

# DOW CORNING® 1-2577 Conformal coating

## FEATURES

- One-part
- Low viscosity dispersion in solvent
- Ease of application by spraying, dipping, brushing or flow coating
- Room temperature cure or rapid heat cure with additional catalyst
- Good adhesion
- Clear
- Stable and flexible from -60°C (-76°F) to 200°C (392°F)
- Contains a dye, fluorescent under UV light
- Excellent dielectric properties
- Underwriters Laboratories: UL 746C

## MIL-I-46058C silicone conformal coating

### APPLICATIONS

- Designed to provide long term coating against moisture and atmospheric contaminants.
- Typical applications include: coating of thick film circuitry, porous substrates and printed circuit boards.

### TYPICAL PROPERTIES

Specifications writers: These values are not intended for use in preparing specifications. Please contact your local Dow Corning sales representative prior to writing specifications on this product.

CTM*	ASTM*	Property	Unit	Value
<b>As supplied</b>				
0176		Color		Clear straw
0208		Non-volatile content	%	72
0001A	D1298	Specific gravity at 23°C (73.4°F)		1.11
0004	D445	Viscosity	mPa.s	750
<b>Physical properties, cured 24 hours at 23°C (73.4°F) + 30 minutes at 80°C (176°F)</b>				
0793	D2240	Durometer hardness, Shore D		24
0137A	D412	Tensile strength	MPa	3.0
0137A	D412	Elongation at break	%	30
<b>Electrical properties, cured 24 hours at 23°C (73.4°F) + 30 minutes at 80°C (176°F)</b>				
0114	D149	Dielectric strength, 1.5mm film	kV/mm	18
0112	D150	Permittivity at 100Hz		2.76
0112	D150	Dissipation factor at 100Hz		0.004
0249	D257	Volume resistivity	Ohm.cm	0.5x10 <sup>14</sup>

\* CTM: Corporate Test Method, copies of CTMs are available on request.  
ASTM: American Society for Testing and Materials.

### HOW TO USE

#### Substrate preparation

For best adhesion, the surface to be coated with DOW CORNING 1-2577 Conformal Coating should be clean and dry prior to application. DOW CORNING 1-2577 Conformal Coating has excellent adhesion on clean boards under most conditions. If increased adhesion is required, the use of DOW CORNING® 1200 OS Primer or DOW CORNING® 1205

Primer is recommended.

#### How to apply

DOW CORNING 1-2577 Conformal Coating can be applied by spraying, dipping, brushing or flow coating. For low volume spray applications using a hand held spray gun, dilution to 40% solids using dry aromatic solvents such as xylene or toluene is recommended. For automated spray equipment, dilution to 50% solids

using PMA (propylene glycol methyl ether acetate) is recommended. Mixtures of PMA and DOW CORNING 1-2577 Conformal Coating should be used within 5 days of mixing.

One dip coat of DOW CORNING 1-2577 Conformal Coating typically produces a film thickness of 0.1 to 0.2mm. Thinner coatings can be achieved by diluting DOW CORNING 1-2577 Conformal Coating with dry xylene or toluene. Recommended withdrawal speed is approximately 30cm per minute.

### Curing

DOW CORNING 1-2577 Conformal Coating can be cured either at room temperature or by an accelerated heat cure at 75°C (167°F) to 100°C (212°F). In either case, DOW CORNING® 176 Catalyst or DOW CORNING® 9076 Catalyst can be added to improve the cure speed.

### Room temperature cure - without catalyst

DOW CORNING 1-2577 Conformal Coating is cured at room temperature by reaction with moisture in the air. A 0.1mm thick coating will be tack free in 15 to 30 minutes, allowing handling and in-process storage. Complete cure does not take place until 72 hours after coating. Suggested cure conditions are 23°C (73.4°F) in air with at least 50% relative humidity. Higher temperatures and relative humidities will accelerate rate of cure.

### Heat cure - without catalyst

The time required to reach a tack-free state can be reduced with heat acceleration. When using heat for this purpose, allow adequate time for the solvent to evaporate prior to exposure to elevated temperatures in an air circulating oven. A typical cure schedule for a 0.1mm thick coating is 10 minutes at room temperature followed by 10 minutes at 80°C (176°F). If the coating blisters or contains bubbles allow additional time at room temperature for the solvent to flash off prior to oven cure.

DOW CORNING 1-2577 Conformal Coating cures upon contact with moisture in the air. The thicker the coating, the longer the cure time. Cracks may occur in the coating if it is exposed to cold temperatures before adequate cure has developed. Boards coated with DOW CORNING 1-2577 Conformal Coating and exposed to 80°C (176°F) for 10 minutes should be held a minimum of 6 hours at room temperature prior to cold testing or shipment during cold weather. Longer exposure to a temperature greater than 80°C (176°F) will reduce the required holding time to prevent cracking prior to exposure to cold. Circuit boards coated with DOW CORNING 1-2577 Conformal Coating but not exposed to 80°C (176°F) for 10 minutes, as described previously, should be held a minimum of 48 hours at room temperature prior to exposure to cold.

### Cure - with catalyst

When applying thick films (greater than 0.25mm dry) of DOW CORNING 1-2577 Conformal Coating, using DOW CORNING 176 Catalyst or DOW CORNING 9076 Catalyst will reduce the time required to reach a tack-free state. For example, a coating of DOW CORNING 1-2577 Conformal Coating which dries to a film thickness of 0.4mm is tack free in approximately 70 minutes at 23°C (73.4°F) and 60% relative humidity when no catalyst is used. Use of DOW CORNING 176 Catalyst or DOW CORNING 9076 Catalyst at the same temperature and relative humidity reduces the tack-free time to approximately 45 minutes.

