Revision Date: 26 February 2020

409B ELECTROSOLVE™ CONTACT CLEANER

MG Chemicals Multiple Part Number List

This document contains safety data sheets related to the same product name. However, different sizes use different propellants with equivalent toxicity. Please refer to the list below to determine which safety data sheet relates to your purchased product.

Contents

Part Number	*Propellant*
409B-140G	1,1,1,2-tetrafluoroethane (HFC-134a)
409B-340G	1,1-difluoroethane (HFC-152a)

Safety Data Sheets for each part number listed above follow this cover sheet.

409B-140G **(AEROSOL)**

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Identifier: 409B-140G

Other Means Of Identification: Electrosolve™ Contact Cleaner

Related Part # 409B-140G

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
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 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

Section 2: Hazard(s) Identification

Classification of Hazardous Chemical

GHS Categories

Criteria		Category	Signal Word	Pictograms
Flammable Aerosol		1	Danger	Flame
Gas Under Pressure		Liquefied gas	Warning	Gas cylinder
Aspiration Hazard		1	Danger	Health
Reproductive Toxicity		2	Warning	Health
Skin Irritation Specific Target Organ Toxicity	 Single Exposure	2 3	Warning Warning	Exclamation Exclamation
Hazardous to 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**
	H222: Extremely Flammable aerosol
	H280: Contains gas under pressure: may explode if heated
	H304: May be fatal if swallowed and enters airways H361: Suspected of damaging fertility or the unborn child

Section continued on the next page

Continued…

Pictograms	Hazard Statements
	H315: Causes skin irritation H336: May cause drowsiness and dizziness
No symbol mandated	H412: Harmful to aquatic life with long lasting effects

Prevention	Precautionary Statements
P102	Keep out of reach of children.
P201, P202	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
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.
P261	Avoid breathing mist, vapors, and spray.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves, protective clothing, and eye protection.
P264	Wash hands thoroughly after handling.
P273	Avoid release to the environment.

Response	Precautionary Statements
P308 + P313	IF exposed or concerned: Get medical advice or attention.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor.
P331	Do NOT induce vomiting.
P302 + P352	IF ON SKIN: Wash with plenty water.
P332 + P313	If skin irritation occurs: Get medical advice or 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 or doctor if you feel unwell.

Section continued on the next page

Continued…

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.
Disposal	**Precautionary Statements**
P501	Dispose of contents in accordance to local, regional, national, and 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%
811-97-2	1,1,1,2-tetrafluoroethane [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%
110-54-3	n-hexane	1-5%

a) Also known as HFC-134a

Section 4: First-Aid Measures

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 or 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 or 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 or doctor if you feel unwell.
IF IN EYES	P305 + P351 + P338
Immediate Symptoms	*low toxicity: redness*
Response	Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

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, CO_2), 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 and 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.

Section 7: Handling and Storage

Prevention

Keep out of reach of children.

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Avoid breathing mist, vapors, and 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.

Wear protective gloves and 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 a 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)
1,1,1,2-tetrafluoroethane	*MG Chemicals* [a)] ACGIH U.S.A. OSHA PEL Canada	1 000 ppm Not established Not established Not established	Not established Not established Not established Not established
methyl-2-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

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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 *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-2,2-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
n-hexane	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	50 ppm 50 ppm 50 ppm 50 ppm 50 ppm 50 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 ACGIH[1], OSHA (Table Z-1), and Canadian provinces exposure limits were consulted. Limits from the RTECS database[2] 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

b) Value vacated (retracted) under court order, but still in effect in some states.

Section continued on the next page

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, and 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.

Section 9: Physical and Chemical Properties

Physical State	Liquid, in an aerosol format	**Lower Flammability Limit**	1%
Appearance	Colorless	**Upper Flammability Limit**	7%
Odor	Starting fluid petroleum	**Vapor Pressure @20 °C**	33 kPa [250 mmHg]
Odor Threshold	Not available	**Vapor Density**	2.98 (Air =1)
pH	Not available	**Relative Density @15.5 °C**	0.66
Freezing/Melting Point	Not available	**Solubility in Water**	Immiscible
Initial Boiling Point	52 °C [125 °F]	**Partition Coefficient n-octanol/water**	Not available
Flash Point [a)]	-29 °C [-20 °F]	**Auto-ignition Temperature**	Not available
Evaporation Rate	0.8 (Ether = 1)	**Decomposition Temperature**	Not available
Flammability	Extremely Flammable	**Viscosity @40 °C**	<20.5 mm^2/s

a) Closed cup flash point

Section 10: Stability and Reactivity

Reactivity	Not available
Chemical Stability	Chemically stable at normal temperatures and pressures
Conditions to Avoid	Temperatures above 50 °C [122 °F], open flames, 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.

