

RTV 511, RTV 560, RTV 577

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	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	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 Momentive performance materials 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 Concentration	
	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.

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, 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 Momentive performance materials. Similar information for solvents and other chemicals used with the Momentive performance materials 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 60°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 5.4 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.



PRINCIPAL LOCATIONS – Regional Information

North America	World Headquarters 187 Danbury Road Wilton, CT 06897, USA	T 800.295.2392	F 607.754.7517
Latin America	Rodovia Eng. Constâncio Cintra, Km 78,5 Itatiba, SP – 13255-700, Brazil	T +55.11.4534.9650	F +55.11.4534.9660
Europe, Middle East, Africa and India	D-51368 Leverkusen Germany	T 00.800.4321.1000 T +31.164.293.276	F +31.164.241.750
Pacific	Akasaka Park Building - 5-2-20 Akasaka Minato-ku, Tokyo 107-6112 Japan	T +81.3.5544.3100	F +81.3.5544.3101

CUSTOMER SERVICE CENTERS

North America	Charleston, WV 25314, USA E cs-na.silicones@momentive.com		
	• Specialty Fluids	T 800.523.5862	F 304.746.1654
	• UA, Silanes, Resins, and Specialties	T 800.334.4674	F 304.746.1623
	• RTV Products-Elastomers	T 800.332.3390	F 304.746.1623
	• Sealants and Adhesives & Construction	T 877.943.7325	F 304.746.1654
Latin America	E cs-la.silicones@momentive.com		
	• Argentina & Chile	T +54.11.4862.9544	F +54.11.4862.9544
	• Brazil	T +55.11.4534.9650	F +55.11.4534.9660
	• Mexico & Central America	T +52.55.5899.5135	F +52.55.5899.5138
	• Venezuela, Ecuador, Peru, Colombia, & Caribbean	T +58.212.285.2149	F +58.212.285.2149
Europe, Middle East, Africa and India	E cs-eur.silicones@momentive.com	T 00.800.4321.1000 T +31.164.293.276	F +31.164.241750
	E cs-ap.silicones@momentive.com		
Pacific	• Japan	T +81.276.20.6182	
	• China	T +86.21.5050.4666 (ext. 1523)	
	• Korea	T +82.2.6201.4600	
	• Singapore	T +65.6220.7022	
Worldwide Hotline	Worldwide Web www.momentive.com	T 800.295.2392 T +607.786.8131	F +607.786.8309

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