

## PREMIUM POLYURETHANE CONFORMAL COATING 4223E-LIQUID

# Safety Data Sheet

## Section 1: Identification

### Product Identifier and Other Means of Identification

**Product Name:** Premium Polyurethane Conformal Coating      **SDS Code:** 4223E-Liquid

**Related Part #** 4223E-1L, 4223E-4L, 4223E-20L

### Recommended Use and Restriction on Use

**Use:** Protective dielectric coating for printed circuit boards

**Uses Advised Against:** Not available

### Details of Manufacturer or Importer

**Manufacturer**

MG Chemicals  
1210 Corporate Drive  
Burlington, Ontario L7L 5R6  
CANADA

MG Chemicals (Head Office)  
9347-193 Street  
Surrey, British Columbia V4N 4E7  
CANADA

**☎** +1-800-340-0772

**FAX** +1-800-340-0773

**E-MAIL** [support@mgchemicals.com](mailto:support@mgchemicals.com)

**WEB** [www.mgchemicals.com](http://www.mgchemicals.com)

**☎** +1-905-331-1396

**FAX** +1-905-331-2682

**E-MAIL** [info@mgchemicals.com](mailto:info@mgchemicals.com)

**E-MAIL** (Competent Person): [sds@mgchemicals.com](mailto:sds@mgchemicals.com)

### Emergency Phone Number

**For hazardous material incidents ONLY**—leaks, spills, fires, exposures or accidents

USA or CANADA: Call CHEMTREC ☎: **+1-800-424-9300**

**For emergencies involving dangerous goods;** Collect 24/7

CANADA: Call CANUTEC ☎: **+1-613-996-6666** or **\*666** on cellular phones

**PREMIUM POLYURETHANE CONFORMAL COATING 4223E-LIQUID**

**Section 2: Hazard(s) Identification**

**Classification of Hazardous Chemical**

**GHS Categories**

Criteria	Category	Signal Word	Pictograms
Flammable liquid	2	Danger	Flame
Skin Irritation	2	Warning	Exclamation
Specific target organ toxicity Single exposure	3	Warning	Exclamation
Environmental Hazard Chronic Aqua. Tox.	2	none	Environment

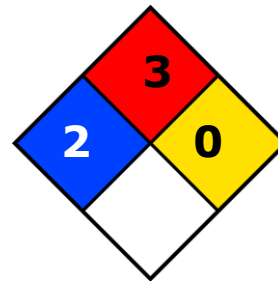
*Note:* The degree of severity is ranked within each hazard class from 1 (Highest Severity) to up to 5 (Lowest Severity), which is opposite to HMIS and NFPA conventions. Severity category rankings do not allow comparisons between classes.

**Other Classifications**

**HMIS® RATING**

<b>HEALTH:</b>	<b>* 2</b>
<b>FLAMMABILITY:</b>	<b>3</b>
<b>PHYSICAL HAZARD:</b>	<b>0</b>
<b>PERSONAL PROTECTION:</b>	

**NFPA® 704 CODES**






*Approximate HMIS and NFPA Risk Ratings Legend:*

0 (Low or none); 1 (Slight); 2 (Moderate); 3 (Serious); 4 (Severe)

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**PREMIUM POLYURETHANE CONFORMAL COATING 4223E-LIQUID**

**Label Elements**

<b>Signal Word</b>	<b>DANGER</b>
<b>Pictograms</b>	<b>Hazard Statements</b>
	H225: Highly flammable liquid and vapor
	H315: Cause skin irritation H336: May cause dizziness or drowsiness
	H411: Toxic to aquatic life with long lasting effects
<b>Prevention</b>	<b>Precautionary Statements</b>
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233	Keep container tightly closed.
P261 + P271	Avoid breathing mist/vapors/spray/fumes. Use only outdoors or in well ventilated area.
P240	Ground and bond container and receiving equipment.
P241	Use explosion proof equipment.
P264	Wash hands thoroughly after handling.
P280	Wear protective gloves/eye protection/face protection.
P273	Avoid release to the environment.
<b>Response</b>	<b>Precautionary Statements</b>
P370 + P378	In case of fire: Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish.
P303 + P361 + P364 + P352	IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash it before reuse. Wash with plenty of water.
P332 + P313	If skin irritation occurs: Get medical advice/attention.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTRE/doctor if you feel unwell.
P391	Collect spillage

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Storage	Precautionary Statements
P403 + P235	Store in well ventilated place. Keep cool.
P405	Store locked up.
Disposal	Precautionary Statements
P501	Dispose of contents/container in accordance to local/regional/international regulations.

