

ELECTROSOLVE CONTACT CLEANER

409B-AEROSOL

Safety Data Sheet

Section 1: Product and Company Identification

Product Identifier and Other Means of Identification

Product Name: Electrosolve Contact Cleaner**MSDS Code:** 409B-Aerosol**Related Part #:** 409B-140G, 409B-340G

Recommended Use and Restriction on Use

Use: Zero residue contact cleaner**Uses Advised Against:** Do NOT use on live circuits or in presence of ignition source

Details of Manufacturer or Importer

Manufacturer

MG Chemicals
1220 Corporate Drive
Burlington, Ontario L7L 5R6
CANADAMG Chemicals (Head Office)
9347-193 Street
Surrey, British Columbia V4N 4E7
CANADA

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FAX 1-800-340-0773

E-MAIL: support@mgchemicals.comWEB www.mgchemicals.com

☎ 1-905-331-1396

FAX 1-905-331-2682

E-MAIL: info@mgchemicals.comE-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 24/7CANADA: Call CANUTEC ☎: **1-613-996-6666** or ***666** on cellular phones1-800-972-2225 | www.elexp.com | electron@elexp.com

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Section 2: Hazards Identification

Classification of Hazardous Chemical

WHMIS Classification



A – Aerosol Container; B5 – Flammable Aerosols;
 D2A – Very Toxic Material (Teratogenicity);
 D2B – Toxic Material (Skin Irritation)

GHS Categories

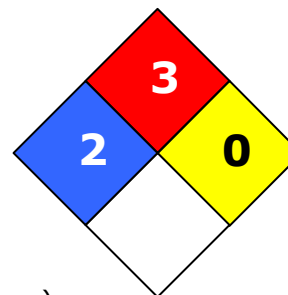
Criteria	Category	Signal Word	Pictograms
Flammable Aerosol	2	Danger	
Gas under pressure Liquefied gas	3	Warning	
Aspiration Hazard	1	Danger	
Reproductive Toxicity	2	Warning	
Skin Irritation	2A	Warning	
Specific Target Organ Toxicity Single Exposure	3	Warning	
Environmental Hazard Acute Aqua. Tox.	2	Warning	No Symbol mandated
Environmental Hazard Chronic Aqua. Tox.	3	None	

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
	H315: Causes skin irritation H336: May cause drowsiness and dizziness
	H304: May be fatal if swallowed and enters airways H361: Suspected of damaging fertility or the unborn child
No Symbol Mandated	H401: Toxic to aquatic life
	Precautionary Statements
	<p>P102: Keep out of reach of children. P202: Do not handle until all safety precautions have been read and understood. P410 + P412: Protect from sunlight. Do not expose to temperatures exceeding 50 °C [122 °F] P251: Do not pierce or burn, even after use. P280: Wear protective gloves/eye protection. P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking. P260 + P271: Do not breathe fume/gas/vapors/spray. Use only outdoors or in well ventilated area. P301 + P310 + P331: IF SWALLOWED: Immediately call a POISON CENTRE/doctor. Do NOT induce vomiting. P302 + P361 + P352: IF ON SKIN: Take off immediately all contaminated clothing. Wash with plenty of water.</p>

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ELECTROSOLVE CONTACT CLEANER**409B-AEROSOL****Other Hazards**

Not applicable

Section 3: Hazardous Ingredients

CAS #	Chemical Name	Wt%
107-83-5	methyl-2-pentane	28-38%
811-97-2	1,1,1,2-tetrafluoroethane	20-30%
96-14-0	methyl-3-pentane	11-14%
79-29-8	dimethyl-2,3-butane	11-14%
75-83-2	dimethyl-2,2-butane	8-11%
110-54-3	n-hexane	2-2.5%

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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, 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	P302
Symptoms	Immediate: <i>irritation, dry skin, redness</i>
Response	P353: Rinse skin with water/shower. P362+ P364: Take off contaminated clothing and wash it before reuse.
If skin irritation persists	P313: Get medical advice/attention.
IF INHALED	P304
Symptoms	Immediate: <i>respiratory system irritation, 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>respiratory system irritation, nausea, headaches, weakness, unconsciousness</i>
Response	P310: Immediately call a POISON CENTER/doctor P331: Do NOT induce vomiting.

