

4140

(AEROSOL)

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Name: 4140**Other Means of Identification:** Flux Remover for PC Boards (Aerosol)**Related Part #** 4140-400G

Recommended Use and Restriction on Use

Use: Flux remover**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**TEL** +1-800-340-0772**TEL** +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 Verisk 3E at **+1-866-519-4752** or **+1-760-476-3962**
(Service access code: 335388)**For emergencies involving the transport of dangerous goods;** 24/7 service
CANADA—Call CANUTEC collect at **+1-613-996-6666** or ***666** on cellular phones

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Section 2: Hazard(s) Identification
Classification of Hazardous Chemical
GHS Categories

Criteria	Category	Signal Word	Pictograms
Flammable Aerosol	2	Danger	Flammable
Gas Under Pressure	3	Warning	Cylinder
Eye Irritation	2	Warning	Exclamation

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.

Label Elements

Signal Word	DANGER
Pictograms	Hazard Statements
	H223: Flammable aerosol
	H280: Contains gas under pressure; may explode if heated
	H319: Causes serious eye irritation

Section continued on the next page.

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Continued ...

Prevention	Precautionary Statements
P102	Keep out of reach of children.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P211	Do not spray on an open flame or other ignition source.
P251	Do not pierce or burn, even after use.
P280	Wear protective gloves and eye protection.
P264	Wash thoroughly after handling.
Response	Precautionary Statements
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 or attention.
Storage	Precautionary Statements
P410 + P412	Protect from sunlight. Do not expose to temperatures exceeding 50 °C [122 °F].
Disposal	Precautionary Statements
P501	Dispose of contents and container in accordance to local, regional, national, and international regulations.

Hazards Not Otherwise Classified

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)
64-17-5	ethanol	65%
811-97-2	1,1,1,2-tetrafluoroethane	30%
67-63-0	propan-2-ol ^{a)}	4%
141-78-6	ethyl acetate	1%

a) Commonly known as isopropyl alcohol (IPA)

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Section 4: First-Aid Measures

<i>Exposure Condition</i>	<i>GHS Code/Symptoms/Precautionary Statements</i>
IF IN EYES	P305 + P351 + P338, P337 + P313
Immediate Symptoms	<i>irritation, tearing, redness, pain</i>
Response	Rinse cautiously with water for at least 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention.
IF ON SKIN	P302 + P353
Immediate Symptoms	<i>Low Toxicity—dry skin, redness</i>
Response	Rinse skin with water.
IF INHALED	P304 + P340
Immediate Symptoms	<i>Low Toxicity—cough, mild dizziness, mild drowsiness, headaches</i>
Response	Remove person to fresh air and keep comfortable for breathing.
IF SWALLOWED	P301 + P330 + P331, P313
Immediate Symptoms	<i>Low Toxicity—dizziness, drowsiness, slurred speech, nausea, vomiting, headaches</i>
Response	Rinse mouth. Do NOT induce vomiting.

Section 5: Fire-Fighting Measures

Extinguishing Media	In case of fire: Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish. Use water spray to cool containers.
Specific Hazards	Aerosol container may erupt with force at temperatures above 50 °C [122 °F]. Produces irritating and toxic fumes in fires or in contact with hot surfaces. Vapors may accumulate in low-lying areas. They can cause flash fire or ignite explosively.
Combustion Products	Produces carbon oxides (CO, CO ₂), halogenated compounds, and hydrogen fluoride (HF).
Fire-Fighter	Wear self-contained breathing apparatus and full fire-fighting turn-out gear.

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(AEROSOL)**Section 6: Accidental Release Measures**

Personal Protection	See personal protection recommendations in Section 8.
Precautions for Response	Remove or keep away all sources of ignition or extreme heat. Avoid breathing mist, vapors, or spray.
Environmental Precautions	Avoid releasing to the environment.
Containment Methods	Contain with inert and non-flammable 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, or wipe with a paper towel and place the dirty towels in the container. Wash the spill area with soap and water to remove remaining residues.
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, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not spray on an open flame or other ignition source. Do not pierce or burn, even after use.
Handling	Wear protective gloves and eye protection. Wash hands thoroughly after handling.
Storage	Protect from sunlight. Do not expose to temperatures exceeding 50 °C [122 °F]

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Section 8: Exposure Controls/Personal Protection
Substances with Occupational Exposure Limit Values

