

FLUX REMOVER FOR PC BOARDS

4140-AEROSOL

Safety Data Sheet

Section 1: Product and Company Identification

Product Identifier and Other Means of Identification

Product Name: Flux Remover for PC Boards**SDS Code:** 4140-Aerosol**Related Part #:** 4140-400G

Recommended Use and Restriction on Use

Use: Plastic-safe flux remover**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 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: Hazards Identification

Classification of Hazardous Chemical

WHMIS Classification



A – Aerosol Container; B2 – Flammable Aerosols; D2B – Toxic Material (Eye Irritant)

GHS Categories

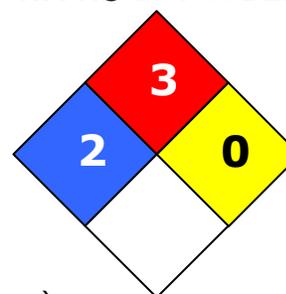
Criteria	Category	Signal Word	Pictograms
Flammable Aerosol	2	Danger	
Gas under pressure Liquefied gas	3	Warning	
Eye irritation	2A	Warning	
Specific Target Organ Toxicity Single Exposure	3	Warning	

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
	H223: Flammable aerosol
	H280: Contains gas under pressure; may explode if heated
	H319: Causes serious eye irritation H336: May cause drowsiness and dizziness
	Precautionary Statements
Prevention	P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking. P251: Do not pierce or burn, even after use. P264: Wash hands thoroughly after handling. P261: Avoid breathing gas/vapors/mist/spray. P271: Use outdoors or in a well-ventilated area. P280: Wear protective gloves/eye protection.
Response	P305 + P351 + P358 + P310: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor. P302 + P353 + P362+ P364: IF ON SKIN (or hair): Rinse skin with water/shower. Take off contaminated clothing and wash it before reuse. P304+ P340 + P312: IF INHALED: Remove person to fresh air (out of the contaminated zone) and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
Storage	P410 + P412: Protect from sunlight. Do not expose to temperatures exceeding 50 °C [122 °F] P405: Store locked up.
Disposal	P501: Dispose of contents/container in accordance to local/regional/national/international regulations.

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FLUX REMOVER FOR PC BOARDS**4140-AEROSOL****Other Hazards**

Ethanol consumption during pregnancy may adversely affect unborn child.

Repeated exposure may cause skin dryness or cracking

Section 3: Hazardous Ingredients

CAS #	Chemical Name	Wt%
64-17-5	ethanol ^{a)}	65-75%
811-97-2	1,1,1,2-tetrafluoroethane	20-30%
67-63-0	propan-2-ol ^{b)}	3-7%
141-78-6	ethyl acetate	0.5-1.5%

a) denatured alcohol

b) Commonly known as isopropyl alcohol (IPA)

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Section 4: First-Aid Measures

<i>Exposure Condition</i>	<i>GHS Code: Precautionary Statement</i>
IF IN EYES	P305
Symptoms	Immediate: <i>irritation, tearing, redness, pain</i>
Response	P351: Rinse cautiously with water for several minutes. P338: Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists	P313: Get medical advice/attention.
IF ON SKIN (or hair)	P302
Symptoms	Immediate: <i>dry skin, redness</i>
Response	P353: Rinse skin with water/shower. P362+ P364: Take off contaminated clothing and wash it before reuse.
IF INHALED	P304 (<i>Not a likely route of exposure under normal use</i>)
Symptoms	Immediate: <i>Cough, dizziness, drowsiness, headaches, weakness, unconsciousness</i>
Response	P340: Remove person to fresh air (out of the contaminated zone) and keep comfortable for breathing.
If feeling unwell	P312: Call a POISON CENTRE/doctor.
IF SWALLOWED	P301 (<i>Not a likely route of exposure under normal use</i>)
Symptoms	Immediate: <i>nausea, headaches, dizziness, weakness, unconsciousness</i>
Response	Not expected to be harmful in small amounts. P330: Rinse mouth. P331: Do NOT induce vomiting.
If feeling unwell or concerned	P313: Get medical advice/attention

