

SAI Global File #004008 Burlington, Ontario, Canada

ELECTROSOLVETM CONTACT CLEANER

409B-AEROSOL

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Name: Electrosolve™ Contact Cleaner

SDS 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 iginition source

Details of Manufacturer or Importer

Manufacturer

MG Chemicals 1210 Corporate Drive Burlington, Ontario L7L 5R6 CANADA

+1-800-340-0772

FAX +1-800-340-0773

E-MAIL support@mgchemicals.com

WEB www.mgchemicals.com

MG Chemicals (Head Office)

9347-193 Street

Surrey, British Columbia V4N 4E7

CANADA

+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

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Section 2: Hazard(s) Identification

Classification of Hazardous Chemical

GHS Categories

Criteria		Category	Signal Word	Pictograms
Aspiration Hazard		1	Danger	Health
Flammable Aerosol		2	Warning	Flame
Gas Under Pressure		Liquefied gas	Warning	Gas cylinder
Skin Irritation		2	Warning	Exclamation
Specific Target Organ Toxicity	Single Exposure	3	Warning	Exclamation
Hazardous to Aquatic Environment	Chronic	3	none	none

Note: The degree of severity is ranked within each hazard class from

Label Elements

Signal Word	DANGER
Pictograms	Hazard Statements
	H304: May be fatal if swallowed and enters airways
	H223: Flammable aerosol
	H280: Contains gas under pressure: may explode if heated

^{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.



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Pictograms	Hazard Statements
	H315: Causes skin irritation
	H336: May cause drowsiness and dizziness
•	
	H412: Harmful to aquatic life with long lasting effects
No symbol mandated	
Prevention	Precautionary Statements
P102	Keep out of reach of children.
P261	Avoid breathing mist/vapors/spray.
P271	Use only outdoors or in a well-ventilated area.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P211	Do not spray on an open flame or other ignition source.
P251	Do not pierce or burn, even after use.
P280	Wear protective gloves/protective clothing/eye protection.
P264	Wash hands thoroughly after handling.
P273	Avoid release to the environment.
Response	Precautionary Statements
P301 + P310, P331	IF SWALLOWED: Immediately call a POISON CENTER/doctor. Do NOT induce vomiting.
P302 + P352	IF ON SKIN: Wash with plenty water.
P332 + P313	If skin irritation occurs: Get medical advice/attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312	Call a POISON CENTER/doctor if you feel unwell.



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Storage	Precautionary Statements
P410 + P412	Protect from sunlight. Do not expose to temperatures exceeding 50 °C [122 °F].
P403	Store in well-ventilated place.
P405	Store locked up.
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)
107-83-5	methyl-2-pentane	30–38%
75-37-6	1,1-difluoroethane ^{a)}	25%
96-14-0	methyl-3-pentane	11–15%
79-29-8	dimethyl-2,3-butane	11–15%
75-83-2	dimethyl-2,2-butane	7–11%
109-66-0	pentane	4–8%

a) Also known as HFC-152a



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Section 4: First-Aid Mea	sures
Exposure Condition	GHS Code/Symptoms/Precautionary Statements
IF SWALLOWED	P301 + P310, P331
Immediate Symptoms	nausea, weakness, headache, abdominal pain, drowsiness, dizziness, unconsciousness
Response	Immediately call a POISON CENTER/doctor. Do NOT induce vomiting.
IF ON SKIN	P302 + P352, P332 + P313, P362 + P364
Immediate Symptoms	dry skin, redness, irritation
Response	Wash with plenty of water.
	If skin irritation occurs: Get medical advice/attention.
	Take off contaminated clothing and wash it before reuse.
IF INHALED	P304 + P340, P312
Immediate Symptoms	nausea, weakness, headache, drowsiness, dizziness, unconsciousness
Response	Remove person to fresh air and keep comfortable for breathing.
	Call a POISON CENTER/doctor if you feel unwell.
IF IN EYES	P305 + P351 + P338
Immediate Symptoms	redness
Response	Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.



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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 Aerosols containers may erupt with force at temperatures above

50 °C [122 °F].

Produces irritating and toxic fumes in fires or in contact with hot

surfaces.

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, CO₂), halogenated compounds, and

hydrogen fluorides.

Fire-Fighter Wear self-contained breathing apparatus and full fire-fighting

turn-out gear.

