

404B

(AEROSOL)

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Identifier: 404B**Other Means of Identification:** Contact Cleaner with Silicones for Electronics (Aerosol)**Related Part #** 404B-140G, 404B-340G

Recommended Use and Restriction on Use

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

Details of Manufacturer or Importer

ManufacturerMG Chemicals
1210 Corporate Drive
Burlington, Ontario L7L 5R6
CANADA**TEL** +1-800-340-0772**TEL** +1-905-331-1396**FAX** +1-800-340-0773**FAX** +1-905-331-2682**E-MAIL** support@mgchemicals.com**WEB** www.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 serviceCANADA—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
Aspiration Hazard	1	Danger	Health
Reproductive Toxicity	2	Warning	Health
Single Target Organ Toxicity Rep. Exposure	2	Warning	Health
Flammable Aerosol	1	Danger	Flame
Gases Under Pressure	Liquefied gas	Warning	Gas cylinder
Skin Irritation	2	Warning	Exclamation
Specific Target Organ Toxicity Single Exposure	3	Warning	Exclamation
Hazardous to the Aquatic Environment Chronic	2	none	Environment

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
	H304: May be fatal if swallowed and enters airways H361: Suspected of damaging fertility or the unborn child H373: May cause damage to organs (central nervous system) through prolonged or repeated exposure
	H222: Extremely flammable aerosol
	H280: Contains gas under pressure; may explode if heated

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Pictograms	Hazard Statements
	H315: Causes skin irritation H336: May cause drowsiness or dizziness
	H411: Toxic to aquatic life with long lasting effects
Prevention	Precautionary Statements
P102 P201, P202 P260 P271 P210 P211 P251 P280 P264 P273	Keep out of reach of children. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe mist, vapors, or spray. Use only outdoors or in a well-ventilated area. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not spray on an open flame or other ignition source. Do not pierce or burn, even after use. Wear protective gloves, protective clothing, and eye protection. Wash hands thoroughly after handling. Avoid release to the environment.
Response	Precautionary Statements
P308 + P313 P301 + P310, P331 P302 + P352 P332 + P313 P362 + P364 P304 + P340 P312 P391	IF exposed or concerned: Get medical advice or attention. IF SWALLOWED: Immediately call a POISON CENTER or doctor. Do NOT induce vomiting. IF ON SKIN: 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: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell. Collect spillage.

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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 a well-ventilated place.
P405	Store locked up.
Disposal	Precautionary Statements
P501	Dispose of contents and container in accordance to local, regional, national, and international regulations.

Hazards Not Otherwise Classified

Other Criteria	Hazard Statements/Precautionary Statement	Signal Word	Pictograms
Simple Asphyxiant	May displace oxygen and cause rapid suffocation.	None	None
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	31%
811-97-2	1,1,1,2-tetrafluoroethane ^{a)}	25%
96-14-0	methyl-3-pentane	12%
79-29-8	dimethyl-2,3-butane	12%
75-83-2	dimethyl-2,2-butane	8%
109-66-0	pentane	7%
110-54-3	n-hexane	4%

Note: Contains a small amount of non-hazardous silicone polymeric material (dimethylpolysiloxanes)

a) Also known as HFC-134a.

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Section 4: First-Aid Measures

<i>Exposure Condition</i>	<i>GHS Code/Symptoms/Precautionary Statements</i>
IF SWALLOWED	P301 + P310, P331, P308 + P313
Immediate Symptoms	<i>nausea, vomiting, abdominal pain, drowsiness, dizziness, weakness</i>
Response	Immediately call a POISON CENTER or doctor. Do NOT induce vomiting. IF exposed or concerned: Get medical advice or attention.
IF ON SKIN	P302 + P352, P332 + P313, P362 + P364, P308 + P313
Immediate Symptoms	<i>dry skin, redness, irritation</i>
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 exposed or concerned: Get medical advice or attention.
IF INHALED	P304 + P340, P312, P308 + P313
Immediate Symptoms	<i>drowsiness, dizziness, headache, nausea, cough, blurry vision, fatigue</i>
Response	Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell. IF exposed or concerned: Get medical advice or attention.
IF IN EYES	P305 + P351 + P338, P308 + P313
Immediate Symptoms	<i>redness, pain</i>
Response	Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical advice or attention.

