaeration

Air entrapped during mixing should be removed to eliminate voids in the cured product. Expose the mixed material to a vacuum of 10 - 20 mbar. The material will expand, crest, and recede to about the original level as the bubbles break. Degassing is usually complete about two minutes after frothing ceases. When using the RTV silicone rubber compound for potting, a deaeration step may be necessary after pouring to avoid capturing air in complex assemblies.

Curing

Using DBT curing agent at a level of 0.5%, these RTV silicone rubber compounds will cure in 24 hours at 25°C and 50% relative humidity to form durable resilient rubbers. Under these conditions a pot life of 1-2 hours will typically be available for pouring and working with the catalyzed material. Pot life may be increased by refrigerating the mixed material at 0°C after catalyzing. Cure times may be shortened by using mild heat up to 93°C maximum.

A choice of curing agents is available for use with RTV511, RTV560 and RTV577 silicone rubber compounds.

CuringAgent	Cure Speed	Curing Agent Concentration	Features
DBT	moderate	0.1-0.5%	standard
STO	fast	0.1-0.5%	small volume applications
RTV9811	moderate	5-10%	good deep section cure suitable for automatic mixing
RTV9950	moderate	5-10%	suitable for automatic mixing
RTV9910	slow	5-10%	suitable for automatic mixing

Deep Section Cure

If these RTV silicone rubber compounds are to be used in deep sections at temperatures over 150°C, the cured product should be properly conditioned prior to service. Following room temperature cure of 1-3 days, a typical program would be eight hours at 25 °C intervals from 100°C to the service temperature. Longer times at each temperature will be required for larger parts or very deep sections.

Bonding

If adhesion is an important application requirement, RTV511, RTV560 and RTV577 silicone rubber compounds require a primer to bond to non-silicone surfaces. Thoroughly clean the substrate with a non-oily solvent such as naphtha or methyl ethyl ketone (MEK) and let dry. Then apply a uniform thin film of a suitable silicone primer such as SS4004P silicone primer and allow the primer to air dry for one hour or more. Finally, apply freshly catalyzed RTV silicone rubber compound to the primed surface and cure as recommended.

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

These products may be shipped at ambient temperature up to 40°C for 7 days maximum. They must be stored at -18°C or below. 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 under conditions as described above.

Availability

RTV511,560 and 577 are available in 454 g, 5.4 kg and 23 kg containers, material is standard supplied with DBT catalyst. If the application requires a different type of catalyst the catalyst of choice should be ordered separately.

LEGAL DISCLAIMER

THE MATERIALS, PRODUCTS AND SERVICES OF GE SILICONES, GE BAYER SILICONES, GE TOSHIBA SILICONES, THEIR SUBSIDIARIES OR AFFILIATES (THE "SUPPLIER"), ARE SOLD SUBJECT TO THE SUPPLIER'S STANDARD CONDITIONS OF SALE, WHICH ARE INCLUDED IN APPLICABLE SALES AGREEMENTS, PRINTED ON THE BACK OF ACKNOWLEDGMENTS AND INVOICES, OR AVAILABLE UPON REQUEST. ALTHOUGH THE INFORMATION, RECOMMENDATIONS OR ADVICE CONTAINED HEREIN IS GIVEN IN GOOD FAITH, SUPPLIER MAKES NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, (I) THAT THE RESULTS DESCRIBED HEREIN WILL BE OBTAINED UNDER END-USE CONDITIONS, OR (II) AS TO THE EFFECTIVENESS OR SAFETY OF ANY DESIGN INCORPORATING SUPPLIER'S MATERIALS, PRODUCTS, SERVICES, RECOMMENDATIONS OR ADVICE. NOTHING IN THIS OR ANY OTHER DOCUMENT SHALL ALTER, VARY, SUPERSEDE OR OPERATE AS A WAIVER OF ANY OF THE SUPPLIER'S STANDARD CONDITIONS OF SALE.

Each user bears the full responsibility for making its own determination as to the suitability of Supplier's materials, products, services, recommendations or advice for its own particular purpose. Each user must identify and perform tests and analyses sufficient to assure it that its finished parts will be safe and suitable for use under end-use conditions. Because actual use of products by the user is beyond the control of Supplier, such use is within the exclusive responsibility of the user, and Supplier cannot be held responsible for any loss incurred through incorrect or faulty use of the products. Further, 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 Supplier or any of its subsidiaries or affiliated companies, 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.