



## Technical Data Sheet

### DOWSIL™ Q1-4010 Conformal Coating

DOWSIL™ Q1-4010 Conformal Coating is a one-part, transparent medium viscosity conformal coating

#### Features & Benefits

- Medium viscosity
- Heat cure
- Cures to soft, low stress elastomer
- No added solvents
- UV indicator for inspection
- UL V-1 flammability rating
- IPC-CC-830B, Mil Spec 46058C tested
- Rapid, versatile cure processing controlled by temperature
- Good adhesion allows use with many low-solids (no clean) and no-lead solders
- UV indicator allows for automated inspection

#### Applications

- Rigid and flexible circuit boards
- Printed wiring board (PWB)
- Boards with sensitive components and fine pitch designs

#### Application Methods

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

#### Typical Properties

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

Property	Unit	Result
Viscosity	cP	825
	mPa-sec	825
	Pa-sec	0.8
Specific Gravity (Cured)		1.00
Heat Cure Time @ 100°C	minutes	10
Durometer Shore A		33
Unprimed Adhesion - Lap Shear (A1)	psi	130
	MPa	0.9
	kg/cm <sup>2</sup>	9

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## Typical Properties (Cont.)

Property	Unit	Result
Dielectric Strength	volts/mil	575
	kV/mm	23
Volume Resistivity	Ohm*cm	2.11 E14
Dielectric Constant @ 100 Hz		2.85
Dielectric Constant @ 100 kHz		2.63
Dissipation Factor @ 100 Hz		0.00271
Dissipation Factor @ 100 kHz		0.0003
Shelf Life at 5°C	months	12
Agency Listing		IPC-CC-830B, UL746E
UL Flammability Classification	NA	94 V-1
Mil Specification	NA	Mil I-46058C Amend 7

<b>Description</b>	Solventless heat cure conformal coatings are designed for rapid processing at low temps (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 product line also features coatings that are Mil Spec, IPC-CC-830 and UL recognized. Conformal coatings are materials applied in thin layers (typically a few mils or microns) onto printed circuits or other substrates. They provide proven, cost effective environmental and mechanical protection to significantly extend the life of the components and circuitry.
<b>Processing/Curing</b>	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.
<b>Pot Life and Cure Rate</b>	The pot life of Dow 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).
<b>Adhesion</b>	With heat cure coatings, the adhesion is complete with the full cure time and temperature. Dow conformal coatings are formulated to provide adhesion to most common substrates and materials. On certain difficult, low-surface energy surfaces, adhesion may be improved by priming or by special surface treatment such as chemical or plasma etching.
<b>Compatibility</b>	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.

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Compatibility (Cont.)	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 at the interface between the questionable substrate and the cured gel indicates incompatibility and inhibition of cure.
Useful Temperature Ranges	For most uses, silicone elastomers 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 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. 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	In general, Dow conformal coatings are supplied in nominal 0.45, 3.6, 18 and 200 kg (1, 8, 40 and 440 lb) containers, net weight. Not all coatings may be available in all packages and some additional packages, such as bladder packs or tubes, may be available for certain coatings and package sizes.
Usable Life And Storage	Shelf life is indicated by the "Use Before" date found on the product label.
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, <a href="http://www.consumer.dow.com">www.consumer.dow.com</a> or consult your local Dow representative.
Limitations	This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

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