ACRYLIC CONFORMAL COATING **419C-AEROSOL**

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Name: Acrylic Conformal Coating

SDS Code: 419C-Aerosol

Related Part # 419C-340G

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
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CANADA

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E-MAIL support@mgchemicals.com
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FAX +1-905-331-2682
E-MAIL info@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 24/7
CANADA: Call CANUTEC ☎: ***+1-613-996-6666*** or ****666*** on cellular phones

Section 2: Hazard(s) Identification

Classification of Hazardous Chemical

GHS Categories

Hazard Class		Category	Signal Word	Pictograms
Aspiration Hazard		1	Danger	Health
Flammable Aerosol		2	Warning	Flame
Gas under pressure		Liquefied gas	Warning	Gas cylinder
Eye irritation		2A	Warning	Exclamation
Skin irritation		2	Warning	Exclamation
Specific Target Organ Toxicity	Single Exposure	3	Warning	Exclamation
Environmental Hazard	Acute Aqua. Tox.	3	—	*None*

Note: The degree of severity is ranked within each hazard class from 1 (Highest Severity) to up to 5 (Lowest Severity). Severity categories do not allow comparisons between classes.

Label Elements

Signal Word	**DANGER**
Pictograms	**Hazard Statements**
	H304: May be fatal if swallowed and enters airways
	H223: Flammable aerosol
	H280: Contains gas under pressure; may explode if heated

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	H319: Causes serious eye irritation H315: Causes skin irritation H336: May cause drowsiness and dizziness
No Symbol mandated	H402: Harmful to aquatic life

Prevention	**Precautionary Statements**
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P211	Do not spray on an open flame or other ignition source.
P251	Do not pierce or burn, even after use.
P261, P271	Avoid breathing gas/vapors/mist/spray. Use only outdoors or in well ventilated area.
P264	Wash hands thoroughly after handling.
P280	Wear protective gloves/eye protection/face protection.
Response	**Precautionary Statements**
P301 + P310, P331	IF SWALLOWED: Immediately call a POISON CENTER/doctor. Do NOT induce vomiting.
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.
P304 + P340, P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTRE/doctor if you feel unwell.
P302 + P352	IF ON SKIN: Wash with plenty of water.
P332 + P313	If skin irritation occurs: Get medical advice.
P362 + P364	Take off contaminated clothing and wash it before reuse.
Storage	**Precautionary Statements**
P410 + P412	Protect from sunlight. Do not expose to temperatures exceeding 50 °C [122 °F].
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.

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Other Hazards

Other Criteria	Hazard Statements/Precautionary Statement	Signal Word	Pictograms
Defats skin	Repeated exposure may cause skin dryness or cracking.	None	None

Section 3: Composition/Information on Ingredients

CAS #	Chemical Name	%(weight)
811-97-2	1,1,1,2-tetrafluoroethane [a)]	45%
141-78-6	ethyl acetate	26%
67-64-1	acetone	9%
142-82-5	n-heptane	6%
108-65-6	1-methoxy-2-propanol acetate [b)]	3%

a) Commonly referred to as HFC-134a
b) Commonly known as propylene glycol methyl ether acetate (PGMEA)

Section 4: First-Aid Measures

Exposure Condition	*GHS Code/Symptoms/Precautionary Statements*
IF SWALLOWED	P301 + P310, P331
Immediate Symptoms	*nausea, vomiting, dizziness, drowsiness, headaches, weakness, unconsciousness*
Response	Immediately call a POISON CENTRE/doctor. Do NOT induce vomiting.
IF IN EYES	P305 + P351 + P338, P337 + P313
Immediate Symptoms	*redness, irritation, tearing, pain*
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.

