

Urethane Conformal Coating



4223

Ideal for extreme chemical conditions. Urethane conformal coating is a durable finish product that provides a protective coating for printed circuit boards against moisture, corrosion, and thermal shock. It protects and insulates electrical and electronic components and assemblies, including generators, motors, transformers, relays, and solenoid coils. For spraying, liquid can be thinned using M.G. [Thinner Cleaner](#). Thin up to one half part thinner to one part coating.



Features

- Fungicidal
- Fast drying-units can be handled in 30 minutes
- Apply by dip, brush or spray
- Class F temperature rating (160°C / 320°F)
- Excellent chemical resistance
- Oil and moisture resistant
- Excellent for coating circuit boards
- Superior abrasion resistance
- Excellent adhesion
- Good flexibility
- Can be thinned to desired viscosity using M.G. Chemicals Cat No. [435 Thinner Cleaner Solvent](#)

Specifications

Standards	
Fungus resistance MIL-V-173C-2	
Properties	
Color	Clear
Specific Gravity @ 21°C (70°F), ASTM D-287	0.94 g/ml
Viscosity, Dolph Viscosimeter @ 30°C (86°F)	44 - 55 sec.
Viscosity, #1 Demmler Cup @ 30°C (86°F)	40 -50 sec.
Build Up, D.F.T., ASTM D-115	2.5 - 3.0 mils
Thinner	M.G Chemicals Cat No. 435
Air Drying Time on Strip, ASTM D-115-Set to Touch	10 min.
Federal Specification, TT-P-1436-Free of After Tack	1 hour
High temperature rating	150°C

Corrosive Effect on Copper	None
VOC Content, ASTM D 6053, lbs/gal	4.75
Chemical Resistance	
Water	Excellent
Acid (10% Sulfuric Acid)	Excellent
Alkali (1% Sodium Hydroxide)	Excellent
Salt Water	Excellent
Oil, ASTM D-115	Passed
Fungus Resistance,, MIL-V-173-2	
Aspergillus Niger	Passed
Aspergillus Flavus	Passed
Penicillium Funiculosum	Passed
Trichoderma SP	Passed
Electrical Properties	
Dielectric Strength, Volts/mil (dry)	1800
Dielectric Strength, Volts/mil (wet)	1200
Full cure	48 hrs. @ 20°C (68°F) 60 min. @ 65°C (149°F)
Thermal Class (UL-1446)	
Twisted Pair (Magnet Wire MW28)	130°C

Available Sizes

Catalog Number	Sizes Available	Description
4223-55ML	55ml (2 oz)	Liquid
4223-1L	950ml (1 quart)	Liquid
4223-4L	4L (1 gal)	Liquid
4223-20L	20L (5.3 gal)	Liquid

Material Safety Data Sheet

Section 1: Product Identification

MSDS Code: 4223-liquid **Name: Urethane Conformal Coating**

Related Part Numbers: 4223-55ML; 4223-1L; 4223-4L

Use: Protective coating for pc boards.

Section 2: Hazardous Ingredients

CAS#	Chemical Name	Percentage by weight	ACGIH TWA	Osha Pel	Osha Stel
1330-20-7	Xylene	40 - 50	100	100	150
100-41-4	Ethyl benzene	10 - 12	100	100	125

Section 3: Hazards Identification

- Eyes:** Causes severe eye irritation, tearing, and redness.
- Skin:** May cause skin irritation.
- Inhalation:** Product is irritating to the nose, throat, and respiratory tract.
- Ingestion:** Harmful if swallowed in large amounts. Aspiration of material into lungs can cause lung inflammation or damage.
- Chronic:** May cause defatting of skin. Extreme exposure over long periods of time may cause liver and kidney damage.

Section 4: First Aid Measure

- Eyes:** Remove contact lenses. Flush with water or saline. Get medical aid.
- Skin:** Wash skin with large quantities of soap and water. Get medical aid if symptoms persist.
- Inhalation:** Immediately remove from exposure to fresh air. If breathing is difficult, give oxygen. Get medical aid.
- Ingestion:** Do not induce vomiting. If conscious, give 1-2 glasses of water. Get medical aid.

Section 5: Fire Fighting Measures

- Autoignition Temperature:** N/e **Flash Point:** 27 °C **LEL / UEL:** 1/7
- Extinguishing Media:** Use water spray, dry chemical, carbon dioxide, or chemical foam.
- General Information:** Will burn if involved in a fire. Flash back along vapor trail is possible.

Section 6: Accidental Release Measures

- Spill** Remove all sources of ignition. Provide adequate ventilation. Wear appropriate personal protection.
- Procedure:** Sprinkle absorbent compound onto spill, then sweep into a plastic or metal container. Wipe up further residue with paper towel and place in container. Wash spill area with soap and water.

Section 7: Handling and Storage

Handling: Wash thoroughly after handling. Avoid contact with eyes, skin, and clothing. Do not ingest or inhale. Do not expose container to heat or flame.

Storage: Keep away from sources of ignition. Store in a cool, dry, well-ventilated area, away from incompatible substances. Keep from freezing.