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Section 5: Fire-Fighting Measures

Auto-ignition Temperature ^{a)}	363 °C [685 °F]	Flash Point ^{b)}	13 °C [55 °F]	LFL [LEL]	2.2%
				UFL [UEL] ^{c)}	12%

In case of fire	P370
Response	P378: Use dry chemical, carbon dioxide, or chemical foam to extinguish. Use water spray to cool containers.
Combustion Products	Produces carbon oxides (CO, CO ₂), halogenated compounds, and hydrogen fluorides
Fire-Fighter	Wear self-contained breathing apparatus for fire fighting
General Information	Vapors may accumulate in low-lying areas. They can cause flash fire or ignite explosively. 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.

a) Auto-ignition value based on ethanol literature value

b) Closed cup

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. 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. Wipe up further residue with paper towel and place dirty towels in container.

Disposal Dispose of spill waste according to Section 13.

FLUX REMOVER FOR PC BOARDS**4140-AEROSOL****Section 7: Handling and Storage**

- Prevention**
- 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.
 - P242 + P241: Use only non-sparking tools. Use explosion-proof electrical/ventilating/lighting equipment.
 - P261 + P271 + P284: Avoid breathing fume/vapors. Use only outdoors or in well ventilated area. In cases of inadequate ventilation wear respiratory protection.
 - P270: Do not eat, drink, or smoke when using this product.
 - P271: Use outdoors or in a well-ventilated area.
- Handling**
- P280: Wear protective gloves/clothing/eye protection.
 - P264: Wash hands thoroughly after handling.
- Storage**
- P410 + P412: Protect from sunlight. Do not expose to temperatures exceeding 50 °C [122 °F]
 - P405: Store locked up.

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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
ethanol	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	1 000 1 000 1 000 Not established Not established 1 000	Not established Not established Not established 1 000 1 000 500
1,1,1,2-tetrafluoroethane	MG Chemicals ^{a)}	1,000	Not established
propan-2-ol	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	200 (TWA) 400 200 200 200 400	400 — 400 400 400 500
ethyl acetate	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	400 400 400 150 Not established 400	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 ACGIH², OSHA, and Canadian provinces exposure limits were consulted. Limits from by RTECS database¹ 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

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FLUX REMOVER FOR PC BOARDS**4140-AEROSOL****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).

Skin Protection Wear appropriate protective clothing to prevent skin contact.

RECOMMENDATION: Use of protective gloves in butyl rubber, nitrile rubber, or other chemically resistant gloves.

Respiratory Protection If exposed to mist, 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.

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Section 9: Physical and Chemical Properties

Physical State	Liquid	Appearance	Colorless
Odor	Alcohol like	Odor Threshold	Not available
pH	Not available	Specific Gravity @23 °C	0.791
Solubility in Water	Fully miscible	Freezing/Melting Point	Not available
Flash Point ^{a)}	13 °C [55 °F]	Vapor Pressure @ 20 °C	12 kPa [93 mmHg]
Boiling Point	≥78 °C [≥174 °F]	Evaporation Rate	Not available
Lower Flammability Limit	2.2%	Upper Flammability Limit	12%
Auto-ignition Temperature ^{b)}	363 °C [685 °F]	Decomposition Temperature	Not available
Viscosity @40 °C	Not established	Vapor Density	≥1.6
Partition Coefficient	Not established		

a) Closed cup value

b) Auto-ignition value based on ethanol literature value

Section 10: Stability and Reactivity

Stabilities	Chemically stable at normal temperatures and pressures
Conditions to Avoid	Ignition sources, excessive heat, and incompatible substances. Vapors may form explosive mixture with air.
Incompatibilities	Strong oxidizing agents, strong acids, strong bases, halogenated compounds, aluminum at temperatures ≥ 49 °C [>120 °F], peroxides
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

Routes of Exposure

Eyes, ingestion, inhalation, and skin

Symptoms Summary

Eyes Causes serious eye irritation, tearing, redness or pain.

Skin Cause dry skin and redness.

Inhalation May cause drowsiness or dizziness. Excessive exposure may cause narcotic effects, weakness, headaches, and unconsciousness.