**Other Hazards**

Repeated exposure may cause skin dryness or cracking.

**Section 3: Composition/Information on Ingredients**

CAS #	Chemical Name	Wt%
8052-41-3	stoddard solvent	40-50%
78-93-3	butan-2-one	7-13%

**Section 4: First-Aid Measures**

<i>Exposure Condition</i>	<i>GHS Code/Symptoms/Precautionary Statements</i>
<b>IF ON SKIN (or hair)</b>	P303 + P361 + P364, P352, P332 + P313
<b>Immediate Symptoms</b>	<i>irritation, dry skin, redness</i>
<b>Response</b>	IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash it before reuse. Wash with plenty of water. If skin irritation occurs: Get medical advice/attention.
<b>IF INHALED</b>	P304 + P340, P312, P308 + P313
<b>Immediate Symptoms</b>	<i>cough, irritation of the respiratory track, dizziness, drowsiness, headaches</i>
<b>Response</b>	Remove person to fresh air (out of the contaminated zone) and keep comfortable for breathing.  If feeling unwell: Call a doctor.

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<b>IF IN EYES</b>	P305 + P351 + P338, P337 + P313
<b>Immediate Symptoms</b>	<i>mild irritation, redness</i>
<b>Response</b>	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
<b>IF SWALLOWED</b>	P301 + P330 + P331, P312, 308 +P313
<b>Immediate Symptoms</b>	<i>abdominal pain, nausea, headaches, dizziness, drowsiness, vomiting</i>
<b>Response</b>	Rinse mouth. Do NOT induce vomiting. If feeling unwell or concerned: Get medical advice.

**Section 5: Fire-Fighting Measures**

<b>Auto-ignition Temperature</b>	≥315 °C [599 °F]	<b>Flash Point</b> <sup>a)</sup>	-3 °C [27 °F]	<b>LFL [LEL]</b> <sup>b)</sup>	1% (v)
				<b>UFL [UEL]</b>	11% (v)

<b>In case of fire</b>	P370 + P378
<b>Extinguishing Media</b>	Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish.
<b>Specific Hazards</b>	Vapors are heavier than air, and may travel to sources of ignition near the ground. They can cause flash fire or ignite explosively.
<b>Combustion Products</b>	Produces CO and CO <sub>2</sub> .
<b>Fire-Fighter</b>	Wear self-contained breathing apparatus for fire fighting

a) Based on the 2-butanone closed cup literature value

b) LFL = Lower Flammability [or Explosion] Limit (in volume %);

UFL = Upper Flammability [or Explosion] Limit (in volume %)

**PREMIUM POLYURETHANE CONFORMAL COATING 4223E-LIQUID****Section 6: Accidental Release Measures**

<b>Personal Protection</b>	Use personal protection recommended in Section 8.
<b>Precautions for Response</b>	Remove all sources of ignition. Avoid breathing the vapors/mist/fumes. Do not flush to sewer.
<b>Environmental Precautions</b>	Avoid release to the environment. Prevent spill from entering drains and waterways. Collect spillage.
<b>Containment Methods</b>	Contain with inert absorbent (such as soil, sand, vermiculite).
<b>Cleaning Methods</b>	Collect liquid in a sealable, solvent-resistant container. Sprinkle inert absorbent compound onto spill, then sweep into the container. Wash spill area with soap and water to remove the last traces of residue.  <b>Recommendation:</b> Use a grounded stainless steel or carbon steel container.
<b>Disposal Methods</b>	Dispose of spill waste according to Section 13.