Section 8: Exposure Controls

Routes of entry: Eyes, ingestion, inhalation, and skin.

Ventilation: Use adequate general or local exhaust ventilation to keep airborne concentrations below exposure limits.

Personal Protection: Wear appropriate protective eyeglasses or chemical safety goggles. Wear appropriate protective clothing to prevent skin contact. Use a NIOSH approved respirator when necessary.

Section 9: Physical and Chemical Properties

Physical State:	Clear Liquid	Odor:	Aromatic	Solubility:	Negligible	Evaporation Rate:	N/E
Boiling Point:	N/E	Specific Gravity:	0.95	Vapor Pressure:	N/E	Vapor Density:	N/E
						pH:	N/E

Section 10: Stability and Reactivity

Stability: Stable at normal temperatures and pressures.

Conditions to avoid: Storage temperatures over 40°C, ignition sources, and incompatible substances.

Incompatibilities: Oxidizers such as peroxides, chlorates, and permanganates.

Polymerization: Will not occur.

Decomposition: Carbon monoxide, carbon dioxide, and hydrocarbons

Section 11: Toxicological Information

Sensitization: (effects of repeated exposure)	Prolonged or repeated skin contact may cause dermatitis.			
Carcinogenicity: (risk of cancer)	Ethyl benzene: IARC – 2B – Possibly carcinogenic to humans			
Teratogenicity: (risk of malformation in an unborn fetus)	No			
Reproductive Toxicity: (risk of sterility)	The CCOHS list Xylene as a reproductive Hazard.			
Mutagenicity: (risk of heritable genetic effects)	No			
Lethal Exposure Concentrations:	Ingestion (LD50):	Inhalation (LC50):	Skin (LD50):	Inhalation (TCLo):
Xylene	2119 mg/kg Mouse	5000 ppm/4H Mouse	>1700 mg/kg Rabbit	15 mg/m ³ /24H/85D Rat
Ethyl benzene	3500 mg/kg Rat	35500 mg/m ³ /2H mouse	17800 uL/kg Rabbit	740 ppm/6H/92D Rat

Section 12: Ecological Information

General Information: Avoid runoff into storms and sewers, which lead into waterways. Water runoff can cause environmental damage.

Volatile Organic compounds, % by weight: 58%

Volatile Organic compounds, grams per litre: 551 g/L

Section 13: Disposal Information

General Information: Dispose of in accordance with all local, provincial, state, and federal regulations. Water runoff can cause environmental damage.

Section 14: Transportation Information

Ground: (all sizes 4 liter or less)

Classified as **Consumer Commodity/ORM-D**.

Ground: (all sizes larger than 4 liter)

Shipping Name: **PAINT RELATED MATERIAL**, UN number: **1263**, Class: **3**, Packing Group: **II**, Flash Point: **-18°C**.
Shipper must be trained and certified. Refer to TDG regulations (Canada), Refer to CFR 49 regulations (USA).

Air:

Shipper must be trained and certified. Refer to IATA Dangerous Goods Regulations.

Shipping Name: **PAINT RELATED MATERIAL**, UN number: **1263**, Class: **3**, Packing Group: **II**, Flash Point: **-18°C**.
Subsidiary Risk – nil, Recommend using original MG Chemicals certified outer cartons. Tape all seams on the carton.
Hazard Label required – Flammable Liquid. A double arrow orientation label is required and is already printed on the original outer carton.

Sea:

Shipper must be trained and certified. Refer to IMDG regulations.

Shipping Name: **PAINT RELATED MATERIAL**, UN number: **1263**, Class: **3**, Packing Group: **II**, Flash Point: **-18°C**.
Storage category "A", segregation as for class 9 but away from sources of heat and separated from goods of class 1 except for those in division 1.4.

Section 15: Regulatory Information

CANADA

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations.

DSL

All ingredients in this product are listed on the Domestic Substances List

WHMIS

This product belongs to the following categories: **B3, D2B**

Industry and Science Canada

MG Labels products intended for the workplace to conform to WHMIS labeling regulations. Product identification, net quantity declaration, minimum printing type size heights, and packaging of this product are in compliance.

Health Canada

Products produced by MG Chemicals intended for retail display conform to the Canadian Consumer Labeling Regulations.

USA

CAA (Clean Air Act, USA)

This product does not contain any class 1 ozone depleting substances.

This product does not contain any class 2 ozone depleting substances.

This product does not contain any chemicals listed as hazardous air pollutants.

SARA (Superfund Amendments and Reauthorization Act of 1986, USA, 40 CFR 372.4)

Ethyl Benzene CAS# 100-41-4 (<10%) and Xylene 1330-207 (15-40%) is listed under section 313 as toxic material.

EPCRA (Emergency Planning and Right to Know Act, USA, 40 CFR 372.45)

This product contains Ethyl Benzene CAS# 100-41-4 (<10%) and Xylene 1330-207 (15-40%) a toxic chemical subject to the reporting requirements of section 313 Title III of the SARA of 1986 and 40 CFR part 372.

TSCA (Toxic Substances Control Act of 1976, USA)

All substances are TSCA listed.