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Section 5: Fire-Fighting Measures

Auto-ignition Temperature	Not Established	Flash Point ^{a)}	-29 °C [-20 °F]	LFL [LEL] ^{b)}	1%
				UFL [UEL]	7%

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. 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) Closed cup value

b) 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.

RECOMMENDATION: Use stainless steel or carbon steel container. Avoid using plastic containers unless they are proven to be resistant to hexane isomers.

Disposal Dispose of spill waste according to Section 13.

ELECTROSOLVE CONTACT CLEANER**409B-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.
P262: Do not get in eye, on skin, or on clothing.
P251: Do not pierce or burn, even after use.
P270: Do not eat, drink, or smoke when using this product.
P261 + P271 + P284: Avoid breathing fume/vapors. Use only outdoors or in well ventilated area. In cases of inadequate ventilation wear respiratory protection.
- 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
- RECOMMENDATION:** Keep in well ventilated room.

Section 8: Exposure Controls/Personal Protection**Routes of Entry**

Eyes, ingestion, inhalation, and skin

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Substances with Occupational Exposure Limit Values

Chemical Name	Country	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
		ppm	ppm
methyl-2-pentane	ACGIH	500	Not established
	U.S.A. OSHA PEL	500	Not established
	Canada AB	500	1 000
	Canada BC	200	Not established
	Canada ON	500	1 000
	Canada QC	500	1 000
1,1,1,2-tetrafluoroethane	MG Chemicals ^{a)}	1,000	Not established
methyl-3-pentane	ACGIH	500	Not established
	U.S.A. OSHA PEL	500	Not established
	Canada AB	500	1 000
	Canada BC	200	Not established
	Canada ON	500	1 000
	Canada QC	500	1 000
dimethyl-2,3-pentane	ACGIH	500	Not established
	U.S.A. OSHA PEL	500	Not established
	Canada AB	500	1 000
	Canada BC	200	Not established
	Canada ON	500	1 000
	Canada QC	500	1 000
dimethyl-2,2-pentane	ACGIH	500	Not established
	U.S.A. OSHA PEL	500	Not established
	Canada AB	500	1 000
	Canada BC	200	Not established
	Canada ON	500	1 000
	Canada QC	500	1 000
n-hexane	ACGIH	50	Not established
	U.S.A. OSHA PEL	50	Not established
	Canada AB	50	Not established
	Canada BC	20	Not established
	Canada ON	50	Not established
	Canada QC	50	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

ELECTROSOLVE CONTACT CLEANER**409B-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	Mild hydrocarbon	Odor Threshold	Not available
pH	Not available	Specific Gravity	0.66
Solubility in Water	Insoluble	Freezing/Melting Point	Not available
Flash Point ^{a)}	-29 °C [-20 °F]	Vapor Pressure @ 20 °C	250 mmHg [33 kPa]
Boiling Point	52 °C [125 °F]	Evaporation Rate	0.8 (Ether = 1)
Lower Flammability Limit	1%	Upper Flammability Limit	7%
Auto-ignition Temperature	Not available	Decomposition Temperature	Not available
Viscosity @40 °C	Not established	Vapor Density	3 (Air = 1)
Partition Coefficient	Not established		

a) Closed cup value

Section 10: Stability and Reactivity

Stabilities	Chemically stable at normal temperatures and pressures
Conditions to Avoid	Ignition sources, temperatures above 50 °C [122 °F]), and incompatible substances
Incompatibilities	Strong oxidizing agents, alkali or alkali earth metals, powdered aluminum, zinc, magnesium, and beryllium
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 May cause eye redness or pain.

