

PREMIUM ACRYLIC CONFORMAL COATING

419D-LIQUID

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Name: Premium Acrylic Conformal Coating**SDS Code:** 419D-Liquid**Related Part #** 419D-1L, 419D-1G, 419D-20L, 419D-200L

Recommended Use and Restriction on Use

Use: Protective coating for printed circuit boards**Uses Advised Against:** Not available

Details of Manufacturer or Importer

ManufacturerMG Chemicals
1210 Corporate Drive
Burlington, Ontario L7L 5R6
CANADAMG Chemicals (Head Office)
9347-193 Street
Surrey, British Columbia V4N 4E7
CANADA**☎** +1-800-340-0772**☎** +1-905-331-1396**FAX** +1-800-340-0773**FAX** +1-905-331-2682**E-MAIL** support@mgchemicals.com**E-MAIL** info@mgchemicals.com**WEB** www.mgchemicals.com**E-MAIL** (Competent Person): 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 24/7CANADA: Call CANUTEC ☎: **+1-613-996-6666** or ***666** on cellular phones

PREMIUM ACRYLIC CONFORMAL COATING

419D-LIQUID

Section 2: Hazard(s) Identification

Classification of Hazardous Chemical

GHS Categories

Criteria	Category	Signal Word	Pictograms
Flammable Liquid	2	Danger	Flame
Skin Sensitization	1	Warning	Exclamation
Eye Irritation	2	Warning	Exclamation
Specific Target Organ Toxicity Single Exposure	3	Warning	Exclamation
Environmental Hazard Acute Aqua. Tox.	3	none	Environment

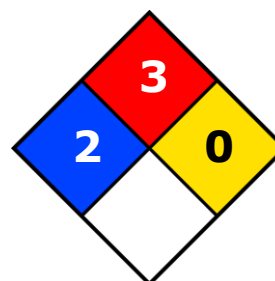
Note: The degree of severity is ranked within each hazard class from 1 (Highest Severity) to up to 5 (Lowest Severity), which is opposite to HMIS and NFPA conventions. Severity category rankings do not allow comparisons between classes.

Other Classifications

HMIS® RATING

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

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 ACRYLIC CONFORMAL COATING

419D-LIQUID

Label Elements

Signal Word	DANGER
Pictograms	Hazard Statements
	H225: Highly flammable liquid and vapor
	H317: May cause an allergic skin irritation H319: Causes serious eye irritation. H336: May cause drowsiness or dizziness
No Symbol Mandated	H402: Harmful to aquatic life.
Prevention	Precautionary Statements
P102	Keep out of reach of children.
P210	Keep away from heat, hot surfaces, sparks, flames, and other ignition sources. No Smoking.
P233	Keep container tightly closed.
P261 + P271	Avoid breathing mist/vapors/spray. Use only outdoors or in a well-ventilated area.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting equipment.
P243	Take precautionary measures against static discharge.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves/eye protection/face protection.
P264	Wash hands thoroughly after handling.
P273	Avoid release to the environment.

Continued on the next page

PREMIUM ACRYLIC CONFORMAL COATING
419D-LIQUID

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Prevention	Precautionary Statements
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.
P333 + P313	If skin irritation or rash 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.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313	If eye irritation persists: Get medical advice/attention.
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.

Hazards Not Otherwise Classified

Repeated exposure may cause skin dryness or cracking.

Section 3: Composition/Information on Ingredients

CAS #	Chemical Name	%(wt/wt)
123-86-4	n-butyl acetate	55%
78-93-3	butan-2-one ^{a)}	15%
80-62-6	methyl methacrylate	0.1-0.2%
97-88-1	n-butyl methacrylate	0.1-0.2%

a) Also known as methyl ethyl ketone (MEK)

PREMIUM ACRYLIC CONFORMAL COATING

419D-LIQUID

Section 4: First-Aid Measures

<i>Exposure Condition</i>	<i>GHS Code/Symptoms/Precautionary Statements</i>
IF ON SKIN (or hair)	P303 + P361 + P352, P333 + P313, P363
Immediate Symptoms	<i>redness, irritation, dry skin</i>
Response	Take off immediately all contaminated clothing. Wash with plenty of water or shower. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
IF INHALED	P304 + P340, P312
Immediate Symptoms	<i>dizziness, drowsiness, cough, headaches, sore throat, nausea</i>
Response	Remove person to fresh air and keep comfortable for breathing. If you feel unwell: Call a doctor.
IF IN EYES	P305 + P351 + P338, P337 + P313
Immediate Symptoms	<i>redness, irritation, pain</i>
Response	Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
IF SWALLOWED	P301 + P330, P331
Immediate Symptoms	<i>nausea, sore throat, diarrhea, drowsiness, dizziness, vomiting</i>
Response	Rinse mouth. Do NOT induce vomiting.

