

FLUX REMOVER FOR PC BOARDS

4140-AEROSOL

Safety Data Sheet

Section 1: 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: 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)
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☎ +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 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

FLUX REMOVER FOR PC BOARDS
4140-AEROSOL
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
Prevention	Precautionary Statements
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P264	Wash thoroughly after handling.
P211, P251	Do not spray on an open flame or other ignition source. Do not pierce or burn, even after use.
P280	Wear eye protection/face protection/gloves.

Section continued on the next page.

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

Continued ...

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/attention.
Storage	Precautionary Statements
P410 + P412	Protect from sunlight. Do not expose to temperatures exceeding 50 °C [122 °F].
P403	Store in a well-ventilated place.
P405	Store locked up.

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

a) denatured alcohol

b) Commonly known as isopropyl alcohol (IPA)

FLUX REMOVER FOR PC BOARDS**4140-AEROSOL****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 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
IF ON SKIN	P302 + P353
Immediate Symptoms	<i>dry skin, redness</i>
Response	Rinse skin with water/shower.
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. Call a POISON CENTRE/doctor if you feel unwell
IF SWALLOWED	P301 + P330 + P331, P313
Immediate Symptoms	<i>nausea, headaches, dizziness, weakness</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.
Specific Hazards	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.
Combustion Products	Produces carbon oxides (CO, CO ₂), halogenated compounds, and hydrogen fluorides.
Fire-Fighter	Wear self-contained breathing apparatus and full fire-fighting turn-out gear.

FLUX REMOVER FOR PC BOARDS**4140-AEROSOL****Section 6: Accidental Release Measures**

Personal Protection	See personal protection recommendations in Section 8.
Precautions for Response	Remove all sources of ignition. Avoid breathing mist/vapors/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. Wipe up further residue with paper towel and place dirty towels in container.
Disposal Methods	Dispose of spill waste according to Section 13.

Section 7: Handling and Storage

Prevention	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 mist/vapors/spray. Use only outdoors or in well ventilated area. In cases of inadequate ventilation wear respiratory protection. Do not spray on an open flame or other ignition source.
Handling	Wear protective gloves/clothing/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 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 500 ppm
1,1,1,2-tetrafluoroethane	MG Chemicals ^{a)}	1 000 ppm	Not established
propan-2-ol	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	200 ppm (TWA) 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.

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

Engineering Controls
Ventilation

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

Section continued on the next page.

FLUX REMOVER FOR PC BOARDS**4140-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

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

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.

FLUX REMOVER FOR PC BOARDS**4140-AEROSOL****Section 9: Physical and Chemical Properties**

Physical State	Liquid	Lower Flammability Limit	2.2%
Appearance	Colorless	Upper Flammability Limit	12%
Odor	Alcohol like	Vapor Pressure @20 °C	12 kPa [93 mmHg]
Odor Threshold	Not established	Vapor Density	≥1.6
pH	Not available	Specific Gravity @25 °C	0.79
Freezing/Melting Point	Not available	Solubility in Water	Fully miscible
Boiling Point	≥78 °C [≥174 °F]	Partition Coefficient	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 (solid, gas)	Not available	Viscosity @25 °C	Not available

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. 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.

FLUX REMOVER FOR PC BOARDS**4140-AEROSOL****Section 11: Toxicological Information****Routes of Exposure**

Eye contact, Skin contact, Inhalation

Symptoms Summary

Eyes	Causes serious eye irritation, tearing, redness or pain.
Skin	Cause dry skin and redness.
Inhalation	May cause cough, dizziness, drowsiness, headaches, weakness, and unconsciousness.
Ingestion	May cause nausea, headaches, dizziness, and weakness.
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 (M)SDS were also consulted.
(M)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.

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)

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

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

Teratogenicity

(risk of fetus malformation)

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

STOT-single exposure**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.

FLUX REMOVER FOR PC BOARDS**4140-AEROSOL****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 is not classifiable as an environmental toxicant with a minimal LC50 96 h of 12 000 mg/L for *Oncorhynchus mykiss* (rainbow trout) and EC50 of 5 770 mg/L for *Pimephales promelas* (fathead minnow); LC50 48 h of 5 012 mg/L for *Ceriodaphnia* sp.

The propan-2-ol component is not classifiable as an environmental toxicant with 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 for *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

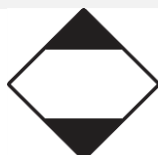
Regulated Volatile Organic Content (VOC) = 70% (554 g/L)

Section 13: Disposal Information

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

Limited Quantity**UN number:** UN1950**Shipping Name:**

AEROSOLS, flammable

Class: 2.1**Packing Group:** Not Applicable**Marine Pollutant:** No**Air**

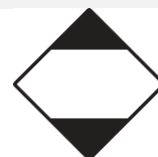
Refer to ICAO-IATA Dangerous Goods Regulations.

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.

FLUX REMOVER FOR PC BOARDS**4140-AEROSOL****Section 15: Regulatory Information****Canada****Domestic Substance List (DSL) / Non-Domestic Substance Lists (NDSL)**

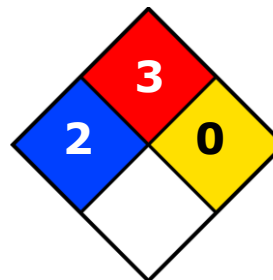
All hazardous ingredients are listed on the DSL/NDSL.

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 (2268 kg) threshold.

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FLUX REMOVER FOR PC BOARDS**4140-AEROSOL****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 Issue	29 May 2017
Supersedes	28 March 2016
Reason for Changes:	Format changes in compliance with HCS2012 and WHMIS 2015.

Reference

- 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).

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

ACGIH American Conference of Governmental Industrial Hygienists

GHS: Globally Harmonized System of Classification of Labeling of Chemicals

LC50 Lethal Concentration 50%

LD50 Lethal Dose 50%

N/A Not Applicable

N/E Not Estimated

PEL Permissible Exposure Limit

STEL Short-Term Exposure Limit

TWA Time Weighted Average

VOC Volatile Organic Content

WEEL Workplace Environmental Exposure Levels

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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