Chemical Name	Country	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
ethanol	ACGIH	1 000 ppm	Not established
	U.S.A. OSHA PEL	1 000 ppm	Not established
	Canada AB	1 000 ppm	Not established
	Canada BC	Not established	1 000 ppm
	Canada ON	Not established	1 000 ppm
	Canada QC	1 000 ppm	Not established
1,1,1,2-tetrafluoroethane	MG Chemicals ^{a)}	1 000 ppm	Not established
propan-2-ol	ACGIH	200 ppm (TWA)	400 ppm
	U.S.A. OSHA PEL	400 ppm	Not established
	Canada AB	200 ppm	400 ppm
	Canada BC	200 ppm	400 ppm
	Canada ON	200 ppm	400 ppm
	Canada QC	400 ppm	500 ppm
ethyl acetate	ACGIH	400 ppm	Not established
	U.S.A. OSHA PEL	400 ppm	Not established
	Canada AB	400 ppm	Not established
	Canada BC	150 ppm	Not established
	Canada ON	400 ppm	Not established
	Canada QC	400 ppm	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 the RTECS database² and 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

Engineering Controls
Ventilation

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

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(AEROSOL)**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 disposable nitrile gloves, or other chemically resistant gloves.

Respiratory Protection

For over-exposures up to 10 x OEL of vapors or 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.

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Section 9: Physical and Chemical Properties

Physical State	Liquid in aerosol format	Lower Flammability Limit	3%
Appearance	Colorless	Upper Flammability Limit	18.5%
Odor	Alcohol like	Vapor Pressure @20 °C	5.9 hPa [44 mmHg]
Odor Threshold	Not established	Vapor Density	≥1.6 (Air =1)
pH	Not available	Relative Density @25 °C	0.79
Freezing/Melting Point	Not available	Solubility in Water	Fully miscible
Initial Boiling Point	≥78 °C [≥174 °F]	Partition Coefficient n-octanol/water	Not established
Flash Point ^{a)}	13 °C [55 °F]	Auto-ignition Temperature ^{b)}	363 °C [685 °F]
Evaporation Rate	Not available	Decomposition Temperature	Not available
Flammability	Flammable	Viscosity @25 °C	<20.5 mm ² /s

a) Closed Cup Value

b) Auto-ignition value based on ethanol literature value

Section 10: Stability and Reactivity

Reactivity	Not available
Chemical Stability	Chemically stable at normal temperatures and pressures
Conditions to Avoid	Ignition sources, excessive heat, and incompatible substances.
Incompatibilities	Strong oxidizing 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.

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Section 11: Toxicological Information
Summary of Effects and Symptoms by Routes of Exposure

Eyes	Causes serious eye irritation, tearing, redness or pain.
Skin	May cause dry skin and redness.
Inhalation	May cause cough, dizziness, drowsiness, and headaches.
Ingestion	Causes drowsiness, dizziness, slurred speech, nausea, vomiting, and headaches.
Chronic	Prolonged or repeated exposure may defat skin and cause skin dryness and cracking, and local redness and discomfort.

Acute Toxicity (Lethal Exposure Concentrations)

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation
ethanol	7 060 mg/kg Rat	Not established	20 000 ppm 10 h Rat
1,1,1,2-tetrafluoroethane	Not available	Not available	Not available
isopropyl alcohol	3 600 mg/kg Rat	12 800 mg/kg Rabbit	16 000 ppm 8 h Rat
ethyl acetate	5 620 mg/kg Rat	>20 000 µL/kg Rabbit	45 g/m ³ 2 h Mouse

Note: Toxicity data from the RTECS² and ECHA databases were consulted. The data from supplier SDS were also consulted.

Other Toxicological Effects

Skin corrosion/irritation	Ethanol, propan-2-ol and ethyl acetate Draize tests causes mild irritation for Rabbits
Serious eye damage/irritation	Ethanol, propan-2-ol and ethyl acetate Draize tests causes severe eye irritation for Rabbits
Sensitization (allergic reactions)	Based on available data, the classification criteria are not met.

Section continued on the next page.

4140**(AEROSOL)****Carcinogenicity**

(risk of cancer)

Evidence of carcinogenicity of ethanol relates to excessive alcoholic beverage consumption, and doesn't relate to exposure risks when used in the workplace or as a consumer product.

Ethanol [64-17-5]

IARC Group 1: Possibly carcinogenic to humans in the form of alcoholic beverages (not ethanol)

ACGIH A4: Not classified as a human carcinogen

CA Prop 65: Listed as a carcinogen when consumed as a beverage

NTP: When in alcoholic beverage consumption, it is listed as a known carcinogen

Mutagenicity

(risk of heritable genetic effects)

Based on available data, the classification criteria are not met.

Reproductive Toxicity

(risk to sex functions)

Evidence of reproductive toxicity of ethanol relates to excessive alcoholic beverage consumption, and doesn't relate to exposure risks when used in the workplace or as a consumer product.