PREMIUM ACRYLIC CONFORMAL COATING

419D-LIQUID

Section 5: Fire-Fighting Measures

Auto-ignition Temperature ^{a)}	≥294 °C [561 °F]	Flash Point ^{b)}	9 °C [48 °F]	LFL [LEL]	1.7%
				UFL [UEL] ^{c,d)}	9.1%
In case of fire	P370 + P378				
Extinguishing Media	Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish.				
Specific Hazards	The liquid may float on water and ignite. The vapors are heavier than air and may accumulate in low-lying areas. Vapors may travel long distances and ignite at an ignition source, which can cause a flashback or an explosion.				
Combustion Products	Produces carbon oxides (CO,CO ₂)				
Fire-Fighter	Wear self-contained breathing apparatus and full fire fighting turn-out gear.				

a) Values based on n-butyl methacrylate, which is the component with the lowest auto-ignition value.

b) Pensky-Martens closed cup

c) Calculated value based on volatile components.

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

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

Section 6: Accidental Release Measures

Personal Protection	See personal protection recommendations in Section 8.
Precautions for Response	Avoid breathing the mist/spray/vapors. Remove or keep away all sources of ignition or extreme heat.
Environmental Precautions	Avoid releasing to the environment. Prevent spill from entering drains and waterways.
Containment Methods	Contain with inert and nonflammable absorbent (such as soil, sand, vermiculite).
Cleaning Methods	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.
Disposal Methods	Dispose of spill waste according to Section 13.

PREMIUM ACRYLIC CONFORMAL COATING**419D-LIQUID****Section 7: Handling and Storage****Prevention**

Keep out of reach of children.

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Ground and bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Take precautionary measures against static discharge.

Keep container tightly closed.

Avoid breathing mist/vapors/spray. Use only outdoors or in a well-ventilated area.

Do not eat, drink, or smoke when using this product.

Handling

Wear protective gloves/clothing/eye protection.

Take off contaminated clothing and wash it before reuse. Contaminated work clothing should not be allowed out of the workplace.

Wash hands thoroughly after handling.

Avoid release to the environment.

Storage

Store in well ventilated place. Keep cool.

Store locked up.

PREMIUM ACRYLIC CONFORMAL COATING
419D-LIQUID
Section 8: Exposure Controls/Personal Protection
Routes of Entry

Skin, Inhalation, and Eyes

Substances with Occupational Exposure Limit Values

Chemical Name	Country	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
n-butyl acetate	ACGIH	150 ppm	Not established
	U.S.A. OSHA PEL	150 ppm	Not established
	Canada AB	150 ppm	200 ppm
	Canada BC	20 ppm	200 ppm
	Canada ON	150 ppm	Not established
	Canada QC	150 ppm	200 ppm
butan-2-one	ACGIH	200 ppm	125 ppm
	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
methyl methacrylate	ACGIH	50 ppm ^{a)}	100 ppm
	U.S.A. OSHA PEL	100 ppm	Not established
	Canada AB	50 ppm	100 ppm
	Canada BC	50 ppm ^{a)}	100 ppm
	Canada ON	50 ppm	100 ppm
	Canada QC	100 ppm	Not established
n-butyl methacrylate	ACGIH	Not established	Not established
	U.S.A. OSHA PEL	Not established	Not established
	Canada AB	Not established	Not established
	Canada BC	50 ppm	Not established
	Canada ON	Not established	Not established
	Canada QC	Not established	Not established

Note: Ingredients are listed in descending weight contribution order (from greatest to least). The ACGIH¹, OSHA (Table Z-1), and Canadian provinces exposure limits were consulted. Limits from by RTECS database² 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.

a) Sensitizer (S)

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PREMIUM ACRYLIC CONFORMAL COATING**419D-LIQUID****Engineering Controls**

Ventilation Keep airborne concentrations below the occupational exposure limits (OEL).

