

ACRYLIC CONFORMAL COATING

419C-AEROSOL

Safety Data Sheet

Section 1: Product and Company 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
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**☎** +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 24/7
CANADA: Call CANUTEC ☎: **+1-613-996-6666** or ***666** on cellular phones

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Section 2: Hazards Identification

Classification of Hazardous Chemical

WHMIS Classification



A – Aerosol Container; B5 – Flammable Aerosol;
 D1B-Toxic (Aspiration Hazard), D2B – Toxic Material (Skin and Eye Irritant)

GHS Categories

Hazard Class	Category	Signal Word	Pictograms	
Aspiration Hazard	1	Danger	Health	
Flammable Aerosol	2	Warning	Flame	
Gas under pressure	Liquefied gas	3	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.	2	—	No Symbol mandated

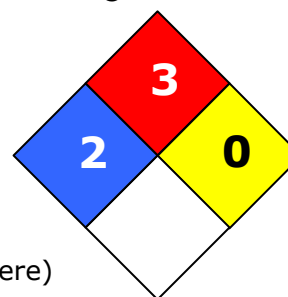
Note: The degree of severity is ranked within each hazard class from 1 (Highest Severity) to up to 5 (Lowest Severity). Severity categories do not allow comparisons between classes.

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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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
	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.

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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.
P333 + P313	If skin irritation occurs: Get medical advice.
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.

Other Hazards

Repeated exposure may cause skin dryness or cracking

Section 3: Hazardous Ingredients

CAS #	Chemical Name	Wt%
811-97-2	1,1,1,2-tetrafluoroethane ^{a)}	45%
141-78-6	ethyl acetate	26-30%
67-64-1	acetone	8-9%
142-82-5	n-heptane	6-7%
108-65-6	1-methoxy-2-propanol acetate ^{a)}	2-5%

a) Commonly referred to as HFC-134a

b) Commonly known as propylene glycol methyl ether acetate (PGMEA)

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Section 4: First-Aid Measures

<i>Exposure Condition</i>	<i>GHS Code/Symptoms/Precautionary Statements</i>
IF SWALLOWED	P301 + P310, P331
Immediate Symptoms	<i>nausea, headaches, dizziness, weakness, unconsciousness</i>
Response	Immediately call a POISON CENTRE/doctor. Do NOT induce vomiting.
IF IN EYES	P305 + P351 + P338, P337 + P313
Immediate Symptoms	<i>irritation, tearing, redness, pain</i>
Response	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.
IF INHALED	P304 + P340, P312
Immediate Symptoms	<i>Cough, dizziness, drowsiness, headaches, weakness, unconsciousness</i>
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, P333 + P313
Immediate Symptoms	<i>dry skin, redness</i>
Response	Rinse skin with water. If skin irritation occurs: Get medical advice.

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Section 5: Fire-Fighting Measures

Auto-ignition Temperature ^{a)}	>234 °C [>453 °F]	Flash Point ^{b)}	-18 °C [-0.4 °F]	LFL [LEL]	1%
				UFL [UEL] ^{c)}	13%

In case of fire P370 + P378

Response Use dry chemical, carbon dioxide, or chemical foam to extinguish. Use water spray to cool containers.

Combustion Products Produces carbon oxides (CO, CO₂) halogenated compounds, and hydrogen fluorides, smoke

Fire-Fighter Wear self-contained breathing apparatus for fire fighting

General Information Aerosol container may erupt with force at temperatures above 50 °C [122 °F]. Vapors may accumulate in low-lying areas. They can cause flash fire or ignite explosively. Produces irritating and toxic fumes in fires or in contact with hot surfaces.

a) Literature value for n-heptane, which is the lowest auto-ignition component.

b) Closed cup literature value for acetone, which is the lowest component flash point.

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

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

Section 6: Accidental Release Measures

Personal Protection See Section 8. Avoid breathing the mist/vapors.

Containment Remove all sources of ignition.
Contain with inert absorbent (such as soil, sand, vermiculite). Prevent spill from entering drains and waterways.

Cleaning 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.

RECOMMENDATION: Use a grounded metal container.

