

Conformal Coatings

Dow Corning® 3-1953 Conformal Coating

FEATURES

- RT cure, no ovens required
- Mild heat acceleration can speed in-line processing
- 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

BENEFITS

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POTENTIAL USES

- Rigid and flexible circuit boards
- Electronic printed wiring boards (PWB)
- Sensitive components and fine pitched designs

APPLICATION METHODS

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

1-part, transparent, medium viscosity conformal coating, UL, IPC and Mil Spec tested

TYPICAL PROPERTIES

Specification Writers: Please contact your local Dow Corning sales office or your Global Dow Corning Connection before writing specifications on this product.

Property	Unit	Value
Viscosity	cP	350
	mPa-sec	350
	Pa-sec	0.4
Specific Gravity (Cured)	-	0.99
Tack-Free Time at 25°C	minutes	8
Tack-Free Time at 60°C/15% RH	minutes	1.5
Durometer Shore A	-	16
Hardening Transition by DSC	°F	-56.2
	°C	-49
Shelf Life at 25°C	months	12
UL Flammability Classification	NA	94 V-0
Mil Specification	NA	Mil I-46058C Amend 7
Agency Listing	-	IPC-CC-830B, UL 746E

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 environmentally friendly and 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 (typically a few mils or microns) onto printed circuits or other electronic substrates. They provide proven, cost effective environmental and mechanical protection to significantly extend the life of the components and circuitry.

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 or less.

POT LIFE AND CURE RATE

The pot life of Dow Corning 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 72 hours to build in some coatings. Dow Corning Conformal Coatings are formulated to provide adhesion to most common electronic 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.

STORAGE AND SHELF LIFE

Special precautions must be taken to prevent moisture from contacting Dow Corning 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. Shelf life is indicated by the "Use Before" date found on the product label.

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 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. 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

In general, Dow Corning 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.

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, www.dowcorning.com, or consult your local Dow Corning representative.

LIMITATIONS

These products are neither tested nor represented as suitable for medical or pharmaceutical uses.

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