

FLUX REMOVER FOR PC BOARDS

4140-LIQUID

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Name: Flux Remover for PC Boards**SDS Code:** 4140-Liquid**Related Part #** 4140-50ML, 4140-1L, 4140-4L, 4140-20L

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**☎** +1-800-340-0772**FAX** +1-800-340-0773**E-MAIL** support@mgchemicals.com**WEB** www.mgchemicals.com**☎** +1-905-331-1396**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 accidentsUSA 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

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Section 2: Hazard(s) Identification



Classification of Hazardous Chemical

GHS Categories

Criteria	Category	Signal Word	Pictograms
Flammable Liquid	2	Danger	Flame
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
	H225: Highly flammable liquid and vapor
	H319: Causes serious eye irritation
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.
P280	Wear protective gloves/eye protection.
P264	Wash hands thoroughly after handling.
P233	Keep container tightly closed.
P240, P241	Ground/bond container and receiving equipment. Use explosion proof electrical equipment.
P243	Take precautionary measures against static discharge.

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Response	Precautionary Statements
P370 + P378	In case of fire: Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish.
P303 + P361 + P353	IF ON SKIN (or hair): Take off contaminated clothing. Rinse skin with water or shower.
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.
Disposal	Precautionary Statements
P501	Dispose of contents/container in accordance to local/regional/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	94%
67-63-0	propan-2-ol ^{a)}	5%
141-78-6	ethyl acetate	1.5%

a) Also known as isopropanol or isopropyl alcohol (IPA)

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Section 4: First-Aid Measures

<i>Exposure Condition</i>	<i>GHS Code/Symptoms/Precautionary Statements</i>
IF ON SKIN (or hair)	P303 + P361 + P353, P363
Immediate Symptoms	<i>redness, irritation, dry skin</i>
Response	Take off immediately all contaminated clothing. Rinse skin with water [or shower]. Wash contaminated clothing before reuse.
IF IN EYES	P305 + P351 + P338, P337 + P313
Immediate Symptoms	<i>irritation, redness, pain</i>
Response	Rinse cautiously with water for 15 minutes or more. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
IF INHALED	P304 + P340
Immediate Symptoms	<i>drowsiness, dizziness, cough</i>
Response	Remove person to fresh air and keep comfortable for breathing.
IF SWALLOWED	P301 + P330, P331
Immediate Symptoms	<i>nausea, drowsiness, dizziness</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	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. Prevent fire-fighting wash from entering waterway or sewer system.
Combustion Products	Produces carbon oxides (CO,CO ₂)
Fire-Fighter	Wear self-contained breathing apparatus and full fire-fighting turn-out gear.

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Personal Protection	See personal protection recommendations in Section 8.
Precautions for Response	Remove or keep away all sources of extreme heat or open flames.
Environmental Precautions	Prevent spill from entering drains and waterways.
Containment Methods	Contain with inert 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.

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/bond container and receiving equipment. Use explosion-proof equipment. Take action to prevent static discharges. 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. Wash hands thoroughly after handling.
Storage	Keep container tightly closed. Store in a well-ventilated area. Keep cool.

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Section 8: Exposure Controls/Personal Protection

Substances with Occupational Exposure Limit Values

Chemical Name	Country/ Provinces	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
ethanol	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	1 000 ppm 1 000 ppm 1 000 ppm Not established Not established 1 000 ppm	Not established Not established Not established 1 000 ppm 1 000 ppm Not established
propan-2-ol	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	200 ppm 400 ppm 200 ppm 200 ppm 200 ppm 400 ppm	400 ppm Not established 400 ppm 400 ppm 400 ppm 500 ppm
ethyl acetate	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	400 ppm 400 ppm 400 ppm 150 ppm Not established 400 ppm	Not established Not established Not established Not established 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 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.

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FLUX REMOVER FOR PC BOARDS**4140-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, nitrile rubber, fluorinated 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 vapors, 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.

If the product is heated or worker has a known allergic reaction, consider using a full mask with organic vapor cartridge or with an independent air supply.

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	Lower Flammability Limit ^{b)}	3%
Appearance	Colorless	Upper Flammability Limit ^{b)}	18.5%
Odor	Alcohol like	Vapor Pressure @20 °C ^{b)}	5.9 hPa [44 mmHg]
Odor Threshold	Not available	Vapor Density	≥1.6 (Air =1)
pH	Not available	Specific Gravity @25 °C	0.791
Freezing/Melting Point	Not available	Solubility in Water	Fully miscible
Boiling Point	≥78 °C [≥174 °F]	Partition Coefficient	Not available
Flash Point ^{a)}	13 °C [55 °F]	Auto-ignition Temperature ^{c)}	≥363 °C [≥685 °F]
Evaporation Rate	Not available	Decomposition Temperature	Not available
Flammability (solid, gas)	Not applicable	Viscosity @40 °C	<20.5 mm ² /s

a) Tag closed cup value

b) Calculated using Raoult's Law and Le Chatelier Principle

c) Values based on ethanol, which is the component with the lowest auto-ignition value.