Disposal Do not flush to sewer. Dispose of spill waste according to Section 13.

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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.
 Use non-sparking tools. Take precautionary measures against static discharge.
 Wash hands thoroughly after handling.

Storage Store in a well-ventilated area. Keep cool.
 Store at moderate temperature. Do NOT store at temperatures above +50 °C [120 °F]. 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

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)
		ppm	ppm
1,1,1,2-tetrafluoroethane	MG Chemicals ^{a)}	1,000 ppm	
	ACGIH	Not established	Not established
	U.S.A. OSHA PEL	Not established	Not established
	Canada	Not established	Not established
ethyl acetate	ACGIH	400	Not established
	U.S.A. OSHA PEL	400	Not established
	Canada AB	400	Not established
	Canada BC	150	Not established
	Canada ON	Not established	Not established
	Canada QC	400	Not established

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Chemical Name	Country	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
		ppm	ppm
acetone	ACGIH	500 (TWA)	750
	U.S.A. OSHA PEL	1 000	—
	Canada AB	500	750
	Canada BC	250	500
	Canada ON	500	750
	Canada QC	750	1 000
n-heptane	ACGIH	400	500
	U.S.A. OSHA PEL	400	500
	Canada AB	400	500
	Canada BC	400	500
	Canada ON	400	500
	Canada QC	400	500
1-methoxy-2-propanol acetate	ACGIH	Not established	Not established
	U.S.A. WEEL	50	Not established
	Canada AB	Not established	Not established
	Canada BC	50	75
	Canada ON	50	Not established
	Canada QC	Not established	Not established

Note: Ingredients are listed in descending weight contribution order (from greatest to least). The ACGIH¹, OSHA, 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 usually for 15 min and long term permissible exposure limits (PEL) for 8 h.

a) MG Chemicals recommended limit corresponding to prevalent international threshold values

Engineering Controls

Ventilation Keep airborne concentrations below exposure limits.

Personal Protective Equipment

Eye protection Wear appropriate protective eyeglasses or chemical safety goggles.

RECOMMENDATION: Use safety glasses with lateral protection (side shields).

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Skin Protection Wear appropriate protective clothing to prevent skin contact.

RECOMMENDATION: Use of latex protective gloves or other chemically resistant gloves.

Respiratory Protection If exposed to gas/vapors/mist/spray, wear respirator such as a half-mask respirator.

RECOMMENDATION: Consult your local safety supply store to ensure your respirator has filter cartridges appropriate for the ingredients listed in section 3 of this MSDS, and that the respirator is 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	Appearance	Colorless
Odor	Ethereal	Odor Threshold	Not available
pH	Not available	Specific Gravity @25 °C	0.75
Solubility in Water	Partially miscible	Freezing/Melting Point	Not available
Flash Point ^{a)}	-18°C [-0.4 °F]	Vapor Pressure ^{b)} @ 20 °C	13 kPa [98 mmHg]
Boiling Point ^{a)}	≥56 °C [180 °F]	Evaporation Rate	Not available
Lower Flammability Limit ^{b)}	1%	Upper Flammability Limit ^{b)}	13%
Auto-ignition Temperature ^{d)}	234 °C [453 °F]	Decomposition Temperature	Not available
Viscosity @40 °C	Not established	Vapor Density	>2
Partition Coefficient	Not established		

a) Value for component with the lowest flash point: acetone, Tag closed cup value

b) Estimated using Raoult's Law

c) Estimated based on Acetone. Value is supported by Le Chatelier Principle calculation for solvent part.

d) Literature value for component with lowest auto-ignition: n-heptane

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Reactivity	Not available
Chemical Stability	Chemically stable at normal temperatures and pressures.
Conditions to Avoid	Ignition sources, temperatures above 50 °C [122 °F]), and incompatible substances. Low lying vapors may form explosive mixture with air.
Incompatibilities	Strong oxidizing agents, strong reducing agents, strong acids, 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**

Eyes, ingestion, inhalation, and skin

Symptoms Summary

Eyes	Causes severe eye irritation if splashed in eyes or exposed to vapors. May also cause eye redness, pain, and blurred vision.
Skin	May causes mild to moderate skin irritation, redness, and dry skin.
Inhalation	May cause nose, throat and lung irritation leading to cough or sore throat, and shortness of breath. Overexposure may lead to visual impairment and central nervous system effects such as dizziness, drowsiness, or weakness.
Ingestion	If swallowed, it may nausea, vomiting, abdominal cramps, irritation. See inhalation symptoms.
Chronic	Prolonged and repeated exposure may cause dermatitis and defatting of the skin.

