

Description

Our 419C Acrylic Conformal Coating is an IPC 830 certified, fast drying, xylene and toluene free product that provides an excellent finish. This one part coating is easy to use and does not require special or costly equipment to apply. It is ideal for high moisture environments and applications requiring easy repair and rework.

The 419C coating protects electric circuit against moisture, dirt, dust, thermal shocks, and scratches that could corrode, short circuit, or otherwise damage the electric component. It insulates against high-voltage arcing, shorts, and static discharges. As well as, this coating provides a high dielectric withstand voltage that allows traces to be put closer together helping with miniaturization.

Applications & Usages

The 419C coating improves reliability, operational range, and lengthens the life of electrical and electronic components and assemblies. Its primary applications are in the automobile, marine, aerospace, aviation, communication, instrumentation, industrial control equipment, and consumer electronics industries.

Common acrylic conformal coatings uses are with electric generators, motors, transformers, relays, and air bag controllers. The 419C coating can serve to protect high technology devices like cell phones, computer tablets, avionics, and more.

Benefits

- **Super fast cure**—tack free in about 3 min; full cure in <30 min at 65 °C [149 °F]
- **No Hazardous Air Pollutants**—free of toluene or xylene • VOC of only 67% • free of ozone depletion compounds • coating is RoHS compliant
- **Externally Qualified** to **IPC-CC-830B** by Pacific Testing Laboratories
- **Meets UL 94V-0**
- **Excellent finish**—smooth, homogeneous, and durable crystal clear coat
- **Protects electronics from** moisture, corrosion, fungus, and static discharges
- **Easy to inspect**—fluoresces under UV light
- **Easy rework and repairs**—can solder through coat • removable with Cat. No. 435 thinner or Cat. No. 8310 stripper

Curing & Work Schedule*

Properties	Value
Tack Free	3-5 minutes
Recoat Time	2 minutes
Full Cure (at room temp.)	24 hours
Full Cure (at 65 °C [149 °F])	30 minutes

*Cure times assume a minimum thickness of 1 mil and standard conditions.

Service Ranges

Properties	Value
Service Temperature	-65 to +125 °C [-85 to +257 °F]
Max coverage** for 25 µm [1 mil]	<12 800 cm ² [<13.7 ft ²]

**Estimated based on ideal values. Actual value will be somewhat less than quoted.

Chemical Components

Name	CAS Number
Acrylic Resin	proprietary
Ethyl Acetate	141-78-6
Acetone	67-64-1
N-Heptane	142-82-5
PM Acetate [PGMEA]	108-65-6

Properties of Cured 419C

Physical Properties	Method	Value
Color	Visual	Crystal Clear
Solderability	—	Excellent
Weather Resistance	—	Excellent
Fungus Resistance	IPC-TM-650 2.6.1.1	Excellent
Flexibility	IPC-TM-650 2.4.5.1	Excellent
Flammability	In-house 94V testing	94V-0
Electric Properties	Method	Value
Dielectric Withstand Voltage	per IPC-TM-650	>1500 Volts
Insulation Resistance (after 24 hours)	IPC-TM-650 Test 2.6.3.4	5×10^{12} Ohms

See Appendix A for UL 94V-0 and IPC-CC-830B standards test results.

Properties of Uncured 419C

Physical Property	Method	Value
Odor	—	Ether-like, gasoline and minty
Viscosity at 23 °C [73 °F]	Brookfield SP1	7.2 cP [0.0072 Pa·s]
Density	MIL-STD-45662A	0.874 g/ml
Flash Point	Closed Cup	-19 °C [-2.2 °F]
Boiling Point		≥66 °C [≥150 °F]
Solids Content (w/w)		16%

Compatibility

The 419C acrylic coating is compatible with most materials found on printed circuit assemblies; however, in an uncured state it is not compatible with contaminants like water, oil, and greasy flux residues. Therefore, it is extremely important to clean the printed circuit assembly thoroughly with a suitable electronic cleaner before applying the coating.

The chosen electronic cleaner should remove moisture, wax, greases, oils, and all other contaminants that are known to cause defects in this type of conformal coating. (See recommended cleaners on page 3.)

