

RTV511

Description

RTV511, RTV560 and RTV577 silicone rubber compounds are low temperature 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 Features and Benefits

- Variable work times and cure rates by adjusting the amount and type of curing agent
- Room temperature cure
- Composition free of solvents and solvent odor
- Excellent adhesion capabilities with primer
- Excellent release properties
- Retention of elastomeric properties with the following temperature ranges:
 - RTV511 and RTV577, at temperatures from -115°C (-175°F) up to 204°C (400°F) continuously and up to 260°C (500°F) for short periods of time
 - RTV560 at temperatures from -115°C(-175°F) up to 260°C (500°F) continuously and up to 316°C (600°F) for short periods of time

Typical Physical Properties

TYPICAL UNCURED PROPERTIES OF RTV BASE COMPOUNDS	RTV511	RTV560	RTV577
Color	White	Red	White
Consistency	Pourable	Pourable	Paste
Viscosity, cps	16,000	30,000	700,000
Specific Gravity	1.21	1.42	1.35
TYPICAL UNCURED PROPERTIES OF RTV BASE COMPOUNDS WITH 0.5% DBT CURING AGENT ADDED	RTV511	RTV560	RTV577
Work Time @ 25°C (77°F), hours	1.5	2.25	2
Cure Time @ 25°C (77°F), hours	24	24	24
TYPICAL CURED PROPERTIES (0.5 wt. % DBT Curing Agent Added, Cured 7 days @	RTV511	RTV560	RTV577

25°C (77°F) and 50% R.H.)			
Mechanical			
Hardness, Shore A Durometer	42	55	48
Tensile Strength, kg/cm ² (psi)	27 (380)	48 (690)	31 (440)
Elongation, %	170	120	150
Tear Strength, kg/cm (lb/in)	3.8 (21)	5.5 (31)	6.8 (38)
Shrinkage, %	1.3	1.0	0.65
Electrical			
Dielectric Strength, kv/mm (v/mil) (1.9 mm thick)	20.5 (520)	21.2 (540)	18.5 (470)
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 (°F)	-115 to 204 (-175 to 400)	-115 to 260 (-175 to 500)	-115 to 204 (-175 to 400)
Thermal Conductivity, W/mK	0.26	0.31	0.31
Coefficient of Linear Thermal Expansion, cm/cm, °C (in/in, °F)	22×10^{-5} (12×10^{-5})	20×10^{-5} (11×10^{-5})	20×10^{-5} (11×10^{-5})
Specific Heat, cal/gm, °C	0.35	0.35	0.35

Potential Applications

Typical applications include, but are not limited to:

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

Patent Status

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

Product Safety, Handling and Storage

Customers should review the latest Safety Data Sheet (SDS) and label for product safety information, safe handling instructions, personal protective equipment if necessary, emergency service contact information, and any special storage conditions required for safety. Momentive Performance Materials (MPM) maintains an around-the-clock emergency service for its products. SDS are available at www.momentive.com or, upon request, from any MPM representative. For product storage and handling procedures to maintain the product quality within our stated specifications, please review Certificates of Analysis, which are available in the Order Center. Use of other materials in conjunction with MPM products (for example, primers) may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

Processing Recommendations

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 Concentration	
	0.1%	0.5%
100 grams	5 drops	25 drops
454 grams (1 lb.)	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 29 inches of mercury minimum (absolute pressure of 25mm). 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 (77°F) 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 (32°F) after catalyzing.

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

Curing Agent	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 (302°F), 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 28°C (80°F) intervals from 100°C (212°F) 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 SS4004 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.

Limitations

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

Contact Information

For product prices, availability, or order placement, contact our customer service at Momentive.com/contact/customer-service

For literature and technical assistance, visit our website at: www.momentive.com

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