Section 11: Toxicological Information

Summary of Effects and Symptoms by Routes of Exposure

Eyes Low toxicity: 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 oral	LD50 dermal	LC50 inhalation
1,1,1,2-tetrafluoroethane	Not available	Not available	1 500 g/m^3 4 h Rat
methyl-2-pentane	Not available	Not available	3 125 ppm Rat
methyl-3-pentane	Not available	Not available	Not available
dimethyl-2,3-butane	Not available	Not available	Not available
dimethyl-2,2-butane	Not available	Not available	Not available
pentane	>2 000 mg/kg Rat	Not available	23.5 mg/L 4 h Rat
n-hexane	15 840 mg/kg Rat	2 000 mg/kg Rabbit [b)]	48 000 ppm 4 h Rat

Note: Toxicity data from the RTECS[2] and ECHA databases were consulted. The data from supplier SDS were also consulted.

Section continued on the next page

Other Toxicological Effects

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/irritation	Based on available data, the classification criteria are not met.
Sensitization (allergic reactions)	Based on available data, the classification criteria are not met.
Carcinogenicity (risk of cancer)	Based on available data, the classification criteria are not met.
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)	The n-hexane component causes harm to fetus according to animal studies.
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 mm^2/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 96 h of 11.4 mg/L for rainbow trout (Oncorhynchus mykiss), and an EL50 48 h of 3.0 mg/L water flea (Daphnia magna).

Acute Ecotoxicity

See chronic ecotoxicity.

Section continued on the next page

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 = 75% [495 g/L]

Note: The VOC exemption for 1,1,1,2-tetrafluoroethane was applied.

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 Max Net Qty/Pkg 30 kg G	

Section continued on the next page

Air

Refer to ICAO-IATA Dangerous Goods Regulations.	
Limited Quantity See package instruction Y203 Max Net Qty/Pkg 30 kg G	
UN number: UN1950 **Shipping Name:** AEROSOL, flammable **Class:** 2.1 **Packing Group**: Not applicable **Marine Pollutant:** No	

Sea

Refer to IMDG regulations.	
Limited Quantity Max Net Qty/Pkg 30 kg G	
UN number: UN1950 **Shipping Name:** AEROSOL, flammable **Class:** 2.1 **Packing Group**: Not applicable **Marine Pollutant:** No	

Note: **Shipper must be appropriately <u>trained and certified</u> 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.

Section continued on the next page

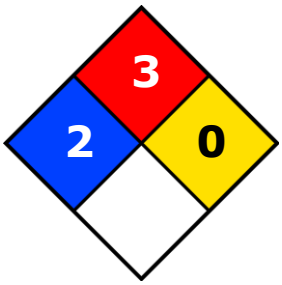
USA

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 contains ≤5% n-hexane (CAS# 110-54-3; reportable quantity = 5 000 lb), which are 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).

This product contains n-hexane, which is listed as reproductively toxic.

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	MG Chemicals' Regulatory department
Date of Review	26 February 2020
Supersedes	04 October 2019
Reason for Changes:	Update to classification and part numbers.

Reference

1) 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).

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
STEL	Short-Term Exposure Limit
TCLo	Lowest published toxic concentration
TWA	Time Weighted Average
VOC	Volatile Organic Content

Section continued on the next page

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

Disclaimer

This 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.

409B-340G **(AEROSOL)**

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Name: 409B-340G

Other Means Of Identification: Electrosolve™ Contact Cleaner

Related Part # 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
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 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

Section 2: Hazard(s) Identification

Classification of Hazardous Chemical

GHS Categories

Criteria		Category	Signal Word	Pictograms
Flammable Aerosol		1	Danger	Flame
Gas Under Pressure		Liquefied gas	Warning	Gas cylinder
Aspiration Hazard		1	Danger	Health
Reproductive Toxicity		2	Warning	Health
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 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**
	H222: Extremely Flammable aerosol
	H280: Contains gas under pressure: may explode if heated
	H304: May be fatal if swallowed and enters airways H361: Suspected of damaging fertility or the unborn child

Section continued on the next page

Continued…

Pictograms	Hazard Statements
	H315: Causes skin irritation H336: May cause drowsiness and dizziness
No symbol mandated	H412: Harmful to aquatic life with long lasting effects

Prevention	Precautionary Statements
P102	Keep out of reach of children.
P201, P202	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
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.
P261	Avoid breathing mist, vapors, and spray.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves, protective clothing, and eye protection.
P264	Wash hands thoroughly after handling.
P273	Avoid release to the environment.

Response	Precautionary Statements
P308 + P313	IF exposed or concerned: Get medical advice or attention.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor.
P331	Do NOT induce vomiting.
P302 + P352	IF ON SKIN: Wash with plenty water.
P332 + P313	If skin irritation occurs: Get medical advice or 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 or doctor if you feel unwell.

Section continued on the next page

Continued…

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.
Disposal	**Precautionary Statements**
P501	Dispose of contents in accordance to local, regional, national, and 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%
110-54-3	n-hexane	1–5%

a) Also known as HFC-152a

Section 4: First-Aid Measures

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 or 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 or 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 or doctor if you feel unwell.
IF IN EYES	P305 + P351 + P338
Immediate Symptoms	*low toxicity: redness*
Response	Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

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, CO_2), 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 and 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.