Packaging and Supporting Products

Product Availability

- Cat. No. 419C-1L (33 oz) / 419C-4L (1 gal) / 419C-20L (5 gal) Liquid
- Cat. No. 419C-340G (12 oz) aerosol can 340g

Thinners & Conformal Coating Removers

- Cat. No. 435-55ML (2 oz), 435-1L (33 oz), 435-4L (1 gal) Conformal Coating Thinner
- Cat. No. 8310-100ML Conformal Coating Stripper

Electronic Cleaners

- Cat. No. 4050A-340G, 4050-1L, 4050-4L, 4050-20L Safety Wash Electronics Cleaner
- Cat. No. 406B-450G Superwash Cleaner Degreaser
- Cat. No. 824 Isopropyl Alcohol

Health, Safety, and Environmental Awareness

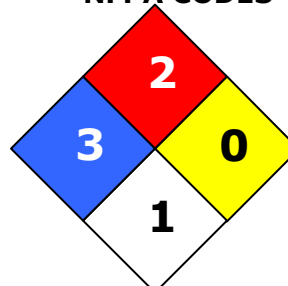
Please see the 419C-340G **Material Safety Data Sheet** (MSDS) for more details on transportation, storage, handling and other security guidelines.

Environmental Impact: The 419C formulation is designed to be environmentally friendly. It is free from ozone depletion compounds or toxic solvents. It has a lower volatile organic content of 67.0% (w/w) [or 581 g/L] than the older 419B formulation. The coating is RoHS compliant.

HMIS RATING

HEALTH:	3
FLAMMABILITY:	2
PHYSICAL HAZARD:	0
PERSONAL PROTECTION:	1

NFPA CODES



Health and Safety: The aerosol is flammable and should be kept away from flames and other ignition sources. As with most paint materials, avoid breathing in fumes or direct contact with the material. Solvents therein can cause irritation and other symptoms like headaches, pain, as well as having long term exposure effects.

Wear safety glasses and disposable gloves. Wash hands thoroughly after use. Use in the open air, in fume hoods, or in well ventilated area. For short or long term (8 hours) at levels of exposures exceeding 500 ppm n-heptane or 750 ppm acetone, use NIOSH approved respirator with organic vapor cartridges rated for this order of concentrations.

The cured coating presents no known hazard.

Spray Gun Application Instructions

Follow the procedure below for best results.

To apply the required thickness by weight

1. Mix thoroughly, and spray a test pattern.
This step ensures good flow quality and helps establish appropriate distance to avoid runs.
2. At a distance of 20 to 25 cm (8 to 10 inches), hold the gun at around 45°, and spray a thin and even coat onto the horizontal board. For best results, use spray-and-release strokes with an even motion to avoid excess paint in one spot.
3. Before the next coat, rotate the board 90° to ensure good coverage.
4. Wait at least 2 minutes, and spray another coat. The delay avoids trapping solvent between coats.
5. Apply other coats until desired thickness is achieved. (Go to Step 3)
6. Let dry for 3-5 minutes (flash off time) at room temperature.

To cure the conformal coating

Full cure can be achieved in less than 30 minutes by using an infrared lamp or in convection oven at 65 °C [149 °F]. At room temperature, the coat dries to the touch in 3-5 minutes. And full cure takes about 24 hours.

The procedure above is based on a minimum thickness of 25 µm (1 mil) conformal coating. After full cure, measure the actual conformal coating thickness to ensure it meets the applications requirements.

Technical Support

Contact us regarding any questions, improvement suggestions, or problems with this product. Application notes, instructions, and FAQs are located at www.mgchemical.com.

Email: support@mgchemicals.com

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1-604-888-3084 Ext. 128 (International)

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Disclaimer

This information is believed to be accurate. It is intended for professional end users having the skills 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.

Appendix A

Standards Qualification

Meets UL 94V-0 and is IPC-CC-830B Qualified.

<i>Qualification Criteria</i>	<i>Test Method</i>	<i>Results</i>
Meets UL 94V-0		
Coating flammability	UL 94V	94V-0
Qualified IPC-CC-830B*		
Appearance	IPC-CC-830B 3.5.2	pass
Fluorescence	IPC-CC-830B 3.5.3	pass
Flammability	IPC-CC-830B 3.5.6	pass
Fungus Resistance	IPC-TM-650 2.6.1.1	pass
Flexibility	IPC-TM-650 2.4.5.1	pass
Dielectric Withstand Voltage	IPC-TM-650 2.5.7.1	pass
Moisture and Insulation Resistance	IPC-TM-650 2.6.3.4	pass
Thermal Shock	IPC-TM-650 2.6.7.1	pass
Temperature Humidity Aging	IPC-TM-650 2.6.11.1	pass

*Qualified independently by Pacific Testing Laboratories, Inc.