



## DOWSIL™ CC-2588 Conformal Coating

One-part, transparent medium viscosity conformal coating with firm, abrasion resistant surface after cure

### Features & Benefits

- Cures to a tough, elastoplastic, abrasion resistant surface
- Solvent-borne resin coating
- High solid content
- UL 94 recognized flammability rating
- RT fast cure, no ovens required
- UV indicator allows for automated inspection

### Composition

- One-part silicone resin blend solution

### Applications

- Protective coating for rigid and flexible circuit boards
- Ideally suited for electronic printed wiring board (PWB) applications, particularly those requiring toughness and abrasion resistance

### Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

Test <sup>1</sup>	Property	Unit	Result
	One or Two-part		One
CTM0176	Color		Colorless to pale yellow liquid
CTM0050	Viscosity, Brookfield LV, 2# Spindle @ 10 rpm	cP	930
CTM0097	Specific Gravity (Uncured)		1.06
CTM0540	Specific Gravity (Cured)		1.11
CTM0098	Tack-Free Time at 25°C, 50% RH	min	5
CTM0099	Durometer	Shore A	75
CTM0114	Dielectric Strength	kV/mm	22.3
CTM0137A	Tensile Strength	MPa	5.04
CTM0137A	Elongation	%	233
CTM0249	Volume Resistivity	Ohm*cm	2.4E15

1. CTM: Corporate Test Method, copies of CTM's are available on request.

## Typical Properties (Cont.)

Test	Property	Unit	Result
CTM0112	Dielectric Constant at 100 Hz		2.6
	Dielectric Constant at 100 kHz		2.6
CTM0112	Dissipation Factor at 100 Hz		0.0034
	Dissipation Factor at 100 kHz		0.0066
CTM0208	NVC - Forced Draft Volatility	%	88
	Tg DMA	°C	-117
CTM0563	CTE	ppm	180
UL94	UL Flammability Classification		V-0

### Description

RTV conformal coatings such as DOWSIL™ CC-2588 Conformal Coating have firm dry surfaces for better handling and abrasion resistance after cure. Proper dilution allows for various viscosities to facilitate different application methods. RTV conformal coatings require atmospheric moisture to cure (no ovens) and their cure rates can be accelerated by mild heat. DOWSIL™ CC-2588 Conformal Coating is supplied in solvent, meets IPC-CC-830 and UL 746E recognition (V-0). Conformal coatings are materials applied in thin layers (typically a few mils or microns) onto printed circuits or other PCB system assembly substrates.

### Application Methods

- Spray
- Brush
- Flow
- Dip
- Automated pattern coating

### Processing/Curing

The time required to reach a tack-free state can be reduced with heat. When using heat for this purpose, allow adequate time for the solvent to evaporate prior to exposing to elevated temperatures in an air circulating oven. A typical cure schedule for 3 mil (75 micron) coatings is 10 minutes at room temperature, followed by 10 minutes at 60°C. If the coating blisters or contains bubbles, allow additional time at room temperature for the solvent to flash off prior to oven cure.

### Pot Life and Cure Rate

The pot life of Dow RTV conformal coatings is dependent on the application method chosen. To extend pot life, minimize exposure to moisture by using dry air or dry nitrogen blanketing whenever possible.

### Adhesion

With RTV cure coatings, adhesion typically lags behind cure and may take up to 72 hours to build in some coatings. Dow RTV conformal coatings are formulated to provide adhesion to most common PCB system assembly substrates and materials. It is recommended that the coatings be applied to clean and dry substrates prior to application. On certain difficult, low surface energy surfaces, adhesion may be improved by priming or by special surface treatment such as chemical or plasma etching.

## **Useful Temperature Ranges**

For most uses, silicone adhesives 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 useable.

## **Repairability**

In the manufacture of PCB system assemblies, it is often desirable to salvage or reclaim damaged or defective units. Dow RTV conformal coatings offer excellent reparability because they can be removed from substrates and circuitry by scraping or cutting, or by using solvents or stripping agents. If only one circuit component is to be replaced, a soldering iron may be applied directly through the coating to remove the component. Proper ventilation of any fume should be employed. After the circuit board has been repaired, the area should be cleaned by brushing or by using solvent, then dried and recoated. Heat cure coatings can be repaired with RTV coatings, but heat cure coatings may not work well when used to repair RTV coatings.

## **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 WEBSITE AT DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

## **Usable Life and Storage**

Special precautions must be taken to prevent moisture from contacting Dow RTV conformal coatings. 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. The product should be stored in its original packaging with the cover tightly attached to avoid any contamination. Store in accordance with any special instructions listed on the product label. The product should be used by its "Use Before" date as indicated on the product label. In some cases depending on storage, there may be a hazy appearance noticed in the containers when first opened, even though they are considered clear conformal coatings. It is normal for this to occur especially if the container has been sitting stagnant for several days or weeks. This is due to the solubility of the phenyl resin in the solvent and how long the container has been sitting in storage. The coating should cure to a clear consistency regardless of this initial appearance. Mild agitation can reconstitute the material so it is consistent in appearance and viscosity. Care should be taken if the low VOC versions are in bladder bags. A gentle rolling of the pail should correct the problem and redistribute the solvent. This should be performed 24 hours before use, so any induced bubbles from the manual agitation or rolling process have a chance to dissipate.

## **Packaging Information**

Multiple packaging sizes are available for this product. Please contact your local distributor or Dow representative for information on packaging size and availability.

## **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 has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, [dow.com](http://dow.com) or consult your local Dow representative.

## **Disposal Considerations**

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

## **Product Stewardship**

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

## **Customer Notice**

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

## **How Can We Help You Today?**

Tell us about your performance, design, and manufacturing challenges. Let us put our silicon-based materials expertise, application knowledge, and processing experience to work for you.

**For more information** about our materials and capabilities, visit **[dow.com](http://dow.com)**.

To discuss how we could work together to meet your specific needs, go to **[dow.com](http://dow.com)** for a contact close to your location. Dow has customer service teams, science and technology centers, application support teams, sales offices, and manufacturing sites around the globe.

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