**Section 7: Handling and Storage**

<b>Prevention</b>	Keep out of reach of children. Keep away from heat/sparks/open flames/hot surfaces. No smoking. Keep container tightly closed. For metal containers, ground/bond container and receiving equipment. Take precautionary measures against static discharge. Use explosion-proof electrical/ventilating/lighting equipment. Avoid breathing mist/vapors/spray/fumes. Use only outdoors or in well ventilated area. Do not eat, drink, or smoke when using this product.
<b>Handling</b>	Wear protective gloves/clothing/eye protection. Wash hands thoroughly after handling. Avoid release to the environment.
<b>Storage</b>	Store in a well-ventilated and dry area. Keep cool. Store locked up.

**PREMIUM POLYURETHANE CONFORMAL COATING 4223E-LIQUID**

**Section 8: Exposure Controls/Personal Protection**

**Routes of Entry**

Eyes, ingestion, inhalation, and skin

**Substances with Occupational Exposure Limit Values**

Chemical Name	Country	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
stoddard solvent	ACGIH	100 ppm	Not established
	U.S.A. OSHA PEL	500 ppm	Not established
	Canada AB	100 ppm	Not established
	Canada BC	290 mg/m <sup>3</sup>	580 mg/m <sup>3</sup>
	Canada ON	100 ppm	Not established
	Canada QC	100 ppm	Not established
butan-2-one	ACGIH	200 ppm	Not established
	U.S.A. OSHA PEL	200 ppm	300 ppm
	Canada AB	200 ppm	300 ppm
	Canada BC	50 ppm	100 ppm
	Canada ON	200 ppm	300 ppm
	Canada QC	150 ppm	300 ppm

*Note:* Ingredients are listed in descending weight contribution order (from greatest to least). The ACGIH<sup>2</sup>, OSHA (Table Z-1), and Canadian provinces exposure limits were consulted. Limits from by RTECS database<sup>1</sup> of the Canadian Centre for Occupational Health and Safety (CCOHS) a data from suppliers' SDS were also consulted. Short term exposure limits (STEL) are for 15 min and long term permissible exposure limits (PEL) for 8 h.

**Engineering Controls**

**Ventilation** Keep airborne concentrations below exposure limits, =.

**Personal Protective Equipment**

**Eye protection** Wear appropriate protective eyeglasses or chemical safety goggles.

**Skin Protection** Use of protective gloves chemically resistant gloves if skin contact is likely.

For incidental exposure, you may use nitrile gloves.

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**Respiratory Protection** If exposed to vapors above the exposure limit, wear respirator such as a half-mask respirator with organic vapor cartridge.

**RECOMMENDATION:** Consult your local safety supply store to ensure your respirator has filter cartridges appropriate for the ingredients listed in section 3 of this SDS, and that the respirator is fitted to the employee by a professional.

### General Hygiene Considerations

Wash hands thoroughly with water and soap after handling.

### Section 9: Physical and Chemical Properties

<b>Physical State</b>	Liquid	<b>Lower Flammability Limit</b> <sup>a)</sup>	1%
<b>Appearance</b>	Clear	<b>Upper Flammability Limit</b> <sup>a)</sup>	11%
<b>Odor</b>	Mild petroleum	<b>Vapor Pressure @20 °C</b>	Not available
<b>Odor Threshold</b>	Not available	<b>Vapor Density</b>	>2.5 (Air =1)
<b>pH</b>	Not available	<b>Specific Gravity @25 °C</b>	0.88
<b>Freezing/Melting Point</b>	Not available	<b>Solubility in Water</b>	Partially soluble
<b>Boiling Point</b> <sup>a)</sup>	80 °C [176 °F]	<b>Partition Coefficient</b>	Not available
<b>Flash Point</b> <sup>a)</sup>	-3 °C [27 °F]	<b>Auto-ignition Temperature</b>	Not available
<b>Evaporation Rate</b>	Not available	<b>Decomposition Temperature</b>	Not available
<b>Flammability (solid, gas)</b>	Not available	<b>Viscosity @40 °C</b>	>20.5 mm <sup>2</sup> /s

a) Lowest component literature value, which corresponds to butan-2-one

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**Section 10: Stability and Reactivity**