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IF INHALED	P304 + P340, P312
Immediate Symptoms	*lung irritation, cough, dizziness, drowsiness, sore throat, headaches, weakness, unconsciousness*
Response	Remove person to fresh air (out of the contaminated zone) and keep comfortable for breathing. If feeling unwell: Call a POISON CENTRE/doctor.
IF ON SKIN	P302 + P352, P332 + P313, P362 + P364
Immediate Symptoms	*redness, irritation, dry skin*
Response	Wash with plenty of water. If skin irritation occurs: Get medical advice. Take off contaminated clothing and wash it before reuse.

Section 5: Fire-Fighting Measures

Response	In case of fire: Use dry chemical, carbon dioxide, or chemical foam to extinguish. Use water spray to cool containers.
Specific Hazards	Aerosol container may erupt with force at temperatures above 50 °C [122 °F]. Vapors may accumulate in low-lying areas. And they can cause flash fire or ignite explosively in the presence of an ignition source. In fires or in contact with hot surfaces, the content produces irritating and toxic fumes.
Combustion Products	Combustion can produce carbon oxides (CO, CO_2), halogenated compounds, and hydrogen fluorides, and smoke.
Fire-Fighter	Wear self-contained breathing apparatus and full fire-fighting turn-out gear.

Section 6: Accidental Release Measures

Personal Protection	See personal protection recommendations in Section 8.
Precautions for Response	Avoid breathing the fumes/mist/vapors. Remove or keep away all sources of extreme heat or open flames.
Environmental Precautions	Avoid releasing to the environment. Prevent spill from entering drains and waterways. Do not flush to sewer.
Containment Methods	Not applicable
Cleaning Methods	Collect liquid in a sealable, chemical-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.

Section 7: Handling and Storage

Prevention	Keep out of reach of children.
	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
	Do not spray on an open flame or other ignition source.
	Do not pierce or burn, even after use.
	Avoid breathing gas/vapors/mist/spray. Use only outdoors or in a well-ventilated area.
Handling	Wear protective gloves/clothing/eye protection.
	Take off contaminated clothing and wash it before reuse.
	Wash hands thoroughly after handling.
Storage	Store in a well-ventilated area.
	Protect from sunlight.
	Store at moderate temperature. Do NOT store at temperatures above+50 °C [120 °F], which may burst the container.
	Do NOT store at temperatures below or equal to -26.5 °C [-15.7 °F] since this may crush or damage the container.
	Store locked up.

Section 8: Exposure Controls/Personal Protection

Substances with Occupational Exposure Limit Values

Chemical Name	Country/Region	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
1,1,1,2-tetrafluoroethane	*MG Chemicals* [a)] ACGIH U.S.A. OSHA PEL Canada	1 000 ppm Not established Not established Not established	 Not established Not established Not established
ethyl acetate	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	400 ppm 400 ppm 400 ppm 150 ppm 400 ppm 400 ppm	Not established Not established Not established Not established Not established Not established
acetone	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	500 ppm (TWA) 1 000 ppm 500 ppm 250 ppm 500 ppm 750 ppm	750 ppm Not established 750 ppm 500 ppm 750 ppm 1 000 ppm
n-heptane	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	400 ppm 400 ppm 400 ppm 400 ppm 400 ppm 400 ppm	500 ppm 500 ppm 500 ppm 500 ppm 500 ppm 500 ppm
1-methoxy-2-propanol acetate	ACGIH U.S.A. WEEL Canada AB Canada BC Canada ON Canada QC	Not established 50 ppm Not established 50 ppm 50 ppm Not established	Not established Not established Not established 75 ppm Not established Not established

Note: Ingredients are listed in descending weight contribution order (from greatest to least). The ACGIH[1], OSHA (Table Z-1), and Canadian provinces exposure limits were consulted. Limits from by RTECS database[2] and 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) MG Chemicals recommended limit corresponding to prevalent international threshold values

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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:** Use safety glasses with lateral protection (side shields).
Skin Protection	For likely contacts, use of protective butyl rubber, fluorinated rubber, or other chemically resistant gloves. For incidental contacts, use nitrile, neoprene, PVC gloves, 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 that your respirator has a NIOSH (U.S.) approved filter cartridges appropriate for the ingredients listed in Section 3. The respirator should be fitted to the employee by a professional. Ensure vapor cartridges are stored in sealed plastic bags when not being used.