By inhalation, no fertility or developmental effects are observed for exposures of up to 16 000 ppm.

Ethanol [64-17-5]

CA Prop 65: Listed as a carcinogen when consumed as a beverage

Teratogenicity

(risk of fetus malformation)

Based on available data, the classification criteria are not met.

STOT-single exposure

Based on available data, the classification criteria are not met. Exposure to ethanol, propan-2-ol and ethyl acetate may affect the central nervous system and may cause drowsiness, dizziness, and narcotic effects.

STOT-repeated exposure

Based on available data, the classification criteria are not met.

Aspiration hazard

Based on available data, the classification criteria are not met.

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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.

Ethanol, isopropanol and ethyl acetate do not meet classification criteria for aquatic environmental toxicants with LC50 and EC50 of >100 mg/L.

- Ethanol is biodegradable and has a minimal LC50 of >1 000 mg/L for fish, invertebrates, and algae.
- Propan-2-ol has a minimal LC50 96 h of 9 640 mg/L for Pimephales promelas (fathead minnow); EC50 24 h of 5 102 mg/L for Daphnia magna (water flea); EC50 24 h of >2 000 mg/L Desmodesmus subspicatus (green algae).
- Ethyl acetate has a minimal LC50 96 h of ≥ 220 mg/L for Pimephales promelas (fathead minnow); a LC50 48 h of 560 mg/L and EC50 24 h of 2 300 mg/L Daphnia magna (water flea); and an EC50 72 h 1 800 mg/L for Selenastrum.

Acute Ecotoxicity

Based on available data, the classification criteria are not met.

Chronic Ecotoxicity

Based on available data, the classification criteria are not met.

Biodegradability

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

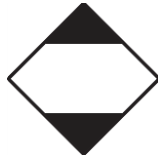
Other Effects

Regulated Volatile Organic Content (VOC) = 70% (554 g/L)

Section 13: Disposal Information

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

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(AEROSOL)**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 1 L and under
Limited Quantity**Air****Refer to ICAO-IATA Dangerous Goods Regulations.**Sizes 1 L and under
Limited QuantityMax Net Qty/Pkg =
30 kg Gross**UN number:** UN1950
Shipping Name: AEROSOLS, flammable
Class: 2.1
Packing Group: Not Applicable
Marine Pollutant: No**Sea****Refer to IMDG regulations.**Sizes 1 L and under
Limited Quantity**UN number:** UN1950
Shipping Name: AEROSOLS, 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.**

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(AEROSOL)**Section 15: Regulatory Information****Canada****Domestic Substance List (DSL) / Non-Domestic Substance Lists (NDSL)**

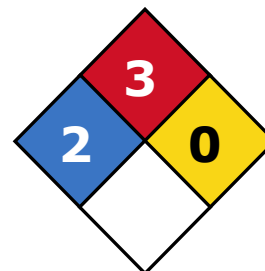
All hazardous ingredients are listed on the DSL/NDSL.

Hazardous Products Act (R.S.C., 1985, c. H-3)

The safety data sheet and label comply with the Hazardous Product Act and WHMIS 2015.

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)

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 ingredients that are listed as hazardous air pollutants.

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

This product contains up to 7% propan-2-ol (CAS# 67-63-0) 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 1.5% ethyl acetate (CAS# 141-78-6), which is subject to the CERCLA reporting requirements at the 5 000 lb (2 268 kg) threshold.

TSCA (Toxic Substances Control Act of 1976, USA)

All substances are TSCA listed.

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California Proposition 65 (Chemicals known to cause cancer or reproductive toxicity, USA).

While ethanol is present in this product, the Proposition 65 warning does NOT apply since it is not an alcoholic beverage.

Europe

RoHS (Restriction of Hazardous Substances Directive)

This product does not contain any lead, cadmium, mercury, hexavalent chromium, PBB's, PBDE's, DEHP, BBP, DBP, or DIBP 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

Prepared by the	Regulatory Affairs Department
Date of Issue	05 March 2020
Supersedes	29 May 2017
Reason for Changes:	Update to the emergency phone number information and general revision.

Reference

- 1) All toxicological data were checked against the RTECS (Registry of Toxic Effects of Chemical Substances®)
- 2) ACGIH 2017 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 (2017).

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4140**(AEROSOL)****Abbreviations**

ACGIH	American Conference of Governmental Industrial Hygienists (USA)
EC50	Half maximal effective concentration
ECHA	European Chemical Agency
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%
OEL	Occupational Exposure Limit
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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