<b>Reactivity</b>	Not available.
<b>Chemical Stability</b>	Chemically stable at normal temperatures and pressures
<b>Conditions to Avoid</b>	Ignition sources, extreme temperatures, and incompatible substances
<b>Incompatibilities</b>	oxidizing agents, strong reducing agents, strong acids
<b>Polymerization</b>	Will not occur
<b>Decomposition</b>	Will not decompose under normal conditions. For thermal decomposition, see combustion products in Section 5

**Section 11: Toxicological Information**

**Routes of Exposure**

Eyes, ingestion, inhalation, and skin

**Symptoms Summary**

<b>Eyes</b>	May cause eye redness or mild irritation.
<b>Skin</b>	May causes mild to moderate skin irritation.
<b>Inhalation</b>	Overexposure may lead to visual impairment and central nervous system effects such as dizziness, drowsiness, or weakness.
<b>Ingestion</b>	Harmful if swallowed. It may cause irritation and burning sensation. See inhalation symptoms.
<b>Chronic</b>	Prolonged and repeated exposure may cause dermatitis, defatting of the skin and adverse central nervous systems effects.

**Acute Toxicity (Lethal Exposure Concentrations)**

<b>Chemical Name</b>	<b>LD50 oral</b>	<b>LD50 dermal</b>	<b>LC50 inhalation</b>	<b>TCLo inhalation</b>
stoddard solvent	15 400 mg/kg Rat	>3 160 mg/kg Rabbit	Not available	Not available
2-butanone	2 737 mg/kg Rat	6 480 mg/kg Rabbit	23 500 mg/m <sup>3</sup> 8h Rat	100 ppm 5 m Human

*Note:* Representative toxicity data from by RTECS database of the Canadian Centre for Occupational Health and Safety (CCOHS)<sup>1</sup> data from supplier (M)SDS were also consulted.

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**PREMIUM POLYURETHANE CONFORMAL COATING 4223E-LIQUID****Other Toxicological Effects**

<b>Skin corrosion/irritation</b>	The Stoddard is a mild to moderate skin irritant.
<b>Serious eye damage/irritation</b>	Mild eye irritant that is not classifiable under HCS 2012
<b>Sensitization</b> (allergic reactions)	No sensitization effects known
<b>Carcinogenicity</b> (risk of cancer)	Not classified or listed as a carcinogen by IARC, ACGIH, CA Prop 65, or NTP
<b>Mutagenicity</b> (risk of heritable genetic effects)	No effects known
<b>Reproductive Toxicity</b> (risk to sex functions)	No known effects
<b>Teratogenicity</b> (risk of fetus malformation)	No known effects
<b>STOT-single exposure</b>	The Stoddard solvent and butan-2-one can affect the central nervous system by inhalation causing drowsiness or dizziness.
<b>STOT-repeated exposure</b>	No effect know
<b>Aspiration hazard</b>	Viscosity at 40 °C is >20.5 mm <sup>2</sup> /s, thus not classified as aspiration hazard.

**Section 12: Ecological Information**

The IMDG Code criteria and the raw-material (M)SDS along with supporting data for the classification of registered substances from the European Chemical Agency database (<http://echa.europa.eu>) were used.

The Stoddard solven is a chronic category 2 environmental toxicant.

Butan-2-one (MEK) is not classifiable as an environmental toxicant (with minimal LC50 of >100 mg/L).

**Acute Ecotoxicity**

Category 2 (H401): Toxic to aquatic life

**Chronic Ecotoxicity**

Category 2 (H411): Toxic to aquatic life with long lasting effects

Avoid release to the environment. Collect spillage.

**Biodegradability**

Not available

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**PREMIUM POLYURETHANE CONFORMAL COATING 4223E-LIQUID**

**Other Effects**

VOC (EPA, WHIMS, and Europe) = 55% [489 g/L]

\*VOC = Volatile Organic Content

**Section 13: Disposal Information**

Dispose of contents in accordance with all local, regional, national, and international regulations.

