Product Information
Solar

DOW CORNING

Dow Corning® PV-6010 Cell Encapsulant

FEATURES

- Compatible with automated dispensing equipment
- Moderate temperature cure (80°C/1 76°F)
- Self-priming adhesion
- Transparent
- Repairable

COMPOSITION

- Two-part silicone encapsulant supplied as flowable liquid

Silicone encapsulant that cures at low temperatures for solar applications

APPLICATIONS

- Encapsulation of crystalline or thin film solar cells for consumer goods applications
- Optical coupling material for concentrator cells

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.

Test	Unit	Result
Mix Ratio		1:1
Color		Clear
Viscosity	centipoise or mPa s	925
Durometer, Shore 00		34
Specific Gravity		1.00
Working Time at RT	hours	24 hours @ 25°C
Dielectric Strength	volts/mil	425
	kV/mm	17
Dielectric Constant at 1000 Hz		2.8
Volume Resistivity	ohm-cm	1.0×10^{15}
Dissipation Factor at 1 MHz		1.0×10^{-4}

DESCRIPTION

Dow Corning® PV-6010 Cell Encapsulant is supplied as two-part liquid component kits comprised of Part A/Part B to be mixed in a 1:1 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.

HOW TO USE

Mixing

Dow Corning® PV-6010 Cell Encapsulant is supplied in two parts as lot-matched base and curing agent that are mixed in a ratio of one part base to one part curing agent, by weight. After thoroughly mixing base and curing agent, agitate gently to reduce the amount of air introduced. Allowing the mixture to set for 30 minutes before pouring may be adequate for removal of the air introduced during mixing. If air bubbles are still present, vacuum deairing may be required. Deair in a container with at least four times the liquid volume to allow for expansion of material. Air entrapped

in the mixture can be removed by using a vacuum of 28 to 30 inches Hg. Continue the vacuum until the liquid expands and settles to its original volume and bubbling subsides. This may take 15 minutes to 2 hours depending on the amount of air introduced during stirring. For best curing results, glassware and glass or metal stirring implements should be used. Mix with a smooth action that does not introduce excess air.

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. *Dow Corning*® PV-6010 Cell Encapsulant has a pot life of 24 hours.

Processing and Curing

Thoroughly mixed *Dow Corning*® PV-6010 Cell 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*® PV-6010 Cell Encapsulant may be low temperature heat cured at 30 minutes at 80°C (176°F). Data is 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. *Dow Corning*® PV-6010 Cell Encapsulant can be placed in service immediately following the completion of the cure schedule. No post cure is required.

SURFACE PREPARATION

Surfaces should be clean and dry. *Dow Corning*® PV-6010 Cell Encapsulant provides self priming adhesion to glass. Some applications requiring adhesion may require priming. 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. For further instructions on primer usage, please contact your Dow Corning representative.

USEFUL TEMPERATURE RANGES

For most uses, *Dow Corning*® PV-6010 Cell Encapsulant should be operational over the typical solar ranges of -40 to 90°C (-40 to 194°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, 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.

COMPATIBILITY

Certain materials, chemicals, curing agents, and plasticizers can inhibit the cure of *Dow Corning*® PV-6010 Cell Encapsulant. 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.

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*® PV-6010 Cell Encapsulant can be selectively removed with relative ease, any repairs or changes accomplished, and the repaired area repotted in place with additional product.

To remove *Dow Corning*® PV-6010 Cell Encapsulant, 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.

Before applying additional *Dow Corning*® PV-6010 Cell 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.

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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 DOWCORNING.COM, OR FROM YOUR DOW CORNING REPRESENTATIVE, OR BY CALLING YOUR GLOBAL DOW CORNING CONNECTION.

USABLE LIFE AND STORAGE

Dow Corning® PV-6010 Cell Encapsulant has a shelf life of 12 months from date of manufacture at room temperature.

For best results *Dow Corning*® PV-6010 Cell Encapsulant should be stored at or below 32°C/90°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 INFORMATION

Dow Corning® PV-6010 Cell Encapsulant is supplied in pail and drum standard packaging. Detailed container size information may be obtained from your Dow Corning representative.

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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