



Sylgard[®] 186 Silicone Elastomer

FEATURES & BENEFITS

- High viscosity
- RT and heat cure
- High tear strength
- UL tested
- Rapid, versatile cure processing controlled by temperature
- Can be considered for uses requiring UL requirements

COMPOSITION

- Two-part
- 10:1 mix ratio

Sylgard[®] 186 Silicone Elastomer is a two-part, 10:1 mix, translucent encapsulant with high tear strength.

APPLICATIONS

Potential uses:

- General potting applications
- Power supplies
- Connectors
- Sensors
- Industrial controls
- Transformers
- Amplifiers
- High voltage resistor packs
- Relays
- Adhesive/encapsulant for solar cells
- Adhesive handling beam lead integrated circuits during processing

TYPICAL PROPERTIES

Specification Writers: These values are not intended for use in preparing specifications. Please contact your local Dow Corning sales office or your Global Dow Corning Connection before writing specifications on this product.

Property	Unit	Result
Viscosity (Part A or Base)	cP	123800
	mPa-sec	123800
	Pa-sec	123.8
Viscosity (Mixed)	cP	66700
	mPa-sec	66700
	Pa-sec	66.7
Working Time at 25°C (Pot Life hours)	hr	1.65
Heat Cure Time @ 100°C	minutes	25
Heat Cure Time @ 125°C	minutes	15
Heat Cure Time @ 150°C	minutes	15
Specific Gravity (Cured)		1.12
Tensile Strength	psi	305
	MPa	2.1
	kg/cm ²	21
Elongation	%	255

DESCRIPTION

Dow Corning[®] brand silicone encapsulants are supplied as two-part liquid component kits. When liquid components are thoroughly mixed, the mixture cures to a flexible elastomer, which is well suited for the protection of electrical/electronic applications. *Dow Corning* silicone encapsulants cure without exotherm at a constant rate regardless of sectional thickness or degree of confinement. *Dow Corning* silicone elastomers require no post cure and can be placed in service immediately following the completion of the cure schedule. Standard silicone encapsulants require a surface treatment with a primer in addition to good cleaning for adhesion while primerless silicone encapsulants require only good cleaning.

HOW TO USE

APPLICATION METHODS

- Automated metered mixing and dispensing
- Manual mixing

MIXING AND DE-AIRING

Dow Corning silicone encapsulants are supplied as two-part liquid component kits. When liquid components are thoroughly mixed, the mixture cures to a flexible elastomer, which is well suited for the protection of electrical/electronic applications. The 10:1 mix ratio gives one latitude to tune the modulus and hardness for specific application needs and production lines. *Dow Corning* silicone encapsulants cure without exotherm at a constant rate regardless of sectional thickness or degree of confinement. *Dow Corning* silicone elastomers require no post cure and can be placed in service immediately following the completion of the cure schedule. Standard silicone encapsulants require a surface treatment with a primer in addition to good cleaning for adhesion while primerless silicone encapsulants require only good cleaning.

TYPICAL PROPERTIES, (continued)

Property	Unit	Result
Tear Strength (Die B)	ppi	100
	N/cm	70
Dielectric Constant at 100 Hz		2.70
Durometer Shore A		24
Dielectric Constant at 100 kHz		2.68
Volume Resistivity	ohm*cm	4.98 E+15
Dissipation Factor at 100 hz		0.00002
Dissipation Factor at 100 kHz		0.00006
Agency Listing		UL 94V-1
Hardening Transition by DSC	°F	-67
	°C	-55
Shelf Life at 25°C	months	12

PREPARING SURFACES

In applications requiring adhesion, priming will be required for the silicone encapsulants. See the Primer Selection Guide for the correct primer to use with a given product. For best results, the primer should be applied in a very thin, uniform coating and then wiped off after application. After application, it should be thoroughly air dried prior to application of the silicone elastomer. Additional instructions for primer usage can be found in the information sheets specific to the individual primers.

PROCESSING/CURING

Thoroughly mixed *Dow Corning* silicone encapsulant may be poured/dispensed directly into the container in which it is to be cured. Care should be taken to minimize air entrapment. When practical, pouring/dispensing should be done under vacuum, particularly if the component being potted or encapsulated has many small voids. If this technique cannot be used, the unit should be evacuated after the silicone encapsulant has been poured/dispensed. *Dow Corning* silicone encapsulants may be either

room temperature (25°C/77°F) or heat cured. Room temperature cure encapsulants may also be heat accelerated for faster cure. Ideal cure conditions for each product are given in the product selection table. Two-part condensation cure encapsulants should not be heat accelerated above 60°C (140°F).