General Hygiene Considerations

Wash hands thoroughly with water and soap after handling.

Section 9: Physical and Chemical Properties

Physical State	Liquid	**Lower Flammability Limit** [b]	1%
Appearance	Colorless	**Upper Flammability Limit** [b]	13%
Odor	Ethereal	**Vapor Pressure** [b] **@20 °C**	13 kPa [98 mmHg]
Odor Threshold	Not available	**Vapor Density**	≥2 (Air =1)
pH	Not available	**Specific Gravity @25 °C**	0.87
Freezing/Melting Point	Not available	**Solubility in Water**	Partially miscible
Boiling Point [a]	≥56 °C [133 °F]	**Partition Coefficient**	Not available
Flash Point [a]	-17°C [1.4 °F]	**Auto-ignition Temperature** [c]	234 °C [453 °F]
Evaporation Rate	Not available	**Decomposition Temperature**	Not available
Flammability (solid, gas)	Not applicable	**Viscosity @25 °C**	≤7 mm^2/s

a) Estimated based on Acetone value
b) Estimated using Raoult's Law Value is supported by Le Chatelier Principle calculation for solvent part
c) Literature value for component with lowest auto-ignition: n-heptane

Section 10: Stability and Reactivity

Reactivity	Not available
Chemical Stability	Chemically stable at normal temperatures and pressures
Conditions to Avoid	Avoid open flames, ignition sources, temperatures above 50 °C [122 °F]), and incompatible substances.
Incompatibilities	strong oxidizing agents, strong reducing agents, strong acids, and strong bases
Polymerization	Will not occur
Decomposition	Will not decompose under normal conditions. For thermal decomposition, see combustion products in Section 5.

Section 11: Toxicological Information

Routes of Exposure

Eye contact, Ingestion, Inhalation, and Skin contact

Symptoms Summary

Eyes	Causes eye redness, serious eye irritation, tearing, or pain.
Skin	May causes skin redness, irritation, or dry skin.
Inhalation	May cause cough, dizziness, drowsiness, or nausea. For extreme exposures, it may cause sore throat, headaches, weakness, or unconsciousness.
Ingestion	May cause nausea, vomiting, abdominal cramps, and irritation. See inhalation symptoms.
Chronic	Prolonged and repeated exposure may cause dermatitis and defatting of the skin.

Acute Toxicity (Lethal Exposure Concentrations)

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation
1,1,1,2-tetrafluoroethane	Not available	Not available	1 500 g/m^3 4 h Rat
ethyl acetate	5 620 mg/kg Rat	>20 000 mg/kg Rabbit	>6 000 ppm 6h Rat [a)]
acetone	5 800 mg/kg Rat	>9 400 µL/kg Guinea pig	50.1 mg/L 8 h Rat
n-heptane	≥5 000 mg/kg Rat [b)]	≥2 000 mg/kg Rabbit [b)]	103 mg/L Rat 4 h
1-methoxy-2-propanol acetate	8 532 mg/kg Rat	>5 g/kg Rabbit	Not available

Note: Toxicity data from the RTECS[2] and ECHA databases were consulted. The data from supplier (M)SDS were also consulted.

a) LCLo value

b) From supplier SDS

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Other Toxicological Effects

Skin corrosion/irritation	N-heptane is a skin irritant.
Serious eye damage/irritation	Acetone and ethyl acetate are serious eye irritants.
Sensitization (allergic reactions)	Based on available data, the classification criteria are not met.
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)	Based on available data, the classification criteria are not met.
Reproductive Toxicity (risk to sex functions)	Based on available data, the classification criteria are not met.
Teratogenicity (risk of fetus malformation)	Based on available data, the classification criteria are not met.
STOT-single exposure	Inhalation of ethyl acetate, acetone, n-heptane, and 1-methoxy-2-propanol acetate may affect the central nervous system.
STOT-repeated exposure	Based on available data, the classification criteria are not met. At very large doses, n-heptane may impair liver function.
Aspiration hazard	The separation layer is classified as a Cat 1 aspiration hazard. The liquid layer contains more than 10% Cat 1 aspiration toxicants (n-heptane) and has kinematic viscosity <20.5 mm^2/s.

