Product Information
Electronics

DOW CORNING

Dow Corning® 1-4105 Conformal Coating

FEATURES & BENEFITS

- Low viscosity
- Heat cure
- Cures to soft, low stress elastomer
- No added solvents
- UV indicator for inspection
- UL V-1 flammability rating
- Rapid, versatile cure processing controlled by temperature
- Good adhesion allows use with many low-solids (no clean) and no-lead solder
- Low viscosity enhances flow and fill in narrow gaps and spaces
- UV indicator allows for automated inspection

COMPOSITION

- One-part silicone elastomer

One-part, heat cure, transparent low viscosity conformal coating

APPLICATIONS

- *Dow Corning*® 1-4105 Conformal Coating is suitable for use as a protective coating for rigid and flexible circuit boards

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
One or Two-part	-	One
Color	-	Clear
NVC (Non Volatile Content)	%	98
Viscosity	cP	450
	mPa-sec	450
	Pa-sec	0.5
Specific Gravity (Cured)	-	0.97
Durometer Shore 00	-	64
Tensile Strength	psi	35
	MPa	0.2
	kg/cm2	2
Elongation	%	70
Tensile Modulus	psi	50
	MPa	0.4
	kg/cm2	4
Dielectric Strength	volts/mil	500
	kV/mm	20
Volume Resistivity	ohm*cm	2.7 E+13
Dielectric Constant at 100 Hz	-	2.63
Dielectric Constant at 100 kHz	-	2.63
Dissipation Factor at 100 kHz	-	0.0007
Dissipation Factor at 100 hz	-	<0.0002
Linear CTE (by TMA)	ppm/ºC	325
Heat Cure at 105°C	min	10
Agency Listing	-	UL746E

DESCRIPTION

Solventless heat cure conformal coatings are designed for rapid processing at low temperatures (below 125 °C). They require some heating to cure, offering long bath at room temperature. Like the room-temperature-curing elastomers, these products offer optimum stress relief to surface mount and fine pitch components and interconnections in a variety of service environments. This that are Mil-I-46058C and IPC-CC-830 qualified and UL recognized. Conformal coatings are materials applied in thin layers onto printed circuits or other electronic substrates.

APPLICATION METHODS

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

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product line also features coatings

PROCESSING/CURING

Time to cure is dependent on film thickness, type of oven, and board population density. Heat cure time in the Typical Properties table gives an indication of typical times after the coating is heated to the temperature indicated. Highly populated, large, heavy boards may take longer than the indicated times due to the large thermal mass taking extra time to warm.

POT LIFE AND CURE RATE

The pot life of *Dow Corning*® Heat Cure Conformal Coatings is also dependent on the conditions in which they are processed, but is typically greater than 2 months. Dip tanks or containers should be closed and sealed when not in use. To maximize pot life, tank temperatures should be maintained at less than 29 °C (85 °F).

ADHESION

With heat cure coatings, the adhesion is complete with the full cure time and temperature. *Dow Corning*® Conformal Coatings are formulated to provide adhesion to most common electronic 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.

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 simple small scale compatibility test be run to ascertain suitability in a given application. The presence of liquid or uncured product after the recommended cure cycle at the interface between the questionable substrate and the cured gel indicates incompatibility and inhibition of cure.

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 electronic devices, it is often desirable to salvage or reclaim damaged or defective units. *Dow Corning* Conformal Coatings offer excellent repairability 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.

PACKAGING INFORMATION

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

USABLE LIFE AND STORAGE

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.

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 WEB SITE AT DOW CORNING.COM, OR FROM YOUR DOW CORNING SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CORNING CUSTOMER SERVICE.

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 web site, 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.

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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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