

Spray Coating of *Dow Corning*[®] 1-2577 Low VOC Silicone Conformal Coating with the Precision Valve PVA1000 Spray Coating and Dispensing System and FCS100 Spray Valve

This application bulletin is designed to provide process information for customers who desire to process *Dow Corning*[®] 1-2577 Low VOC Silicone Conformal Coating with processing equipment from Precision Valve & Automation Inc. (Dow Corning Corporation and Precision Valve & Automation Inc. are unrelated companies.)

***Dow Corning* 1-2577 Low VOC Silicone Conformal Coating¹**

Description

Dow Corning 1-2577 Low VOC Silicone Conformal Coating is a room temperature vulcanizing (RTV), solvent borne, elastoplastic resin. The key features of *Dow Corning* 1-2577 Low VOC Silicone Conformal Coating include:

- VOC-exempt, SNAP-approved, low odor, low toxicity (200 ppm IHG) silicone diluent
- Less than 50 grams per liter non-exempt VOC content
- Heat accelerable room temperature cure
- One component formulation
- Ease of application by dipping, brushing, or spraying
- Adjustable viscosity using VOC-exempt *Dow Corning*[®] OS-20 Fluid
- Useful temperature range of -65 to 200°C (-85 to 392°F)
- Good electrical properties over a wide temperature range
- UL 746C approved

Uses

Dow Corning 1-2577 Low VOC Silicone Conformal Coating is used as a protective coating for rigid and flexible circuit boards and thick film circuitry, as well as for impregnating porous substances such as ceramics to improve moisture resistance.

¹For more detailed product information, obtain specific product information sheet from Dow Corning.

Cure

Dow Corning 1-2577 Low VOC Silicone Conformal Coating cures upon contact with moisture in the air. The thicker the coating, the longer the cure time. Time to cure is dependent on several variables, including the method of application, film thickness, temperature, and humidity. Generally, films of less than 8 mils will be tack-free in less than 20 minutes at 25°C (77°F) and greater than 30 percent relative humidity. Under these conditions, final cure will typically be achieved in 72 hours. The tack-free and cure times can be shortened significantly by introducing mild heat up to 70°C (158°F) and 70 percent relative humidity. Cracks may occur in the coating if it is exposed to cold temperatures or thermal cycling before adequate cure has developed.

A typical cure schedule for a 3-mil coating is ten minutes at room temperature followed by ten minutes at 70°C (158°F). If the coating bubbles, allow additional time at room temperature for the solvent to evaporate prior to oven cure.

Adhesion

Dow Corning 1-2577 Low VOC Silicone Conformal Coating typically develops adhesion to most electronic substrates in one to seven days, depending on specific processing conditions. Mild heating shortens the time to build adhesion, and in some cases can improve the ultimate adhesion for difficult substrates. If increased adhesion is required, the use of *Dow Corning*[®] 1204 Prime Coat or *Dow Corning*[®] P5204 Adhesion Promoter may help. *Dow Corning* 1204 Prime Coat is required for UL 746C approval.

Pot Life

The pot life of *Dow Corning* 1-2577 Low VOC Silicone Conformal Coating is dependent on the conditions under which it is processed. To extend pot life, use dry air or other dry blanketing whenever possible. Dilution using reactive solvents such as alcohol or solvents containing water will reduce shelf and pot life.

Application Methods² with Precision Valve PVA1000 Spray Coating and Dispensing System and FCS100 Spray Valve

Equipment

A PVA1000 spray coating and dispensing system using an FCS100 spray valve.

Application

Film builds of 1-3 mils can be achieved using the FCS100 nozzle and the following guidelines:

FCS1-1 Air Cap:	-F (flat), -R (round)
Fluid Pressure:	20-30 psig
Supply Pressure:	80 psig dry air
Atomizing Air Pressure:	5-10 psig
Nozzle Adjust:	> 1/8 turn
Robot Velocity (linear):	1-3 in/sec
Z-height:	0.25 - 1.0 in

The FCS100 spray valve requires no cleaning under normal operating conditions. Remove the air cap and inspect tip before startup.

Notes

- The above information is based on lab testing only.
- It is important to flush the fluid delivery system with an inerting fluid such as *Dow Corning* OS-20 Fluid, VM&P naphtha, or toluene prior to the introduction of the conformal coating. Failure to adequately remove moisture from the process lines will result in gel formation in the coating.
- For shutdown, park the head in the inerting fluid cup.
- Extensive shutdowns should have no effect as long as the fluid system is sealed and free of air or moisture.

²Information pertaining to application methods supplied by Precision Valve & Automation Inc.

Safe Handling Information

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED. 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 FROM YOUR DOW CORNING REPRESENTATIVE, OR DISTRIBUTOR, OR BY WRITING TO DOW CORNING CUSTOMER SERVICE, OR BY CALLING (517) 496-6000.

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For more process information, contact:

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For more information on the Precision Valve PVA1000 system and FCS100 spray valve, contact:

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