Section 12: Ecological Information

Ecological classifications are based on the IMDG/GHS criteria in conjunction with ecotoxicological data from our suppliers, the European Chemical Agency database (http://echa.europa.eu), and other reliable sources.

The n-heptane component is an acute category 2 environmental toxicant (with minimal LC50 of 4 mg/L for Carrassius auratus (gold fish); EC 50 48 h 13,500 mg/L Daphnia magna (water flea).

Ethyl acetate, acetone, and 1-methoxy-2-propanol acetate are not classifiable as an environmental toxicant (with minimal LC50 of >100 mg/L).

- Ethyl acetate is biodegradable and has minimal LC50 96 h of 220 mg/L for fathead minnow (Pimephales promelas); LC50 24 h of 560 mg/L and EC50 24 h of 2300 mg/L Daphnia magna (water flea).
- Acetone has a minimal LC50 96 h of 5 540 mg/L for Oncorhynchus mykiss (rainbow trout) and an EC50 48 h of 13 500 mg/L for Daphnia magna (water flea).
- 1-Methoxy-2-propanol has a minimal LC50 96 h of ≥100 mg/L Salmo gairdneri and an EC50 48 h of >500 mg/L for Daphnia magna (water flea).

Acute Ecotoxicity

Available toxicity data does not meet classification thresholds

Chronic Ecotoxicity

Available toxicity data does not meet classification thresholds

Biodegradability

Not available

Other Effects

Volatile Organic Content (VOC) = 38% (330 g/L)

Note: Using acetone and 1,1,1,2–tetrafluoroethane exemptions in accordance with American and Canadian regulations.

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 CFR 49 Regulations** (Parts 100 to 185).

Limited Quantity

UN number: UN1950
Shipping Name: AEROSOL, flammable
Class: 2.1
Packing Group: Not applicable
Marine Pollutant: No

Air

Refer to ICAO-IATA Dangerous Goods Regulations.

Limited Quantity
Max Net Qty/Pkg
30 kg Gross

UN number: UN1950
Shipping Name: AEROSOL, flammable
Class: 2.1
Packing Group: Not applicable
Marine Pollutant: No

Sea

Refer to IMDG regulations.

Limited Quantity

UN number: UN1950
Shipping Name: AEROSOL, flammable
Class: 2.1
Packing Group: Not applicable
Marine Pollutant: No

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

Section 15: Regulatory Information

Canada

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.

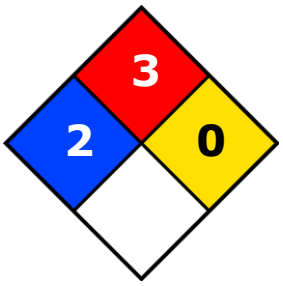
USA

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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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 26% ethyl acetate (CAS# 141-78-6) and 9% acetone (CAS# 67-64-1), which are subject to the CERCLA reporting requirements at the 5000 lb (2268 kg) threshold.

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 of the listed substances.

Europe

RoHS (Restriction of Hazardous Substances Directive)

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

WEEE (Waste Electrical and Electronic Equipment Directive)

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

Section 16: Other Information

MSDS Prepared by	Michel Hachey
Date of Revision	27 January 2016
Supersedes	29 January 2014

Reason for Changes: Format changes in compliance with HCS 2012 and WHMIS 2015.

References

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®), MDL Information Systems, Inc.

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Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists (USA)
EC50	Half maximal effective concentration
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.

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