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(AEROSOL)**Section 5: Fire-Fighting Measures**

Extinguishing Media	In case of fire: Use dry chemical, carbon dioxide, chemical foam. Use water spray to cool containers.
Specific Hazards	Aerosol containers may erupt with force at temperatures above 50 °C [122 °F]. 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. Produces irritating and toxic fumes in fires or in contact with hot surfaces. The liquid may float on water and ignite. 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, or 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.

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 or spray. Use only outdoors or in a well-ventilated area.

Do not pierce or burn, even after use. Do not spray on an open flame or other ignition source.

Handling

Wear protective gloves, protective clothing, and eye protection.

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	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
methyl-2-pentane hexane isomers (except <i>n</i> -Hexane)	ACGIH	500 ppm	1 000 ppm
	U.S.A. OSHA PEL	(500 ppm) ^{a)}	(1 000 ppm) ^{a)}
	Canada AB	500 ppm	1 000 ppm
	Canada BC	200 ppm	Not established
	Canada ON	500 ppm	1 000 ppm
1,1,1,2-tetrafluoroethane	Canada QC	500 ppm	1 000 ppm
	<i>MG Chemicals</i> ^{b)}	1 000 ppm	Not established
	ACGIH	Not established	Not established
	U.S.A. OSHA PEL	Not established	Not established
	Canada	Not established	Not established

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Chemical Name	Country	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
methyl-3-pentane hexane isomers (except n-Hexane)	ACGIH	500 ppm	1 000 ppm
	U.S.A. OSHA PEL	(500 ppm) ^{a)}	(1 000 ppm) ^{a)}
	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
dimethyl-2,3-butane hexane isomers (except n-Hexane)	ACGIH	500 ppm	1 000 ppm
	U.S.A. OSHA PEL	(500 ppm) ^{a)}	(1 000 ppm) ^{a)}
	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
dimethyl-2,2-butane hexane isomers (except n-Hexane)	ACGIH	500 ppm	1 000 ppm
	U.S.A. OSHA PEL	(500 ppm) ^{a)}	(1 000 ppm) ^{a)}
	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
pentane	ACGIH	600 ppm	Not established
	U.S.A. OSHA PEL	1000 ppm	Not established
	Canada AB	600 ppm	Not established
	Canada BC	600 ppm	Not established
	Canada ON	600 ppm	Not established
	Canada QC	120 ppm	Not established
n-hexane	ACGIH	50 ppm	Not established
	U.S.A. OSHA PEL	50 ppm	Not established
	Canada AB	50 ppm	Not established
	Canada BC	50 ppm	Not established
	Canada ON	50 ppm	Not established
	Canada QC	50 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 the 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) Value vacated (retracted) under court order, but still in effect in some states.

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

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404B**(AEROSOL)****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, or 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

Physical State	Liquid, in aerosol format	Lower Flammability Limit	1%
Appearance	Clear	Upper Flammability Limit	7%
Odor	Mild hydrocarbon	Vapor Pressure @20 °C	33 kPa [250 mmHg]
Odor Threshold	Not available	Vapor Density	2.98 (Air =1)
pH	Not applicable	Relative Density @25 °C	0.66
Freezing/Melting Point	Not available	Solubility in Water	Immiscible
Initial Boiling Point	-26 °C [-14.8 °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	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	Avoid open flames, ignition sources, temperatures above 50 °C [122 °F], and incompatible substances.
Incompatibilities	Strong oxidizing agents, alkaline and alkaline-earth metals, powdered aluminium, 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
Summary of Effects and Symptoms by Routes of Exposure

Eyes	May cause redness.
Skin	Causes dry skin, redness, and irritation.
Inhalation	May cause dizziness, drowsiness, headaches, nausea, cough, blurry vision, and fatigue.
Ingestion	May cause nausea, vomiting, and abdominal pain. See inhalation symptoms.
Chronic	Prolonged or repeated exposure may cause skin dryness and a dermatite.

