

SILTRUST™ RTV681-LV THERMAL CONTROL COATING

Description

SILTRUST RTV681-LV is a white, highly reflective, durable silicone thermal control coating. It has been developed for long term reliability in harsh environmental conditions. It is simple to apply and cures in one hour. The coating can provide excellent adhesion to many metal, composite, and organic substrates and maintains flexibility down to -60°C. This two-part silicone rubber is to be mixed 1:1 by weight mix ratio for ease of use. RTV681-LV cures quickly upon exposure to heat. RTV681-LV is a semi-flowable paste but can also be diluted for uniform spray coating using conventional painting equipment. Applications include satellite, aerospace, aviation, and sensors where a passive thermal control coating is needed. Each batch of RTV681-LV meets ASTM E595 for low outgassing.

Key Features and Benefits

- Excellent thermal control properties
 - Highly reflective with typical solar absorption of 0.16 at 0.006" thickness
 - Thermal emittance greater than 0.88
 - Non-specular coating
- 100% solids formulation can be diluted using optional Part C to meet application technique needs
- Simple Processing
 - Convenient 1:1 by weight mix ratio
 - Long working time at 77F/50%RH
 - Fast, full cure from 1 hour at 100°C to 150°C, to enable continuous production
 - Also cures at room temperature
- Meets ASTM E595 low outgassing levels to minimize contamination under vacuum and high temperature exposure
- Flexible coating capable of performing a 3.2 mm (0.125 inch) bend radius down to -60°C
- Dielectric Insulator
- Highly reflective even after hundreds of hours of elevated temperature or UV exposure
- Radiation and Atomic Oxygen stability

Typical Physical Properties

	RTV681-LV		Diluted RTV681-LV (63% Solids by Weight)	
	RTV681-LV (A)	RTV681-LV (B)	RTV681-LV (A)	RTV681-LV (B)
Uncured Properties				
Consistency	Semi-Flowable	Semi-Flowable	Flowable	Flowable
Color	White	White	White	White
Viscosity [#] , cPs	100,200	90,650	5,700	5,700
Specific Gravity	1.44	1.45	1.08	1.09
Working Properties				
Mix Ratio by weight	1:1		1:1	
Work Time [^] , hours	>12		>8	

Typical Cured Properties	(Cured at 100°C for 1 hour)	(Cured at 60°C for 0.5 hours followed by 100°C for 0.5 hours)
Hardness, Shore A	52	46
Tensile Strength, MPa, (psi)	4.6 (667)	3.7 (534)
Elongation, %	162	145
Lap Shear Strength ‡, MPa, (psi)	3.3 (489)	
AM0 Solar Absorptance	0.13 (0.075" thick)	0.16 (0.006" thick)
Thermal Emittance	0.89 (0.075" thick)	0.89 (0.006" thick)
Outgassing: TML, %	0.27	0.33
Outgassing: CVCM, %	0.01	0.02

#: Controlled Stress Rheometer at 10⁻¹seconds shear rate

^: At 21°C (70°F)

‡ Acid Etched AL 6061-T6 with primer

Data above is typical and should not be used to create specifications

Processing Recommendations

RTV681-LV can be diluted with a silicone fluid, RTV681-LV C, making many different material application techniques possible. In the un-diluted form, RTV681-LV is semi-flowable and is skivable onto desired surfaces to be coated. RTV681-LV can be diluted then sprayed with conventional high volume, low pressure (HVLP) paint equipment. RTV681-LV can also be diluted mildly so that it may be rolled onto surfaces.

Compatibility

RTV681-LV silicone rubber compound will cure in contact with most clean, dry surfaces. However, certain materials, such as butyl and chlorinated rubber, sulfur-containing materials, amines, and certain metal soap-cured RTV silicone rubber compounds, can cause cure inhibition. Cure inhibition is characterized by a gummy appearance of the RTV silicone rubber compound at the interface between it and the substrate.

It is recommended that a sample patch test be performed with RTV681-LV silicone rubber compound to determine if a barrier coating or other inhibition preventing measures are necessary before applying material to a desired surface.

Mixing

Select a mixing container 4-5 times larger than the volume of RTV silicone rubber compound to be used. Weigh out one part of the A component and one part of the B component by weight. With clean tools, thoroughly mix the A and B components together, 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 about 29 inches of mercury. The material will expand, crest, and recede to approximately the original level as the bubbles break. Degassing is usually complete approximately 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.

Automatic equipment designed to meter, mix, de-aerate, and dispense two-component RTV silicone rubber compounds will add convenience to continuous or large volume operations. Deaeration is not necessarily required when using diluted RTV681-LV depending on the spray equipment being used.

Curing

RTV681-LV can cure at room temperature or rapidly at elevated temperatures. Curing at 100°C or 150°C for 1 hour is common especially for RTV681-LV. Cure time and temperature of diluted RTV681-LV can be tailored to accommodate the

amount of diluting silicone fluid solvent added.

Patent Status

Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute the 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. Be aware of RTV681C-LV's low flash point when processing. Take precautions to reduce combustion potential by grounding equipment such as mixing and spray equipment and do not process RTV681C-LV near open flames or sparks. SDS are available at www.momentive.com or, upon request, from any Momentive 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 Momentive products (for example, primers) may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

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/CustomerService/

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

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