Personal Protective Equipment

Eye protection Wear appropriate protective eyeglasses or chemical safety goggles.

Recommendation: Ensure that glasses have side shields for lateral protection.

Skin Protection For likely contacts, use of protective butyl rubber or other chemically resistant gloves.

For incidental contacts, use nitrile or other chemically resistant gloves.

Respiratory Protection For over-exposures up to 10 x OEL of mist/vapors/spray, wear respirator such as a half-mask respirator with organic vapor cartridges.

Above 10 x OEL, use a positive-pressure, air-supplied respirator or a self-contained breathing apparatus.

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.

PREMIUM ACRYLIC CONFORMAL COATING
419D-LIQUID
Section 9: Physical and Chemical Properties

Physical State	Liquid	Lower Flammability Limit ^{c)}	1.7%
Appearance	Clear	Upper Flammability Limit ^{c)}	9.1%
Odor	Fruity	Vapor Pressure @20 °C ^{c)}	43 hPa [32 mmHg]
Odor Threshold	0.007 ppm	Vapor Density	>2.5 (Air =1)
pH	Not available	Specific Gravity @25 °C	0.93
Freezing/Melting Point	Not available	Solubility in Water	Slightly soluble
Boiling Point ^{a)}	≥80 °C [≥176 °F]	Partition Coefficient	Not available
Flash Point ^{b)}	9 °C [48 °F]	Auto-ignition Temperature ^{d)}	≥294 °C [≥561 °F]
Evaporation Rate	<1 (ButAc = 1)	Decomposition Temperature	Not available
Flammability (solid, gas)	Not available	Viscosity @25 °C	110 mm ² /s

a) Values based on butan-2-one component.

b) Pensky-Martens closed cup

c) Calculated based on components.

d) Values based on n-butyl methacrylate, which is the component with the lowest auto-ignition value.

Section 10: Stability and Reactivity

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

PREMIUM ACRYLIC CONFORMAL COATING

419D-LIQUID

Section 11: Toxicological Information

Routes of Exposure

Skin, Inhalation, Eyes

Symptoms Summary

- Eyes** May cause redness, severe irritation, or pain
- Skin** May cause skin redness, irritation, and dry skin.
- Inhalation** May cause dizziness, drowsiness, cough, headaches, or nausea
- Ingestion** May cause nausea, sore throat, diarrhea, or vomiting (see inhalation symptoms)
- Chronic** Prolonged or repeated exposure may cause skin dryness, cracking, as well as defatting the skin.

Prolonged or repeated exposure may cause skin may cause skin allergies.

Acute Toxicity (Lethal Exposure Concentrations)

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation
n-butyl acetate	>10 768 mg/kg Rat	>17 600 mg/kg Rabbit	390 ppm 4 h Rat
butan-2-one	2 737 mg/kg Rat	6 480 mg/kg Rabbit	23 500 mg/m ³ 8 h Rat
methyl methacrylate	7 872 mg/kg Rat	>5 000 mg/kg Rabbit	78 000 mg/m ³ 4 h Rat
n-butyl methacrylate	16 000 mg/kg Rat	113 000 µL/kg Rabbit	29.8 mg/L 4 h Rat

Note: Toxicity data from the RTECS database accessed through the Canadian Centre for Occupational Health and Safety (CCOHS)² were consulted. The data from supplier (M)SDS were also consulted.

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PREMIUM ACRYLIC CONFORMAL COATING**419D-LIQUID****Other Toxicological Effects**

Skin corrosion/irritation	The available data do not meet GHS criteria for classification.
Serious eye damage/irritation	Butan-2-one is a known serious eye irritant.
Sensitization (allergic reactions)	The n-butyl methacrylate and methyl methacrylate may cause skin sensitization according to animal studies.
Carcinogenicity (risk of cancer)	None of the ingredients are classified or listed as a carcinogen by IARC, ACGIH, CA Prop 65, or NTP.
Mutagenicity (risk of heritable genetic effects)	No known effects
Reproductive Toxicity (risk to sex functions)	No known effects
Teratogenicity (risk of fetus malformation)	No known effects
STOT-single exposure	The n-butyl acetate, butan-2-one, and 1-methoxy-2-propanol acetate components can affect the central nervous system by inhalation causing drowsiness or dizziness.
STOT-repeated exposure	No known effects
Aspiration hazard	The available data do not meet GHS criteria for classification. There are no Cat 1 substances, and the kinematic viscosity is $>20.5 \text{ mm}^2/\text{s}$ at $40 \text{ }^\circ\text{C}$.