Section 6: Accidental Release Measures

Personal Protection See personal protection recommendations in Section 8.

Precautions for

Response

Avoid breathing the mist/spray/vapors. Remove or keep away all

sources of extreme heat or open flames.

Environmental

Precautions

Avoid releasing to the environment. Prevent spill from entering

drains and waterways.

Containment Methods

Not applicable

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.



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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.

Avoid breathing mist/vapors/spray. Use only outdoors or in a

well-ventilated area.

Do not pierce or burn, even after use.

Handling Do not spray on an open flame or other ignition source.

Use only outdoors or in a well-ventilated area.

Wear protective gloves/protective clothing/eye protection. Take

off contaminated clothing and wash it before reuse.

Wash hands thoroughly after handling.

Avoid release to the environment.

Storage Protect from sunlight. Do not expose to temperatures exceeding

50 °C [122 °F].

Store in well ventilated place.

Store locked up.

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)
1,1-difluoroethane	MG Chemicals a)	1 000 ppm	Not established
	ACGIH	Not established	Not established
	U.S.A. OSHA PEL	Not established	Not established
	Canada	Not established	Not established
methyl-2-pentane	ACGIH	500 ppm	1 000 ppm
Hexane isomers	U.S.A. OSHA PEL	(500 ppm) b)	(1 000 ppm) ^{b)}
(except n-Hexane)	Canada AB	500 ppm	1 000 ppm
	Canada BC	200 ppm	Not established
	Canada ON	500 ppm	1 000 ppm
	Canada QC	500 ppm	1 000 ppm



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Chemical Name	Country/ Provinces	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
methyl-3-pentane Hexane isomers (except n-Hexane)	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	500 ppm (500 ppm) ^{b)} 500 ppm 200 ppm 500 ppm 500 ppm	1 000 ppm (1 000 ppm) b) 1 000 ppm Not established 1 000 ppm 1 000 ppm
dimethyl-2,3-butane <i>Hexane isomers</i> (except n-Hexane)	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	500 ppm (500 ppm) ^{b)} 500 ppm 200 ppm 500 ppm 500 ppm	1 000 ppm (1 000 ppm) b) 1 000 ppm Not established 1 000 ppm 1 000 ppm
dimethyl-2,2-butane Hexane isomers (except n-Hexane)	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	500 ppm (500 ppm) ^{b)} 500 ppm 200 ppm 500 ppm 500 ppm	1 000 ppm (1 000 ppm) b) 1 000 ppm Not established 1 000 ppm 1 000 ppm
pentane	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	1000 ppm 1000 ppm 600 ppm 600 ppm 600 ppm 120 ppm	Not established Not established Not established Not established 750 ppm 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 by RTECS database² and data 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
- b) Value vacated (retracted) under court order, but still in effect in some states.

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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 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, 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

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Physical State	Liquid, in an aerosol format	Lower Flammability Limit

7% **Appearance** Colorless Upper Flammability

Limit

Odor Mild hydrocarbon Vapor Pressure 33 kPa

> @20 °C [250 mmHg]

Odor Threshold Not Vapor Density 2.98 available

(Air = 1)

1%

Not **Specific Gravity** 0.66 pН

@15.5 °C

Freezing/Melting Solubility in **Immiscible** Not

available **Point** Water

available

52 °C **Boiling Point Partition** Not [125 °F] Coefficient available

Flash Point a) -29 °C **Auto-ignition** Not available

[-20 °F] **Temperature**

Evaporation 0.8 (Ether = 1)Decomposition

Rate **Temperature** available

 $< 20.5 \text{ mm}^2/\text{s}$ Flammability Not Viscosity

(solid, gas) available @40 °C

Section 10: Stability and Reactivity

Reactivity Not available

Chemical Stability Chemically stable at normal temperatures and pressures

Temperatures above 50 °C [122 °F], open flames, and incompatible **Conditions to**

Avoid substances

Incompatibilities Strong oxidizing agents, alkali or alkali earth metals, powdered

aluminum, zinc, magnesium, and beryllium

Polymerization Will not occur

Will not decompose under normal conditions. For thermal Decomposition

decomposition, see combustion products in Section 5.

a) Closed cup flash point

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Section 11: Toxicological Information

Routes of Exposure

Eye Contact, Ingestion, Inhalation, and Skin Contact

Symptoms Summary

Eyes May cause redness.

