4223F Liquid

Premium Polyurethane Conformal Coating

4223F is a 1-part, heat curing, UL 746E certified, thermoset polyurethane conformal coating. It cures to a durable, flexible, scratch resistant, and smooth finish. It is easy to apply and can be handled in 15 minutes. It cures in only 2 hours at 100 °C (212 °F). It may be removed with appropriate strippers, or soldered through for repair or rework.

4223F protects printed circuit boards in chemically challenging environments. It provides strong protection against aggressive chemicals, corrosion, moisture, fungus, dirt, dust, thermal shock, abrasion, short circuit, high-voltage arcing, and static discharge.



Features and Benefits

- Certified UL 746E (File# E203094) for outdoor use
- Certified IPC-CC-830B
- Excellent corrosion resistance
- Xylene and isocyanate free
- Fluoresces under UV-A light
- Suitable for use with selective coating equipment

Available Packaging

Cat. No.	Packaging	Net Vol.	Net Wt.
4223F-55ML	Bottle	55 mL	48.68 g
4223F-1L	Can	945 mL	841 g
4223F-4L	Can	3.78 L	3.36 kg
4223F-20L	Pail	18.9 L	16.8 kg

Contact Information

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Cured Properties

Resistivity	3.5 x 10^{13}	Ω·cm
Dielectric Strength	1 000	V/mil
Dielectric Withstand Voltage	>1 500	V
Insulation Resistance	1 x 10^{13}	Ω
Moisture Insulation Resistance	1 x 10^{12}	Ω
Dielectric Constant @ 1 MHz	0.29	
Dissipation Factor @ 1 MHz	0.009	
Glass Transition Temperature (T_g)	57	°C
CTE Prior T_g	130	ppm/°C
CTE After T_g	190	ppm/°C
Service Temperature Range	-65–125	°C

Usage Parameters

Dry Time To Handle (1 coat)	15	min
(2 coats)	25	min
Minimum Recoat Time	5	min
Recommended Film Thickness	25–75	µm
Theoretical Coverage @ 25 µm	109 400	cm^2/L

Uncured Properties

Viscosity @ 25 ˚C	290	cP
Density	0.89	g/mL
Percent Solids	45	%
Shelf Life	3	y
Calculated VOC	482	g/L

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Application Instructions
Read the product SDS before using this product (downloadable at www.mgchemicals.com).

Recommended Preparation
Clean the substrate with Isopropyl Alcohol, MG #824, so the surface is free of oils, dust, and other residues.

Recommended Thinner
When thinning is required, use MG #4352 Thinner 2.

Brush
4223F can be applied by brush for rework or touch-ups. Thinning is not required for most brush applications. Desired coating thickness can be achieved in a single application. Applied coating can be cured immediately.

Manual Spray Guns
Use a standard fluid nozzle gun with a minimum tip diameter of 0.8–1.0 mm. The settings listed below are recommendations; however, performance will vary with different brands:

Inlet	Air flow	Air cap
20–40 psi	10–15 SCFM	8–10 psi

1. Dilute 1-part coating to 1-part thinner (MG #4352 Thinner 2). Adjust ratio if required.
2. Stir the coating gently, but thoroughly.
3. Spray a test pattern to ensure good flow quality.
4. Tilt the board at 45° and spray a thin even coat from a distance of 20–25 cm (8–10 in). Use spray-and-release strokes with an even motion to avoid paint buildup in one spot. Start and end each stroke off the surface.
5. Wait 5 min between coats to avoid trapping solvent.
6. Rotate the board 90° and spray again to ensure good coverage.
7. Apply additional coats until desired thickness is achieved (go to step 3).
8. Let dry for 15 min at room temperature before applying heat cure.

Dip Coat
Use a Ford or Zahn cup to monitor the viscosity of the coating, as the solvent will evaporate over time.

1. Hang the PCB on a dipping arm.
2. Slowly lower the PCB into a tank and leave immersed in the coating for 2 min to allow penetration.
3. Slowly withdraw the PCB from the tank at a rate of approximately 6" per minute.
4. Let dry for 5 min before applying additional coats or 15 min before heat cure.

Selective Coating
For higher volume applications, coating can be applied via selective coating equipment. The settings listed below are recommendations and performance will vary with different brands.

Settings	PVA	Nordson Asymtek
Platform	PVA 650	SL 940E
Valve	FC100-CF	SC 280N
Dilution	2:1 with 435	5:1 with 4352
Air Pressure	N/Av	80 psi
Fluid Pressure	17 psi	23 psi
Dispense Height	10 mm	12.7 mm
Pass Width	8 mm	N/Av
Coating Speed	400 mm/sec	381 mm/sec

Cure Instructions
The product will not cure at room temperature. After letting sit for 15 minutes, cure the coating in an oven at one of these time/temperature options:

Temperature	80 °C	100 °C
Time	16 hours	2 hours

Clean-up
Clean spray system and equipment with MEK or acetone, MG #434.

Storage and Handling
Store between -5 and 40 ˚C in a in a dry area, away from sunlight (see SDS).

Disclaimer
This information is believed to be accurate. It is intended for professional end-users who have the skills required to evaluate and use the data properly. M.G. Chemicals Ltd. does not guarantee the accuracy of the data and assumes no liability in connection with damages incurred while using it.