Section 7: Handling and Storage

Prevention

Keep out of reach of children.

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Avoid breathing mist, vapors, and 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 and 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 a 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)] ACGIH U.S.A. OSHA PEL Canada	1 000 ppm Not established Not established Not established	Not established Not established Not established Not established
methyl-2-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

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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 *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-2,2-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
n-hexane	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	50 ppm 50 ppm 50 ppm 50 ppm 50 ppm 50 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 ACGIH[1], OSHA (Table Z-1), and Canadian provinces exposure limits were consulted. Limits from the RTECS database[2] 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

b) Value vacated (retracted) under court order, but still in effect in some states.

Section continued on the next page

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, and 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.

Section 9: Physical and Chemical Properties

Physical State	Liquid, in an aerosol format	**Lower Flammability Limit**	1%
Appearance	Colorless	**Upper Flammability Limit**	7%
Odor	Starting fluid petroleum	**Vapor Pressure @20 °C**	33 kPa [250 mmHg]
Odor Threshold	Not available	**Vapor Density**	2.98 (Air =1)
pH	Not available	**Relative Density @15.5 °C**	0.66
Freezing/Melting Point	Not available	**Solubility in Water**	Immiscible
Initial Boiling Point	52 °C [125 °F]	**Partition Coefficient n-octanol/water**	Not available
Flash Point a)	-29 °C [-20 °F]	**Auto-ignition Temperature**	Not available
Evaporation Rate	0.8 (Ether = 1)	**Decomposition Temperature**	Not available
Flammability	Extremely Flammable	**Viscosity @40 °C**	<20.5 mm^2/s

a) Closed cup flash point

Section 10: Stability and Reactivity

Reactivity	Not available
Chemical Stability	Chemically stable at normal temperatures and pressures
Conditions to Avoid	Temperatures above 50 °C [122 °F], open flames, 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.

Section 11: Toxicological Information

Summary of Effects and Symptoms by Routes of Exposure

Eyes Low toxicity: 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 oral	LD50 dermal	LC50 inhalation
1,1-difluoroethane	Not available	Not available	977 g/m^3 2 h Mouse
methyl-2-pentane	Not available	Not available	3 125 ppm Rat
methyl-3-pentane	Not available	Not available	Not available
dimethyl-2,3-butane	Not available	Not available	Not available
dimethyl-2,2-butane	Not available	Not available	Not available
pentane	>2 000 mg/kg Rat	Not available	>20 mg/L Rat 4 h (vapor)
n-hexane	15 840 mg/kg Rat	2 000 mg/kg Rabbit [b)]	48 000 ppm 4 h Rat

Note: Toxicity data from the RTECS[2] and ECHA databases were consulted. The data from supplier SDS were also consulted.

Section continued on the next page

Other Toxicological Effects

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/irritation	Based on available data, the classification criteria are not met.
Sensitization (allergic reactions)	Based on available data, the classification criteria are not met.
Carcinogenicity (risk of cancer)	Based on available data, the classification criteria are not met.
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)	The n-hexane component causes harm to fetus according to animal studies.
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 mm^2/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 96 h of 11.4 mg/L for rainbow trout (Oncorhynchus mykiss), and an EL50 48 h of 3.0 mg/L water flea (Daphnia magna).

Acute Ecotoxicity

See chronic ecotoxicity.

Section continued on the next page

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 = 75% [495 g/L]

Note: The VOC exemption for 1,2-difluoroethane was applied.

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 Max Net Qty/Pkg 30 kg G	

Section continued on the next page

Air

Refer to ICAO-IATA Dangerous Goods Regulations.	
Limited Quantity See package instruction Y203 Max Net Qty/Pkg 30 kg G	
UN number: UN1950 **Shipping Name:** AEROSOL, flammable **Class:** 2.1 **Packing Group**: Not applicable **Marine Pollutant:** No	

Sea

Refer to IMDG regulations.	
Limited Quantity Max Net Qty/Pkg 30 kg G	
UN number: UN1950 **Shipping Name:** AEROSOL, flammable **Class:** 2.1 **Packing Group**: Not applicable **Marine Pollutant:** No	

Note: **Shipper must be appropriately <u>trained and certified</u> 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.

Section continued on the next page

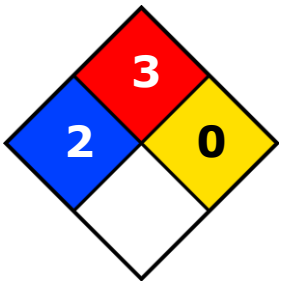
USA

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 contains ≤5% n-hexane (CAS# 110-54-3; reportable quantity = 5 000 lb), which are 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).

This product contains n-hexane, which is listed as reproductively toxic.

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	MG Chemicals' Regulatory department
Date of Review	26 February 2020
Supersedes	04 October 2019
Reason for Changes:	Update to the emergency contact information.

Reference

1) 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).

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
STEL	Short-Term Exposure Limit
TCLo	Lowest published toxic concentration
TWA	Time Weighted Average
VOC	Volatile Organic Content

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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.

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