Inhalation May cause nausea, weakness, headache, drowsiness, dizziness,

andunconsciousness.

Ingestion May cause nausea, weakness, headache, abdominal pain, drowsiness,

dizziness, and unconsciousness (also see inhalation symptoms).

Skin May cause dry skin, redness, and irritation.

Chronic Prolonged or repeated exposure may cause skin dryness, cracking, as well

as defatting the skin.

Ingestion or inhalation of paint material, mist, or vapor during pregnancy

may increase the chances fetal death and developmental defects.

Acute Toxicity (Lethal Exposure Concentrations)

Chemical Name	LD50	LD50	LC50
	oral	dermal	inhalation
1,1-difluoroethane	Not	Not	977 g/m³
	established	established	2 h Mouse
methyl-2-pentane	Not	Not	3 125 ppm
	established	established	4 h Rat ^{a)}
methyl-3-pentane	Not	Not	Not
	established	established	established
dimethyl-2,3-butane	Not	Not	Not
	established	established	established
dimethyl-2,2-butane	Not	Not	Not
	established	established	established
pentane	>2 000 mg/kg	Not	>20 mg/L
	Rat	established	Rat 4 h (vapor)

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

a) Data from supplier (M)SDS



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Other Toxicological Effects

Skin corrosion/irritation Causes skin irritation.

Serious eye Based on available data, the classification criteria are not

damage/irritation me

Sensitization Based on available data, the classification criteria are not

(allergic reactions) met.

Carcinogenicity Based on available data, the classification criteria are not

(risk of cancer) met.

Mutagenicity Based on available data, the classification criteria are not

(risk of heritable genetic effects) met.

Reproductive ToxicityBased on available data, the classification criteria are not

(risk to sex functions) met.

Teratogenicity Based on available data, the classification criteria are not

(risk of fetus malformation) met.

STOT-single exposure The hexane isomers may affect the central nervous

system.

STOT-repeated exposure Based on available data, the classification criteria are not

met.

Aspiration hazard Mixture is a class 1 aspiration hazard. It contain 75%

class 1 aspiration hazard components and has a mixture

viscosity of $< 20.5 \text{ mm}^2/\text{s}$ at 40 °C.

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.

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

Toxic to aquatic life

Avoid release to the environment.



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Chronic Ecotoxicity

Category 3

Harmful to aquatic life with long lasting effects

Avoid release to the environment. Collect spillage.

Biodegradability

Not available

Other Effects

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

Actual VOC = 75% [495 g/L]

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

Limited Quantity



UN number: UN1950 Shipping Name: AEROSOL,

flammable **Class:** 2.1

Packing Group: Not applicable

Marine Pollutant: No

Flash Point -29 °C [-20.2 °F]



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Air

Refer to ICAO-IATA Dangerous Goods Regulations.

Limited Quantity See package

Max Net Qty/Pkg

instruction Y203



UN number: UN1950 Shipping Name: AEROSOL,

flammable **Class:** 2.1

Packing Group: Not applicable

Marine Pollutant: No

Flash Point -29 °C [-20.2 °F]



Sea

30 kg G

Refer to IMDG regulations.

Limited Quantity



UN number: UN1950 Shipping Name: AEROSOL,

flammable Class: 2.1

Packing Group: Not applicable

Marine Pollutant: No

Flash Point -29 °C [-20.2 °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.

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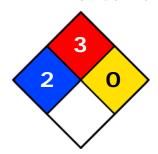
USA

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 products 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 ingredients that subject to the reporting requirements of 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, June 06, 2014 revision, USA).

This product does not contain any substances known to be listed in California.

Europe

RoHS (Restriction of Hazardous Substances Directive)

This product does not contain any lead, cadmium, mercury, hexavalent chromium, PBB's, or PBDE's, 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 Regulatory department

Date of Review 11 January 2017

Supersedes 26 May 2016

Reason for Changes: Change propellant.

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)
ECHA	European Chemicals Agency
EU	European Union
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

SDS Safety Data Sheet

Short-Term Exposure Limit STEL

Lowest published toxic concentration TCLo

TWA Time Weighted Average Volatile Organic Content VOC



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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

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L7L 5R6 V4N 4E7

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.