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SUPER HFE ELECTRONICS CLEANER

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Identifier: 4120**Other Means of Identification:** Super HFE Electronics Cleaner**Related Part #** 4120-3.78L

Recommended Use and Restriction on Use

Use: Electronic cleaner**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**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 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
Eye Damage	1	Danger	Corrosion
Acute Toxicity Oral	4	Warning	Exclamation
Hazardous to the Aquatic Environment Chronic	3	none	none

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
	H318: Causes serious eye damage
	H302: Harmful if swallowed
No symbol mandated	H412: Harmful to aquatic life with long lasting effects

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Prevention	Precautionary Statements
P102	Keep out of reach of children.
P264	Wash hands thoroughly after handling.
P280	Wear eye protection/face protection.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
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.
P310	Immediately call a POISON CENTER or doctor.
P301 + P312	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P330	Rinse mouth.
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
Weathering Fire Hazard	The liquid content is non-flammable as mixed, but the liquid can become flammable while drying due to weathering (unequal evaporation rates of non-flammable and flammable components)	None	None

Section 3: Composition/Information on Ingredients

CAS #	Chemical Name	%(weight)
156-60-5	1,2-trans-dichloroethylene	47%
406-58-6	1,1,1,3,3-pentafluorobutane	40%
163702-07-6	methyl nonafluorobutyl ether	5%
163702-08-7	methyl nonafluoroisobutyl ether	5%
71-36-3	1-butanol	3%

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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, P310
Immediate Symptoms	<i>redness, severe irritation, burn, pain</i>
Response	Rinse cautiously with water for 30 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTRE/doctor.
IF SWALLOWED	P301 + P312, P330
Immediate Symptoms	<i>nausea, drowsiness, fatigue</i>
Response	If you feel unwell, call a POISON CENTRE/doctor. Rinse mouth.
IF ON SKIN	P302 + P352
Immediate Symptoms	<i>Low toxicity</i>
Response	Wash with plenty of water.
IF INHALED	P304 + P340
Immediate Symptoms	<i>Low toxicity</i>
Response	Remove person to fresh air and keep comfortable for breathing.

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	Not flammable or combustible in its original state. Liquid may ignite during evaporation due fractional evaporation, which changes the composition of ignitable vapors produced by the liquid. This is because fractional evaporation causes ignitable and non-ignitable components to evaporate at different rates.
Combustion Products	Produces carbon oxides (CO, CO ₂), and may produce hydrogen fluorides (HF), hydrogen chlorides (HCl), fluorophosgene, and perfluoroisobutylene (PFIB)
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	Not available
Environmental Precautions	Avoid releasing to the environment. Prevent spill from entering drains and waterways.
Containment Methods	Contain with inert and non-flammable absorbent (such as soil, sand, vermiculite).
Cleaning Methods	Collect liquid in a sealable, chemical-resistant container. Sprinkle inert absorbent compound onto spill, then sweep into the container. Wipe residues with a paper towel and place dirty towels in the waste container. Use 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. Do not eat, drink or smoke when using this product. Avoid release to the environment.
Handling	Wash thoroughly after handling. Wear eye protection/face protection/gloves.
Storage	Not available

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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)
1,2-trans-dichloroethylene	ACGIH	200 ppm	Not established
	U.S.A. OSHA PEL	200 ppm	Not established
	Canada AB	200 ppm	Not established
	Canada BC	200 ppm	Not established
	Canada ON	200 ppm	250 ppm
	Canada QC	200 ppm	Not established
methyl nonafluorobutyl ether	AIHA ^{a)}	750 ppm	Not established
methyl nonafluoroisobutyl ether	AIHA ^{a)}	750 ppm	Not established
1-butanol	ACGIH	20 ppm	Not established
	U.S.A. OSHA PEL	100 ppm	Not established
	Canada AB	20 ppm	Not established
	Canada BC	15 ppm	30 ppm (Ceiling)
	Canada ON	20 ppm	Not established
	Canada QC	50 ppm (Ceiling)	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) AIHA = American Industrial Hygiene Association

Engineering Controls
Ventilation

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

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SUPER HFE ELECTRONICS CLEANER**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 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 mist/vapors/spray, wear respirator such as a half-mask respirator with organic vapor cartridges.

Above 10 x OEL or in case of thermal degradation, 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	Lower Flammability Limit	Not applicable
Appearance	Colorless	Upper Flammability Limit	Not applicable
Odor	Slight ethereal	Vapor Pressure @20 °C^{c)}	270 mmHg [>36 kPa]
Odor Threshold	Not available	Vapor Density	>3 (Air =1)
pH	Not available	Relative Density @25 °C	1.27
Freezing/Melting Point	Not available	Solubility in Water	Slightly soluble
Initial Boiling Point^{a)}	>40 °C [>104 °F]	Partition Coefficient n-octanol/water	Not available
Flash Point^{b)}	None detected	Auto-ignition Temperature^{d)}	≥405 °C [≥761 °F]
Evaporation Rate	>1 (ButAc =1)	Decomposition Temperature	Not available
Flammability	Non Flammable	Viscosity @40 °C	<20.5 mm ² /s

a) Lowest component literature value, which corresponds to 1,1,1,3,3-pentafluorobutane

b) No flash point was detected on non-weathered mixture; however, the liquid does readily ignite with weathering.