**Section 14: Transport Information**

**Ground**

**Refer to TDG regulations** (Canadian Transportation of Dangerous Goods regulations); **USA DOT 49 CFR** (Parts 100 to 185) **Regulations.**

Sizes 5 liters and under

**Limited Quantity**



Sizes greater than 5 liters

**UN number:** UN1263  
**Shipping Name:** PAINT  
**Class:** 3  
**Packing Group:** II  
**Marine Pollutant:** Yes



Flash Point = -3 °C [27 °C]

**Air**

**Refer to ICAO-IATA Dangerous Goods Regulations.**

Sizes up to 5 L (passenger), 60 L (cargo)




**UN number:** UN1263  
**Shipping Name:** PAINT  
**Class:** 3  
**Packing Group:** II  
**Marine Pollutant:** Yes



Flash Point = -3 °C [27 °C]

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**PREMIUM POLYURETHANE CONFORMAL COATING 4223E-LIQUID****Sea**

Refer to IMDG regulations.	
Sizes 5 liters and under <b>Limited Quantity</b> 	Sizes greater than 5 liters <b>UN number:</b> UN1263 <b>Shipping Name:</b> PAINT <b>Class:</b> 3 <b>Packing Group:</b> II <b>Marine Pollutant:</b> Yes   Flash Point = -3 °C [27 °C]

**Note:** Shipper must be appropriately trained and certified before involvement with the transport of dangerous goods.

**Section 15: Regulatory Information****Canada****WHMIS Classification**

B2 – Flammable Liquid;  
D2B – Toxic Material (Skin Irritation)

**Domestic Substance List (DSL) / Non-Domestic Substance Lists (NDSL)**

All hazardous ingredients are listed on the DSL/NDSL.

**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.

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**PREMIUM POLYURETHANE CONFORMAL COATING 4223E-LIQUID****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 substances that are listed as hazardous air pollutants.

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

This product contains 2-butanone (CAS# 78-93-3, reportable quantity = 5000 lb), which is 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.

**California Proposition 65** (Chemicals known to cause cancer or reproductive toxicity, Sept 2, 2011 revision, USA).

This product does not contain any substances known to be listed in California.

**Europe****RoHS**

This product does not contain any lead, cadmium, mercury, hexavalent chromium, PBB's, or PBDE's, and complies with European RoHS regulations.

**WEEE**

This product is not a piece of electrical or electronics equipment, and is therefore not governed by this regulation.

**PREMIUM POLYURETHANE CONFORMAL COATING 4223E-LIQUID****Section 16: Other Information**

**SDS Prepared by** Michel Hachey  
**Date of Creation** 20 August 2014  
**Date of Issue** 21 October 2014  
**Supersedes** Not applicable  
**Reason for Changes:** Change in formulation

**Reference**

- 1) ACGIH 2013 TLVs and BEIs: Based on the documentation of the threshold limit values for chemical substances and physical agents & biological exposure indices, American Conference of Governmental of Industrial Hygienist Cincinnati, OH (2013).
- 2) All toxicological data were checked against the RTECS (Registry of Toxic Effects of Chemical Substances®)

**Abbreviations**

ACGIH	American Conference of Governmental Industrial Hygienists (USA)
EC50	Half maximal effective concentration
EL50	Half maximal effective loading
NOELR	No observable effect loading ratio
GHS	Globally Harmonized System of Classification of Labeling of Chemicals
LC50	Lethal Concentration 50%
LCLo	Lowest published lethal concentration
LD50	Lethal Dose 50%
PEL	Permissible Exposure Limit
STEL	Short-Term Exposure Limit
TCLo	Lowest published toxic concentration
TWA	Time Weighted Average
VOC	Volatile Organic Content

**Technical Queries** Contact us regarding any questions, improvement suggestions, or problems with this product. Application notes, instructions, and FAQs are located at [www.mgchemicals.com](http://www.mgchemicals.com).

Email: [support@mgchemicals.com](mailto:support@mgchemicals.com)

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Quality System Certified to ISO 9001:2008

SAI Global File #004008

Burlington, Ontario, Canada

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**PREMIUM POLYURETHANE CONFORMAL COATING 4223E-LIQUID**

**Mailing Addresses** *Manufacturing & Support*  
1210 Corporate Drive  
Burlington, Ontario, Canada  
L7L 5R6

*Head Office*  
9347-193rd Street  
Surrey, British Columbia, Canada  
V4N 4E7

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