PREMIUM ACRYLIC CONFORMAL COATING**419D-LIQUID****Section 12: Ecological Information**

The IMDG Code criteria, the raw-material safety data sheets, and supporting data from the European Chemical Agency database (<http://echa.europa.eu>) were used to support the classification.

The n-butyl acetate ingredient is an acute category 3 environmental toxicant (biodegradable, with minimal LC50 of 18 mg/L for fathead minnow).

The 2-butanone (MEK) ingredient is not classified as an environmental hazard according to GHS criteria.

Acute Ecotoxicity

Category 3

H402: Harmful to aquatic life

Avoid release of the environment.

Chronic Ecotoxicity

Available data doesn't give rise to classification as a chronic ecotoxicant.

Biodegradability

Expected to be biodegradable. The volatile solvent constituents will oxidize rapidly in air by photochemical reaction.

Other Effects

Regulated Volatile Organic Compounds (VOC) content according to the US (EPA) and Canadian (CEPA) authorities.

VOC = 71% [654 g/L]

Section 13: Disposal Information

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

PREMIUM ACRYLIC CONFORMAL COATING

419D-LIQUID

Section 14: Transport Information

Ground

Refer to TDG (Canadian Transportation of Dangerous Goods regulations) and 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: No

Flash Point = 9 °C [48 °F]



Air

Refer to ICAO-IATA Dangerous Goods Regulations.

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

UN number: UN1263

Shipping Name: PAINT

Class: 3

Packing Group: II

Marine Pollutant: No

Flash Point = 9 °C [48 °F]



Sea

Refer to IMDG 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: No

Flash Point = 9 °C [48 °F]



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

PREMIUM ACRYLIC CONFORMAL COATING**419D-LIQUID****Section 15: Regulatory Information****Canada****WHMIS Classification**

B2 – Flammable Liquid;

D2B – Toxic Other (Skin Sensitizer, Eye Irritant)

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

All hazardous ingredients are listed on the DSL.

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 contains methyl methacrylate, which is listed as hazardous air pollutants.

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

This product contains 0.2% of methyl methacrylate (CAS# 80-62-4; reportable quantity = 1000 lb), which is subject to the reporting requirements of section 313 Title III of the SARA of 1986 and 40 CFR part 372.

This product contains n-butyl acetate (CAS# 123-86-4) and 2-butanone (CAS# 78-93-3), which are subject to the CERCLA reporting requirements at the 5000 lb (2268 kg) threshold.

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PREMIUM ACRYLIC CONFORMAL COATING**419D-LIQUID****TSCA** (Toxic Substances Control Act of 1976, USA)

All substances are TSCA listed.

California Proposition 65 (Chemicals known to cause cancer or reproductive toxicity, June 06, 2014 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.

Section 16: Other Information**SDS Prepared by**

Michel Hachey

Date of Review

05 November 2014

Supersedes

30 July 2014

Reason for Changes: New supplier information on ingredients triggering a hazard reassessment.

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®)

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PREMIUM ACRYLIC CONFORMAL COATING**419D-LIQUID****Abbreviations**

ACGIH	American Conference of Governmental Industrial Hygienists (USA)
EC50	Half maximal effective concentration
EL50	Half maximal effective loading
IARC	International Agency for Research on Cancer
NOELR	No observable effect loading ratio
NTP	National Toxicology Program
GHS	Globally Harmonized System of Classification of Labeling of Chemicals
LC50	Lethal Concentration 50%
LCLo	Lowest published lethal concentration
LD50	Lethal Dose 50%
OEL	Occupational Exposure Limit
PEL	Permissible Exposure Limit
SDS	Safety Data Sheet
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.

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