GE Silicones

RTV 31

RTV 31 Silicone Rubber Compound for High Temperature

Product Description

RTV31 silicone rubber compound is a high temperature two-part silicone elastomer. It is 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.

Key Performance Properties

- Variable work times and cure rates by adjusting the amount and type of curing agent
- Room temperature cure
- Composition free of solvents and solvent odour
- Excellent adhesion capabilities with primer
- Excellent release properties
- Retention of elastomeric properties at temperatures from minus 54°C up to 260°C continuously, and up to 316°C for short periods of time

Applications

Typical high temperature applications for these product include, but are not limited to:

- Potting and encapsulating electric motors and transformers
- Fabrication of rubber parts
- Casting moulds for low-melting point metals
- Release applications such as rubber rollers
- Thermal insulation

Typical Product Data

UNCURED PROPERTIES OF RTV BASE COMPOUND	RTV 31
Colour	Red
Consistency	Pourable
Viscosity, cps	25,000
Specific Gravity	1.42
UNCURED PROPERTIES OF RTV BASE WITH 0.5% DBT CURING AGENT ADDED	RTV31
Work Time @ 25C hrs	2
Cure Time @ 25C, hrs	24
CURED PROPERTIES (0.5 wt. % DBT Curing Agent added, cured 7 days at 25C and 50% R.H.)	RTV 31
Mechanical	
Hardness, Shore A Durometer	54
Tensile Strength, kg/cm2	61
Elongation, %	170
Tear Strength, kg/cm	5
Shrinkage, %	0.6
Electrical	
Dielectric Strength, KV/mm (v/mil) (1.9 mm thick)	17 (430)
Dielectric Constant @ 1000 Hz	4.4
Dissipation Factor @ 1000 Hz	0.03
Volume Resistivity, ohm-cm	1.6×10^{14}

Typical Product Data

Thermal	
Useful Temperature Range,° C	-54 to 260
Thermal Conductivity, gm-cal/sec, $cm^{2,\circ C/cm}$	0.00074
Coefficient of Expansion, cm/cm, ° C	20 x 10-5
Specific Heat, cal/gm, ° C	0.35

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 about one hour and a cure time of 24 hours. 0.5% DBT is the most commonly used concentration of curing agent for RTV31silicone rubber compound. The pot life may be lengthened by using less DBT (as little as 0.1% DBT).

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)

With 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.

De-aeration

Air entrapped during mixing should be removed to eliminate voids in the cured product. Expose the mixed material to a vacuum of 25mm (29 in.) of mercury. 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 de-aeration 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 about one hour will typically be available for pouring and working with the catalysed material. Pot life may be increased by refrigerating the mixed material at 0° C after catalysing. Cure times may be shortened by using mild heat up to 93° C maximum. A choice of curing agents is available for use with RTV31 silicone rubber compound

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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	10%	suitable for automatic mixing

Deep Section Cure

If these RTV silicone rubber compound is 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 50° 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, RTV31silicone rubber compound 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 catalysed RTV silicone rubber compound to the primed surface and cure as recommended. For more details on priming and adhesion refer to GE Silicones data sheet on silicone primers (1873).

Handling and Safety

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

Storage and Warranty Period

These products may be shipped at ambient temperature up to 43℃ for 7 days maximum. They must be stored at -18℃ or below. The warranty period is 12 months from the date of shipment from GE Silicones if stored in the original unopened container at these conditions.

Availability

RTV31 silicone rubber compound may be ordered from GE Silicones, Waterford, NY, 12188, the GE Silicones sales office nearest you or an authorized GE silicone product distributor.

Government Requirement

Prior to considering use of a GE Silicones product in fulfilling any Government requirement, please contact the Government and Trade Compliance office at 413-448-4624.

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