POT LIFE AND CURE RATE

Cure reaction begins with the mixing process. Initially, cure is evidenced by a gradual increase in viscosity, followed by gelation and conversion to a solid elastomer. Pot life is defined as the time required for viscosity to double after Parts A and B (base and curing agent) are mixed and is highly temperature and application dependent. Please refer to the data table.

USEFUL TEMPERATURE RANGES

For most uses, silicone elastomers should be operational over a temperature range of -45 to 200°C (-49 to 392°F) for long periods of time. However, at both the low and high temperature ends of the

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spectrum, behavior of the materials and performance in particular applications can become more complex and require additional considerations. For low temperature performance, thermal cycling to conditions such as -55°C (-67°F) may be possible, but performance should be verified for your parts or assemblies. Factors that may influence performance are configuration and stress sensitivity of components, cooling rates and hold times, and prior temperature history. At the high temperature end, the durability of the cured silicone elastomer is time and temperature dependent. As expected, the higher the temperature, the shorter the time the material will remain useable.

COMPATIBILITY

Certain materials, chemicals, curing agents and plasticizers can inhibit the cure of addition cure adhesives. Most notable of these include: Organotin and other organometallic compounds, silicone rubber containing organotin catalyst, sulfur, polysulfides, polysulfones or other sulfur containing materials, unsaturated hydrocarbon plasticizers, and some solder flux residues. If a substrate or material is questionable with respect to potentially causing inhibition of cure, it is recommended that a small scale compatibility test be run to ascertain suitability in a given application. The presence of liquid or uncured product at the interface between the questionable substrate and the cured gel indicates incompatibility and inhibition of cure.

REPAIRABILITY

In the manufacture of electrical/electronic devices it is often desirable to salvage or reclaim damaged or defective units. With most non-silicone rigid potting/encapsulating materials, removal or entry is difficult or impossible without causing excessive damage to internal circuitry.

Dow Corning silicone encapsulants can be selectively removed with relative ease, any repairs or changes

accomplished, and the repaired area repositioned in place with additional product. To remove silicone elastomers, simply cut with a sharp blade or knife and tear and remove unwanted material from the area to be repaired. Sections of the adhered elastomer are best removed from substrates and circuitry by mechanical action such as scraping or rubbing and can be assisted by applying *Dow Corning*® brand OS Fluids. Before applying additional encapsulant to a repaired device, roughen the exposed surfaces of the cured encapsulant with an abrasive paper and rinse with a suitable solvent. This will enhance adhesion and permit the repaired material to become an integral matrix with the existing encapsulant. Silicone prime coats are not recommended for adhering products to themselves.

HANDLING

PRECAUTIONS

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW CORNING WEBSITE AT DOWCORNING.COM, OR FROM YOUR DOW CORNING SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CORNING CUSTOMER SERVICE.

USABLE LIFE AND STORAGE

Shelf life is indicated by the "Use Before" date found on the product label. For best results, *Dow Corning* silicone encapsulants should be stored at or below 25°C (77°F). Special precautions must be taken to prevent moisture from contacting these materials. Containers should be kept tightly closed and head or air space

minimized. Partially filled containers should be purged with dry air or other gases, such as nitrogen.

PACKAGING INFORMATION

In general, *Dow Corning* silicone 1:1 mix ratio encapsulants are supplied in nominal 0.45-, 3.6-, 18- and 200- kg (1-, 8-, 40- and 440- lb) containers, net weight. *Dow Corning* silicone 10:1 mix ratio encapsulants are supplied in nominal 0.5-, 5-, 25- and 225- kg (1.1-, 11-, 55- and 495- lb) containers, net weight. Packaging options may vary by product. Consult *Dow Corning* Customer Service at (989) 496-6000 for additional packaging options.

LIMITATIONS

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

HEALTH AND ENVIRONMENTAL INFORMATION

To support customers in their product safety needs, *Dow Corning* has an extensive Product Stewardship organization and a team of Product Safety and Regulatory Compliance (PS&RC) specialists available in each area.

For further information, please see our website, dowcorning.com or consult your local *Dow Corning* representative.

LIMITED WARRANTY INFORMATION – PLEASE READ CAREFULLY

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to ensure that our products are safe, effective, and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent.

Dow Corning's sole warranty is that our products will meet the sales specifications in effect at the time of shipment.

Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted.

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For more information about our materials and capabilities, visit **dowcorning.com**.

To discuss how we could work together to meet your specific needs, email **electronics@dowcorning.com** or go to **dowcorning.com/contactus** for a contact close to your location. Dow Corning has customer service teams, science and technology centers, application support teams, sales offices and manufacturing sites around the globe.

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