

# Product Information

## Solar

# Sylgard<sup>®</sup> 184 Silicone Elastomer

## FEATURES

- Transparent
- Cures to flexible elastomer
- Constant cure rate, regardless of sectional thickness or degree of confinement
- Service range of -45 to 200°C (-49 to 392°F)
- No post cure required
- Two part, 10:1 mix
- RT/HA cure
- Minimal shrinkage
- No exotherm during cure
- No solvents or cure byproducts
- Repairable
- Good dielectric properties
- Deep section cure
- UL 94 V1, V0
- UL RTI 130°C (266°F)

## COMPOSITION

- Two-part silicone elastomer supplied as flowable liquid

**Two-part silicone that cures to a flexible elastomer for protection of electrical and electronic devices in solar applications**

## APPLICATIONS

- Protection of electrical/electronic devices.
- General potting applications including power supplies, connectors, sensors, industrial controls, transformers, amplifiers, high voltage resistor packs, and relays; adhesive/encapsulant for solar cells.

## TYPICAL PROPERTIES

Specification Writers: Please contact your local Dow Corning sales office or your Global Dow Corning contact before writing specifications on this product.

Test	Unit	Result
Mix Ratio		10:1
Color		Clear
Viscosity	centipoise or mPa.s	3900
Durometer, Shore A		50
Specific Gravity		1.03
Working Time at RT	min	>2 hours
Thermal Conductivity	Watt/meter-°K	0.2
	cal/cm-sec °C	4.3 x 10 <sup>-4</sup>
Linear Coefficient of Thermal Expansion	µm/m-°C or ppm	310
UL Flammability Classification		94 V1, V0
UL Temperature Index, Electrical/ Mechanical	°C	130/130
Dielectric Strength	volts/mil	540
	kV/mm	21.2
Dielectric Constant at 100 Hz		2.7
Dielectric Constant at 100 kHz		2.7
Volume Resistivity	ohm-cm	1.2 x 10 <sup>14</sup>
Dissipation Factor at 100 Hz		<0.001
Dissipation Factor at 100 kHz		<0.001

## DESCRIPTION

Sylgard<sup>®</sup> 184 Silicone Elastomer is supplied as two-part liquid component kits comprised of Part A/Part B to be mixed in a 10:1 ratio by weight or volume. It is suitable for manual mixing or automated mixing and dispensing.

When liquid components are thoroughly mixed, the mixture cures to a flexible elastomer, which is suited for the protection of electrical/electronic devices in solar applications.

## HOW TO USE

### Mixing

Sylgard 184 Silicone Elastomer is supplied in two parts as lot-matched base and curing agent that are mixed in a ratio of 10 parts base to one part curing agent, by weight. For further information, consult your local Dow Corning representative.

### Pot Life/Working Time

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. *Sylgard* 184 Silicone Elastomer has a pot life of >2 hours.

### Processing and Curing

Thoroughly mixed *Sylgard* 184 Silicone Elastomer 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.

*Sylgard* 184 Silicone Elastomer may be either room temperature (25°C/77°F) or heat cured following this schedule:

~48 hours at room temperature  
45 minutes at 100°C (212°F)  
20 minutes at 125°C (257°F)  
10 minutes at 150°C (302°F)

These data are believed to be typical and should be used as initial estimates of cure times. Times will vary slightly from batch to batch and can be longer or shorter due to thermal mass of your parts and your heating ramp rate. Pretesting is recommended to confirm adequate cure for your application.

*Sylgard* 184 Silicone Elastomer can be placed in service immediately following the completion of the cure schedule. No post cure is required.

### SURFACE PREPARATION

In applications requiring adhesion, priming is required. For best results, the primer should be applied in a very thin, uniform coating and then wiped off after application. The surface should be thoroughly air-dried prior to application of the silicone elastomer. Instructions for primer usage can be found in the Dow Corning literature, "How To Use *Dow Corning* Primers and Adhesion Promoters" (Form No. 10-366) and in the information sheets specific to the individual primers.

### USEFUL TEMPERATURE RANGES

For most uses, *Sylgard* 184 Silicone Elastomer 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 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 usable.

### COMPATIBILITY

Certain materials, chemicals, curing agents, and plasticizers can inhibit the cure of *Sylgard* 184 Silicone Elastomer. Most notable of these include:

- Organotin and other organometallic compounds
- Silicone rubber containing organotin catalyst
- Sulfur, polysulfides, polysulfones, or other sulfur-containing materials
- Amines, urethanes, or amine-containing materials
- Unsaturated hydrocarbon plasticizers
- 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.

### HANDLING PRECAUTIONS

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

### USABLE LIFE AND STORAGE

*Sylgard* 184 Silicone Elastomer has a shelf life of 24 months from date of manufacture at room temperature.

For best results, *Sylgard* 184 Silicone Elastomer should be stored at or below 25°C (77°F). Special precautions must be taken to prevent moisture from contacting this material. 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

*Sylgard* 184 Silicone Elastomer is supplied in nominal 0.45-, 3.6-, 18- and 200-kg (1-, 8-, 40- and 440-lb) containers, net weight. Packaging options may vary.

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 organ-

ization and a team of Product Safety and Regulatory Compliance (PS&RC) specialists available in each area.

For further information, please see our website, [www.dowcorning.com](http://www.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 Dow Corning's 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.

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Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any

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