Ingestion May be harmful if swallowed. 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	TCLo inhalation
ethanol	7,060 mg/kg Rat	N/E	20,000 ppm 10 h Rat	2,500 mg/m ³ 20 min Human
1,1,1,2-tetrafluoroethane	Not available	Not available	Not available	Not available
isopropyl alcohol	3 600 mg/kg Rat	12 800 mg/kg Rabbit	16 000 ppm 8 h Rat	35 ppm Human
ethyl acetate	5 620 mg/kg Rat	>20 000 µL/kg Rabbit	45 g/m ³ 2 h Mouse	1 105 mg/m ³ 4 h Rat

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.

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) None known or expected

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FLUX REMOVER FOR PC BOARDS**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)

No data available

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)

No data available

STOT-single exposure

Inhalation of ethanol, propan-2-ol and ethyl acetate may affect the central nervous system and may cause drowsiness, dizziness, and narcotic effects

STOT-repeated exposure

No data available

Aspiration hazard

The components are not classified as aspiration hazards.

FLUX REMOVER FOR PC BOARDS**4140-AEROSOL****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.

Ethanol is not classifiable as an environmental toxicant (with minimal LC50 of 12 000 mg/L 96 h for *Oncorhynchus mykiss* (rainbow trout) and 5 770 mg/L for *Pimephales promelas* (fathead minnow); LC 50 48 h of 5 012 mg/L for *Cerodaphnia* sp.)

The 2-propanol component is not classifiable as an environmental toxicant (with minimal LC50 of 9,640 mg/L 96 h for *Pimephales promelas* (fathead minnow); 5,102 mg/L 24 h *Daphnia magna* (water flea); >2,000 mg/L 24 h *Pseudokirchneriella subcapitata* (green algae)).

The ethyl acetate ingredient is an acute category 3 environmental toxicant liquid (biodegradable, with minimal LC50 of 220 mg/L for fathead minnow).

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) = 100% (791 g/L)

Section 13: Disposal Information

P501: Dispose of contents in accordance with all local, regional, national, and international regulations.

FLUX REMOVER FOR PC BOARDS**4140-AEROSOL****Section 14: Transport Information****Ground**

Refer to TDG regulations (Canadian Transportation of Dangerous Goods regulations); **USA CFR 49 Regulations** (Parts 100 to 185). **ADR** (European Agreement Concerning the International Carriage of Dangerous Goods by Road, and **ADN** (Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterways).

Limited Quantity**IMDG marking:** LTD QTY**Air****Refer to ICAO-IATA Dangerous Goods Regulations.****UN number:** UN1950**Shipping Name:** AEROSOL, flammable**Class:** 2.1**Packing Group:** not applicable**Marine Pollutant:** No**Sea****Refer to IMDG regulations.****IMDG Marking:** LTD QTY**UN number:** UN1950**Shipping Name:** AEROSOL, flammable**Class:** 2.1**Packing Group:** not applicable**Marine Pollutant:** No

Note: Component supplier SDS transportation sections and labeling were consulted. All involved staff of shipper must be appropriately trained before involvement with the transport of this product, or work under direct supervision of a trained person.

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 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 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 contains ethanol, which is listed as reproductively toxic. It is also listed as a carcinogen when in an alcoholic beverage.

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FLUX REMOVER FOR PC BOARDS**4140-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 27 July 2013
Supersedes 09 November 2010
Reason for Changes: Change to GHS classification and format

References

- 1) All toxicological data were checked against the RTECS (Registry of Toxic Effects of Chemical Substances®)
- 2) ACGIH 2011 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 (2011).

Abbreviations

ACGIH American Conference of Governmental Industrial Hygienists
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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Quality System Certified to ISO 9001:2008

SAI Global File #004008
Burlington, Ontario, Canada

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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.

Email: support@mgchemicals.com

Mailing Addresses *Manufacturing & Support*
1210 Corporate Drive
Burlington, Ontario, Canada
L7L 5R6

Head Office
9347-193rd Street
Surrey, British Columbia, Canada
V4N 4E7

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