Acute Toxicity (Lethal Exposure Concentrations)

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation
methyl-2-pentane	Not available	Not available	3 125 ppm 4 h Rat ^{a)}
1,1,1,2-tetrafluoroethane	Not available	Not available	1 500 g/m ³ 4 h 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	<20 000 ppm 4 h Rat (vapor)
n-hexane	15 840 mg/kg Rat	2 000 mg/kg Rabbit	48 000 ppm 4 h Rat
Mixture ATE	>5 000 mg/kg	>5 000 mg/kg	33 ppm

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

a) Supplier SDS

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Date: 08 mars 2023 / Ver. 3.05

404B**(AEROSOL)****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)	Not 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)	The n-hexane component causes harm to fertility according to animal studies.
Teratogenicity (risk of fetus malformation)	The n-hexane component causes harm to fetus according to some animal studies.
STOT-single exposure	Hexane isomers can affect the central nervous system by inhalation causing drowsiness or dizziness.
STOT-repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Mixture is a class 1 aspiration hazard. It contains over 10% class 1 aspiration hazard components and has a mixture viscosity of <math><20.5 \text{ mm}^2/\text{s}</math> at 40 °C.

404B**(AEROSOL)****Section 12: Ecological Information**

Ecological classifications are based on the IMDG/GHS criteria in conjunction with ecotoxicological data from our suppliers, the European Chemical Agency database (<http://echa.europa.eu>), and other reliable sources.

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

See chronic ecotoxicity.

Chronic Ecotoxicity

Category 2

Toxic to aquatic life with long lasting effects

Avoid release to the environment. Collect spillage.

Biodegradability

Not available

Other Effects

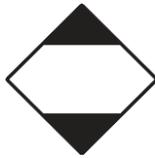
Actual VOC (Volatile Organic Compounds) content according to the US (EPA) and Canadian (CEPA) authorities.

Actual VOC = 73% [556 g/L]

Section 13: Disposal Information

Dispose of contents and recipient in accordance with all local, regional, national, and international regulations.

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(AEROSOL)**Section 14: Transport Information****Ground****Refer to TDG (Canadian Transportation of Dangerous Goods regulations) and USA DOT 49 CFR (Parts 100 to 185) Regulations.****Limited Quantity****Air****Refer to ICAO-IATA Dangerous Goods Regulations.****Limited Quantity****UN number:** UN1950
Shipping Name:
AEROSOLS, flammable
Class: 2.1
Packing Group: Not applicable
Marine Pollutant: Yes**Sea****Refer to IMDG regulations.****Limited Quantity****UN number:** UN1950
Shipping Name:
AEROSOLS, flammable
Class: 2.1
Packing Group: Not applicable
Marine Pollutant: Yes**Note: Shipper must be appropriately trained and certified before involvement with the transport of dangerous goods.**

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

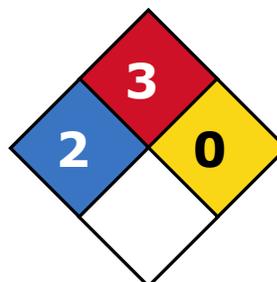
All hazardous ingredients are listed on the DSL.

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.

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 contains n-hexane, which is listed as hazardous air pollutants.

EPCRA (Emergency Planning and Right to Know Act, USA, 40 CFR 372.45)

This product contains n-hexane (CAS# 110-54-3; reportable quantity = 5 000 lb), which is 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.

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

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	08 March 2023
Supersedes	03 March 2020
Reason for Changes:	Update to classification information, section 2.

Reference

1) ACGIH 2022 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 (2022).

404B**(AEROSOL)****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

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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