

Silicone Modified Conformal Coating

Description

422B is a one-part, acrylic-silicone blend conformal coating that cures to a durable, flexible and smooth finish. It is easy to apply and can be handled in only 8 minutes. It may be removed with appropriate strippers or soldered through for repair or rework.

422B is designed for applications where both high service temperature and flexibility are required. It puts minimum stress on components during thermal cycling, making it ideal for applications that involve a wide temperature range. It provides strong protection against moisture, corrosion, fungus, dirt, dust, thermal shock, short circuits, high-voltage arcing, and static discharge.

Features and Benefits

- Certified UL 94 V-0 (File# [E203094](#))
- Maximum constant service temperature of 200 °C [392 °F]
- Fluoresces under UV-A light (blacklight)
- Validated for selective robotic coating equipment including PVA and Nordson ASYMTEK
- Excellent corrosion resistance—tested in salt spray environment with no oxidation or coating damage

Usage Parameters

Properties	Value
Drying time to handle	8 min
Recoat time	5 min
Full cure @22 °C [72 °F]	48 h
Full cure @65 °C [149 °F]	20 min
Shelf life	5 y
Theoretical coverage per 340 g can ^{a)}	<5 600 cm ² [<870 in ²]

a) Estimate based on a coat thickness of 25 µm [1.0 mil] and 50% transfer efficiency.

Temperature Ranges

Properties	Value
Constant service temperature	-40–200 °C [-40–392 °F]
Storage temperature limits	-5–40 °C [23–104 °F]

Cured Properties

Physical Properties	Method	Value
Color	Visual	Clear
Solderability	—	Fair
Flexibility	—	Excellent
Flammability	94 V (UL File # E203094)	94 V-0
UV inspection absorption max	Absorption spectrum	375 nm (near UV)
UV inspection fluorescence max	Emission spectrum	437 nm (blue)
Electrical Properties	Method	Value
Dielectric strength @0.0150"	IPC-TM-650 Test 2.5.6.1	1 056 V/mil [41.6 kV/mm]
Volume resistivity @23 °C, 50% RH	ASTM D 257-07	1.2 x 10 ¹⁵ Ω·cm
Surface resistivity	ASTM D 257-07	4.5 x 10 ¹⁶ Ω/sq
Dielectric constant @60 Hz & 25 °C [77 °F]	ASTM D 150-98	2.35
@1 MHz & 25 °C [77 °F]	ASTM D 150-98	1.99
Dissipation factor @60 Hz & 25 °C [77 °F]	ASTM D 150-98	0.037
@1 MHz & 25 °C [77 °F]	ASTM D 150-98	0.012

Cured Properties

Thermal Properties	Method	Value
CTE ^{a)} prior T _g	IPC-TM-650 Test 2.4.24	253 ppm/°C [487 ppm/°F]
Glass transition temperature (T _g)	IPC-TM-650 Test 2.4.24	None detected
Softening point	IPC-TM-650 Test 2.4.24	31 °C [88 °F]
Mechanical Properties	Method	Value
Adhesion (ABS)	ASTM D 3359	5B
(PC)	ASTM D 3359	5B
(PVC)	ASTM D 3359	4B
(Polyamide)	ASTM D 3359	5B
(Glass)	ASTM D 3359	1B
(Copper)	ASTM D 3359	0B
(Aluminum)	ASTM D 3359	1B
(FR4)	ASTM D 3359	3B
Pencil hardness (ABS)	ASTM D 3363	F, hard
Environmental & Ageing Study	Method	Value
Salt Spray Test, 7 day @35 °C, Salt/Fog	ASTM B117-2011	—
Cross-hatch adhesion	ASTM D3359-2009	5B = 0% area removed
Cracking, unwashed area	ASTM D661-93	None
Visual color, unwashed area	ASTM D1729-96	No change
Peeling, unwashed area	ASTM D1729-96	None

a) Coefficient of Thermal Expansion (CTE) units are in ppm/°C = in/in/°C × 10⁻⁶ = unit/unit/°C × 10⁻⁶.

Uncured Properties

Physical Properties	Method	Value
Odor	—	Ethereal
Viscosity @23 °C [73 °F]	Brookfield SP1	13 cP [0.013 Pa·s]
Density	—	0.81 g/mL
Flash point	Closed cup	-18 °C [-0.40 °F]
Boiling point	—	55 °C [131 °F]
Solids content (w/w)	—	8.6% ^{a)}

a) Also available in liquid format with 27% solids.

Compatibility

The 422B adheres to most plastics and metals used to house printed circuit assemblies; however, it is not compatible with contaminants like water, oil, or greasy flux residues that may affect adhesion. If contamination is present, first clean the surface to be coated with MG Chemicals 824 Isopropyl alcohol.

Attention!

Do not use on thin plastics or plastics where you want to keep original surface. The product contains a controlled amount of solvents designed to chemically etch plastic surfaces to help adhesion.

Storage

Store between -5 to 40 °C [23 to 104 °F] in a dry area, away from sunlight.

Health and Safety

Please see the 422B-Aerosol Safety Data Sheet (SDS) for further details on transportation, storage, handling, safety guidelines, and regulatory compliance.

Application Instructions

Spraying:

1. Shake the can vigorously.
2. Spray a test pattern to ensure good flow quality.
3. At an approximate distance of 20–25 cm (8–10 in), tilt the board 45° from a vertical position and spray a thin and even coat. Use spray-and-release strokes with an even motion to avoid excess paint in one spot. Start and end each stroke off the surface.
4. Wait 5–7 min before applying another coat to avoid trapping solvent.
5. Rotate the board 90° and spray again to ensure good coverage.
6. Apply other coats until desired thickness is achieved (go to step 3).
7. Let dry for 5–7 min at room temperature before heat cure.

Clearing nozzle between use:

1. Invert the can upside down.
2. Hold button until clear propellant comes out. The propellant should clear in seconds.

Cure Instructions

Room temperature cure:

- Let cure at room temperature for 48 h.

Heat cure:

- Put in oven at 65 °C [149 °F] for 20 min.

Packaging and Supporting Products

Cat. No.	Packaging	Net Volume	Net Weight	Packaged Weight
422B-340G	Aerosol	425 mL [14.3 fl oz]	340 g [11.9 oz]	460 g [1.01 lb] ^{b)}
422B-340GCA	Aerosol	425 mL [14.3 fl oz]	340 g [11.9 oz]	460 g [1.01 lb] ^{b)}
422B-55ML	Bottle	55 mL [1.86 fl oz]	49.4 g [1.74 oz]	190 g [0.42 lb] ^{a)}
422B-1L	Can	945 mL [1.99 pt]	849 g [1.87 lb]	1.05 kg [2.32 lb] ^{a)}
422B-4L	Can	3.78 L [1.00 gal]	3.39 kg [7.49 lb]	3.80 kg [8.37 lb]
422B-20L	Pail	18.9 L [5.04 gal]	16.9 kg [37.4 lb]	20.5 kg [45.2 lb]
422B-P	Pen	5 mL [0.16 fl oz]	4.49 g [0.15 oz]	4.60 g [0.01 lb]

^{a)} Case pack of 5

^{b)} Case pack of 10

Technical Support

Please contact us regarding any questions, suggestions for improvements, or problems with this product. Application notes, instructions and FAQs are located at www.mgchemicals.com.

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