c) Calculated using Raoult's Law and LeChatelier Principle

d) Lowest component auto-ignition literature value

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SUPER HFE ELECTRONICS CLEANER**Section 10: Stability and Reactivity**

Reactivity	Reacts with metals and alkalis (bases).
Chemical Stability	Chemically stable at normal temperatures and pressures
Conditions to Avoid	Avoid extreme heat, open flames, and incompatible substances.
Incompatibilities	Alkali metals, allyl chloride, ethylene oxide, nylon, styrene, strong oxidizing agents, 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**Summary of Effects and Symptoms by Routes of Exposure**

Eyes	Causes redness, severe eye irritation, burns, or pain.
Ingestion	Low toxicity: nausea, drowsiness, fatigue
Skin	Low toxicity
Inhalation	Low toxicity
Chronic	No known effects

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Acute Toxicity (Lethal Exposure Concentrations)

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation
1,2-trans-dichloroethylene	1 235 mg/kg Rat	>5 g/kg Rabbit	24 100 ppm 4 h Rat
1,1,1,3,3-pentafluorobutane	>2 000 mg/kg Rat ^{a)}	Not established	Not established
methyl nonafluorobutyl ether	>5 g/kg Rat ^{a)}	Not established	>100 000 ppm Rat 4 h ^{a)}
methyl nonafluoroisobutyl ether	>5 g/kg Rat ^{a)}	Not established	>100 000 ppm Rat 4 h ^{a)}
1-butanol	790 mg/kg Rat	3 400 mg/kg Rabbit	Not established

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

a) Value from supplier safety data sheet

Other Toxicological Effects
Skin corrosion/irritation

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

Serious eye damage/irritation

At a concentration of 3%, 1-butanol is expected to cause serious eye irritation

Sensitization
(allergic reactions)

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

Carcinogenicity
(risk of cancer)

None of the ingredients are classified or listed as a carcinogen by IARC, ACGIH, CA Prop 65, or NTP.

Mutagenicity
(risk of heritable genetic effects)

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

Reproductive Toxicity
(risk to sex functions)

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

Teratogenicity
(risk of fetus malformation)

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

STOT-single exposure

Does not give rise to classification, because the concentration of hydrochloric acid is below the classification threshold.

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4120**SUPER HFE ELECTRONICS CLEANER****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. There are no category 1 components.

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.

The 1,2-trans-dichloroethylene ingredient is categorized to be a chronic category 3 environmental toxicant in Annex VI (Table 3.1). According to an EPA report, it has a minimal LC50 of 135 mg/L for *Lepomis macrochirus* (bluegill fish); EC50 220 mg/L 48 h *Daphnia magna* (water flea).

The methyl nonafluorobutyl ether and methyl nonafluoroisobutyl ether ingredients are considered to be practically non-toxic. These ingredients are not readily biodegradable. Their lowest LC50, EC50, or IC50 for aquatic organisms are greater than the substances' water solubility, and the high volatility and means it should move to the atmosphere rapidly. The atmospheric lifetime is about 4.1 years.

The 1,1,1,3,3-pentafluorobutane and 1-butanol are not classifiable as an environmental toxicant with minimal LC50 of >200 mg/L.

Acute Ecotoxicity

See chronic ecotoxicity.

Chronic Ecotoxicity

Category 3

Harmful to aquatic life with long lasting effects.

Avoid release to the environment.

Biodegradability

The content is not readily biodegradable.

Other Effects

Not available

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SUPER HFE ELECTRONICS CLEANER**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 regulations (Canadian Transportation of Dangerous Goods regulations);
USA DOT 49 CFR (Parts 100 to 185) **Regulations.**

Not Regulated

Air

Refer to ICAO-IATA Dangerous Goods Regulations.

Not Regulated

Sea

Refer to IMDG regulations.

Not Regulated

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

All hazardous ingredients are listed on the DSL/NDSL.

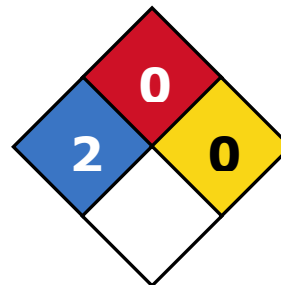
Hazardous Products Act (R.S.C., 1985, c. H-3)

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

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4120**SUPER HFE ELECTRONICS CLEANER****USA****Other Classifications****HMIS[®] RATING**

HEALTH:	* 2
FLAMMABILITY:	0
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)

TSCA (Toxic Substances Control Act of 1976, USA)

All substances are TSCA listed.

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 1,2-trans-dichloroethylene (CAS# 156-60-5; reportable quantity = 1 000 lb) and 1-butanol (CAS# 71-36-3; reportable quantity = 5 000 lb), which can be subject to the CERCLA reporting requirements.

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

This product does not contain any listed substances in California.

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.

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Section 16: Other Information**SDS Prepared by** MG Chemical's Regulatory Department**Date of Issue** 05 March 2020**Supersedes** 18 September 2017**Reason for Changes:** Update to the emergency phone number information.**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).

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.

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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4120**SUPER HFE ELECTRONICS CLEANER****Disclaimer**

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