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Reactivity	Not available
Chemical Stability	Chemically stable at normal temperatures and pressures
Conditions to Avoid	Ignition sources, open flames, 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.

Section 11: Toxicological Information**Routes of Exposure**

Inhalation, Eye contact, Ingestion

Symptoms Summary

Eyes	Causes serious eye irritation, pain, tearing, or redness.
Skin	May cause skin redness and dry skin.
Inhalation	May cause drowsiness or dizziness.
Ingestion	See inhalation symptoms.
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 available	124 700 mg/m ³ 4 h Rat
propan-2-ol	4 700 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 (M)SDS were also consulted.
(M)SDS were also consulted.

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FLUX REMOVER FOR PC BOARDS**4140-LIQUID****Other Toxicological Effects****Skin corrosion/irritation**

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

Serious eye damage/irritation

Ethanol, propan-2-ol, and ethyl acetate are known serious eye irritants.

Sensitization
(allergic reactions)

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

Carcinogenicity
(risk of cancer)

Except for ethanol, none of the ingredients are classified or listed as a carcinogen by IARC, ACGIH, CA Prop 65, or NTP.

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 non-comestible consumer product.

Ethanol [64-17-5]

IARC Group 1: Carcinogenic to human when consumed as beverage.

ACGIH A3: Confirmed animal carcinogen with unknown relevance to humans

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

NTP: Not listed

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 reproductive hazard when consumed as a beverage

Teratogenicity (risk of fetus malformation)

Based on available data, the classification criteria are not met. Extreme consumption of ethanol presents risks for the newborn.

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STOT-single exposure	Based on available data, the classification criteria are not met.
STOT-repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	The liquid content does not meet the aspiration hazard criteria. The mixture doesn't contain category 1 substances.

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.

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 \geq 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

Expected to be biodegradable.

Other Effects

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

VOC = 100% [791 g/L]

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

Sizes 1 L and under

Limited Quantity



Sizes greater than 1 L

UN number: UN1987
Shipping Name: ALCOHOLS, N.O.S.
(Ethanol, Isopropanol)
Class: 3
Packing Group: II
Marine Pollutant: No
Flash Point = 13 °C [55 °F]



Air

Refer to ICAO-IATA Dangerous Goods Regulations.

Sizes 1 L and under

Limited Quantity



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

UN number: UN1987
Shipping Name: ALCOHOLS, N.O.S.
(Ethanol, Isopropanol)
Class: 3
Packing Group: II
Marine Pollutant: No
Flash Point = 13 °C [55 °F]



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Sea

Refer to IMDG regulations.

Sizes 1 L and under

Limited Quantity



Sizes greater than 1 liters

UN number: UN1987

Shipping Name: ALCOHOLS, N.O.S.
(Ethanol, Isopropanol)

Class: 3

Packing Group: II

Marine Pollutant: No

Flash Point = 13 °C [55 °F]



Note: Shipper must be appropriately trained and certified 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.

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.

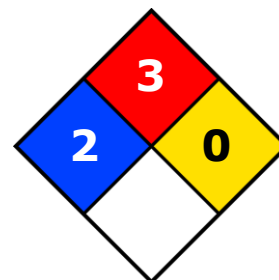
USA

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)

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FLUX REMOVER FOR PC BOARDS**4140-LIQUID****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 products that are listed as hazardous air pollutants..

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

This product contains 5% isopropanol (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 ethyl acetate (CAS# 141-78-6), which is 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, June 06, 2014 revision, USA).

While ethanol is present in this product, the Proposition 65 warning does NOT apply since it is not an alcoholic beverage and because the mixture is fully denatured to discourage recreational consumption. Therefore, no warnings relating to alcoholic beverages or alcohol abuse, where ethanol is listed as a carcinogen and reproductive toxicant, are necessary.

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

SDS Prepared by	Michel Hachey
Date of Review	29 May 2017
Supersedes	28 April 2015
Reason for Changes:	Adjustment to HCS 2012 and WHMIS 2015 format.

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FLUX REMOVER FOR PC BOARDS**4140-LIQUID****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
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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