The use of DOW CORNING 176 Catalyst or DOW CORNING 9076 Catalyst improves solvent resistance and should be considered if the coating will be subjected to solvent vapours. The use of DOW CORNING 176 Catalyst or DOW CORNING 9076 Catalyst shortens the pot life of the material and is not recommended for use in dip equipment. Mixtures of DOW CORNING 1-2577 Conformal Coating and DOW CORNING 176 Catalyst or DOW CORNING 9076 Catalyst are usable for 7 days when stored at room temperature in a

sealed container.

Use 0.5 parts of DOW CORNING 176 Catalyst or DOW CORNING 9076 Catalyst to 100 parts by weight of DOW CORNING 1-2577 Conformal Coating as supplied. If catalyst is being used to improve solvent resistance, exposure to 80°C (176°F) for 30 minutes is required. Allow sufficient time for solvent evaporation prior to exposure to elevated temperatures.

### Pot life

For maximum pot life, exposure to humidity must be minimised. Proper handling can extend pot life appreciably.

In dip coating equipment, the tank should be covered when not in use. If it will not be used for several days, the addition to the surface of a thin layer of a dry aromatic solvent, such as xylene, will minimise moisture contact with the material. If a skin develops on the tank surface, it should be removed prior to start up.

Partially filled containers of DOW CORNING 1-2577 Conformal Coating should be kept tightly closed. If possible, head space in containers should be purged with dry air or another dry gas such as carbon dioxide or nitrogen. Dilution using reactive solvents such as alcohols, or solvents containing water, will reduce shelf life. Mixtures of DOW CORNING 1-2577 Conformal Coating and PMA for use in automated spray equipment should be kept for no longer than 5 days.

### Repairability

Parts coated with DOW CORNING 1-2577 Conformal Coating can be repaired. Refer to the application note "Removal of Silicone Polymers", reference number 10-1148B-01.

### Flame retardancy

DOW CORNING 1-2577 Conformal Coating is recognised by Underwriters Laboratories for use on printed circuit boards with substrates of generic type: ANSI FR-4, FR-5, G-10, G-11, CEM-1 and CEM-3 materials.

## **HANDLING PRECAUTIONS**

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED. 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 FROM YOUR LOCAL DOW CORNING SALES REPRESENTATIVE.

## **USABLE LIFE AND STORAGE**

When stored at or below 25°C (77°F) in the original unopened containers, this product has a usable life of 36 months from the date of production.

Special precautions must be taken to prevent moisture from contacting this material. Containers should be kept tightly closed and "head" or air space minimised. Partially filled containers should be purged with DRY air or other gases (Carbon Dioxide, Nitrogen).

After addition of DOW CORNING 176 Catalyst or DOW CORNING 9076 Catalyst for heat cure, the pot life is 7 to 10 days at 23°C (73.4°F).

## **PACKAGING**

DOW CORNING 1-2577 Conformal Coating is available in standard industrial container sizes. For details please refer to your Dow Corning sales office.

## **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 Health, Environment and Regulatory Affairs specialists available in each area.

For further information, please consult your local Dow Corning representative.

## **LIMITED WARRANTY - PLEASE READ CAREFULLY**

The information contained herein is offered in good faith based on Dow Corning's research and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information shall not be used in substitution for customers' tests to ensure that Dow Corning's products are fully satisfactory for your specific applications. Dow Corning's sole warranty is that the product will meet its current sales specifications. 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. DOW CORNING SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY. UNLESS DOW CORNING PROVIDES YOU WITH A SPECIFIC, DULY SIGNED ENDORSEMENT OF FITNESS FOR USE, DOW CORNING DISCLAIMS LIABILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES. SUGGESTIONS OF USE SHALL NOT BE TAKEN AS INDUCEMENTS TO INFRINGE ANY PATENT.

**DOW CORNING CORP**  
**3901 S SAGINAW RD, MIDLAND MI 48640**

E81611

Mtl Dsg	Col	Coating Mtl Min Mils (Mic)	Elec Temp Index	UL94 Flame Class	ANSI Grade	Min (In.)	Lam Thk (mm)
Conformal coatings, for use on Recognized printed wiring boards, furnished in the form of liquid or film.							
3140	NC	14(35.6)	105	94V-1	FR-4	0.025	(0.64)
3140	NC	14(35.6)	105	—	FR-2, -3, -GPO	0.055	(1.40)
R4-3117	NC	8(203)	105	—	FR-2, -3, -4, GPO	0.055	(1.40)
1-2577, 1-2577	NC	8(203)	105	94V-0	FR-4, CEM-1, CEM-3	0.057	(1.45)
Low VOC, Q1-2620, 1-2620	NC	8(203) 15(381)	105 130	94HB 94V-0	G-10, G-11 FR-4, CEM-1, CEM-3	0.055 0.057	(1.40) (1.45)
Low VOC 1-4105	NC	15(381) 7(178)	130 105	94HB 94V-1	G-10, G-11 FR-4, CEM-1	0.055 0.055	(1.40) (1.40)
Q1-4010	NC	7(178) 9(229)	105 105	94HB 94V-1	G-10, G-11 FR-4, CEM-1,	0.055 0.057	(1.40) (1.45)