Skin Cause mild to moderate skin irritation.

Inhalation May cause nose, throat and lung irritation. Overexposure may lead to visual impairment and central nervous system effects such as dizziness, drowsiness, or weakness

Ingestion Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis. See inhalation symptoms.

Chronic Ingestion or inhalation of material, mist, or vapor during pregnancy increases the chances fetal death and developmental defects.

Acute Toxicity (Lethal Exposure Concentrations)

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation	TCLo inhalation ^{a)}
methyl-2-pentane	Not available	Not available	3 125 ppm 4 h Rat ^{b)}	Not available
1,1,1,2-tetrafluoroethane	Not available	Not available	Not available	Not available
methyl-3-pentane	Not available	Not available	Not available	Not available
dimethyl-2,3-butane	Not available	Not available	Not available	Not available
dimethyl-2,2-butane	Not available	Not available	Not available	Not available
n-hexane	15 480 mg/kg Rat	>1.3 g/kg Rabbit ^{b)}	627 000 ppm 3 min Rat	5 400 mg/m ³ 10 min Human

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.

a) Lowest published lethal toxic dose

b) Data from supplier MSDS

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Skin corrosion/irritation	Skin irritant
Serious eye damage/irritation	No data available
Sensitization (allergic reactions)	None known or expected
Carcinogenicity (risk of cancer)	Not classified or listed as a carcinogen by IARC, ACGIH, CA Prop 65, or NTP
Mutagenicity (risk of heritable genetic effects)	No data available
Reproductive Toxicity (risk to sex functions)	No data available
Teratogenicity (risk of fetus malformation)	Harm to fetus found in animal studies.
STOT-single exposure	Inhalation of hexane isomers may affect the central nervous system
STOT-repeated exposure	No data available
Aspiration hazard	Mixture is a class 1 aspiration hazard. It contains over 70% class 1 aspiration hazard components and has a mixture viscosity of <math><20.5 \text{ mm}^2/\text{s}</math> at 40 °C.

ELECTROSOLVE CONTACT CLEANER**409B-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.

Similar mixtures of isoalkanes C6-C7 with <5% n-hexane have a LC50 of 11.4 mg/L for rainbow trout (*Oncorhynchus mykiss*) 96 h, and an EL50 of 3.0 mg/L water flea (*Daphnia magna*) 48 h.

Acute Ecotoxicity

Category 2

GHS Code: Hazard Statement

H401: Toxic to aquatic life

P273: Avoid release to the environment

P391: Collect spillage

Chronic Ecotoxicity

Similar mixtures of isoalkanes C6-C7 with <5% n-hexane suggest a EC50 >2 mg/L for fish using a QSAR model. For water flea (*Daphnia magna*) a NOELR 21 days of 1 mg/L and an EL50 of 1.6 mg/L.

Category 3

GHS Code: Hazard Statement

H412: Harmful to aquatic life with long lasting effects

Biodegradability

Not available

Other Effects

Regulated Volatile Organic Content (VOC) = 75% (495 g/L)

ELECTROSOLVE CONTACT CLEANER**409B-AEROSOL****Section 13: Disposal Information**

P501: 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 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 does not contain $\leq 2.25\%$ n-hexane (CAS# 110-54-3) which has a 5,000 lb reporting quantity requirements in section 313 Title III of the SARA of 1986 and 40 CFR part 372.

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 does not contain any of the listed substances.

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.

ELECTROSOLVE CONTACT CLEANER**409B-AEROSOL****Section 16: Other Information**

MSDS Prepared by Michel Hachey
Date of Revision 09 May 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

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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Disclaimer This material safety data sheet is provided as an information resource only. *M.G. Chemicals, Ltd.* believes the information contained herein is accurate and compiled from reliable sources. It is the responsibility of the user to query and verify any information seeming suspect where doubt on the validity may exist. The buyer assumes all responsibility of using and handling the product in accordance with local, regional, national, and international regulations.