



DOWSIL™ 3-1965 Conformal Coating

One-part, transparent, solventless low viscosity conformal coating, UL, IPC, and Mil Spec Qualified

Features & Benefits

- Low viscosity
- Cures to soft, low stress elastomer
- UL V-0, Mil-I-46058C, Amendment 7, and IPC-CC-830, Amendment 1 Qualified
- Room temp cure with optional heat acceleration
- UV indicator for inspection
- No added solvents
- Room temperature cure, no ovens required
- Mild heat acceleration can speed in-line processing
- Low viscosity enhances flow and fill in narrow gaps and spaces
- Good adhesion allows use with many low-solids (no clean) and no-lead solders
- Soft coating can improve reliability against stress
- Can be considered for uses with UL, IPC or Mil Spec requirements

Composition

- One-part polydimethylsiloxane conformal coating

Applications

DOWSIL™ 3-1965 Conformal Coating is suitable for use with:

- Rigid and flexible circuit boards
- Printed wiring boards (PWB)
- Sensitive components and fine pitch designs

Typical Properties

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

Property	Unit	Result
One or Two Part		One
Color		Transparent
Viscosity	cP	115
	Pa-sec	0.1
Specific Gravity (Cured)		0.99
Tack-free Time at 25°C	minutes	6

Typical Properties (Cont.)

Property	Unit	Result
Durometer Shore A		33
Dielectric Strength	Volts/mil	425
	kV/mm	17
Volume Resistivity	ohm-cm	8.7 E14
Dissipation Factor at 100 Hz		0.001
Dissipation Factor at 100 kHz		< 0.0002
UL Flammability Classification	NA	94 V-0
Mil ¹ Specification	NA	Mil I-46058C Amend 7
Agency Listing		IPC-CC-830, Amendment 1

1. MIL: Military Specification and Standards

Description

Solventless RTV elastomeric conformal coatings require atmospheric moisture to cure needing no expensive ovens, and various viscosity versions facilitate different application methods. This family of coatings is rapidly gaining popularity due to its solventless formulations, its rapid cure rates that can be dramatically accelerated by mild heat, and its cost effectiveness. These elastomers, when cured, offer the optimum stress relief for even the most delicate components and interconnections in a variety of service environments.

This product line also features coatings manufactured for controlled volatility and many of these products are UL recognized. Conformal coatings are materials applied in thin layers onto printed circuits or other substrates.

Application Methods

- Spray
- Brush flow
- Automated pattern coating
- May be dip coated with special precautions

Processing/Curing

Time to cure is dependent on several variables including the method of application, film thickness, temperature and humidity. Tack-free time in the data table gives an indication of typical times until surface is dry enough to handle. Cure time for full cure are indications of time needed to develop full physical properties such as durometer, tensile strength or adhesion. These times, including full cure time, can be significantly improved by introducing mild heat of 60°C (140°F) or less.

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 ambient 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 conformal coatings are formulated to provide adhesion to most common 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 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.

Packaging Information

Multiple packaging sizes are available for this product.

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 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 experience, application knowledge, and processing experience to work for you.

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

To discuss how we could work together to address your specific needs, go to 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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