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Acute Toxicity (Lethal Exposure Concentrations)

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation	TCLo inhalation
1,1,1,2-tetrafluoroethane	Not available	Not available	1 500 g/m ³ 4 h Rat	Not available
ethyl acetate	5 620 mg/kg Rat	>20 000 µL/kg Rabbit	45 g/m ³ 2 h Mouse	400 ppm Human
acetone	5 800 mg/kg Rat	>9 400 µL/kg Guinea pig	44 g/m ³ 4 h Rat	10 mg/m ³ 6 h Human
n-heptane	Not established	Not established	29.29 g/ m ³ 4 h Rat	1 000 ppm 6 min human
1-methoxy-2-propanol acetate	8 532 mg/kg Rat	>5 g/kg Rabbit	Not established	400 ppm Human

Note: Representative toxicity data from by RTECS database of the Canadian Centre for Occupational Health and Safety (CCOHS)¹ data from supplier MSDS were also consulted.

Other Toxicological Effects

Skin corrosion/irritation	N-heptane is a skin irritant. Prolonged or repeated skin contact with the mixture may cause dermatitis
Serious eye damage/irritation	Acetone, ethyl acetate are known serious eye irritant
Sensitization (allergic reactions)	No sensitization effects known
Carcinogenicity (risk of cancer)	No known components listed in IARC, ACGIH, CA Prop 65, or NTP
Mutagenicity (risk of heritable genetic effects)	Not available
Reproductive Toxicity (risk to sex functions)	Not available
Teratogenicity (risk of fetus malformation)	Not available

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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	At very large doses, n-heptane may impair liver function
Aspiration hazard	Cat 1 aspiration hazard because the mixture is composed of more than 10% Cat 1 aspiration toxicants (isoheptane) and has kinematic viscosity at 23 °C of 7 mm ² /s.

Section 12: Ecological Information

The ecotoxicity of the mixture was estimated by the calculation method using the summation of classified ingredients. The IMDG Code criteria and the raw-material MSDS along with supporting data for the classification of registered substances from the European Chemical Agency database (<http://echa.europa.eu>) were used.

Ethyl acetate is not classifiable as an environmental toxicant (biodegradable, with minimal LC50 of 220 mg/L for fathead minnow; LC50 24 h of 560 mg/L and EC50 24 h of 2300 mg/L Daphnia magna (water flea)).

Acetone is not classifiable as an environmental toxicant (with minimal LC50 96 h of 5,540 mg/L for Oncorhynchus mykiss (rainbow trout); EC 50 48 h 13,500 mg/L Daphnia magna (water flea)).

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

1-methoxy-2-propanol acetate is an acute category 3 environmental toxicant (with minimal LC50 96 h of ≥ 100 mg/L Salmo gairdneri).

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

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

Note: Using acetone and 1,1,1,2-tetrafluoroethane exemptions in accordance with EPA and WHIMS

Section 13: Disposal Information

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

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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



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 trained and certified before involvement with the transport of dangerous goods.

ACRYLIC CONFORMAL COATING**419C-AEROSOL****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**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 contain $\leq 1.5\%$ n-hexane (CAS# 110-54-3) which has a 5,000 lb reporting quantity requirements in section 313 Title III of the SARA of 1986 and 40 CFR part 372.

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.

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ACRYLIC CONFORMAL COATING**419C-AEROSOL****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

MSDS Prepared by Michel Hachey
Date of Revision 29 January 2014
Supersedes 03 February 2011
Reason for Changes: Change to GHS classification and format

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.

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

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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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