SUPER COLD 134 **403A**

Safety Data Sheet

Section 1: Product and Company Identification

Product Identifier and Other Means of Identification

Product Name: Super Cold 134 **MSDS Code:** 403A-Aerosol

Related Part #: 403A-285G, 403A-400G

Recommended Use and Restriction on Use

Use: For cooling electronic components and locating thermal intermittents

Uses Advised Against: Not available

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

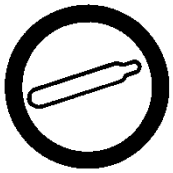
Emergency Phone Number

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

Section 2: Hazards Identification

WHMIS Classification



A – Aerosol Container

GHS Categories

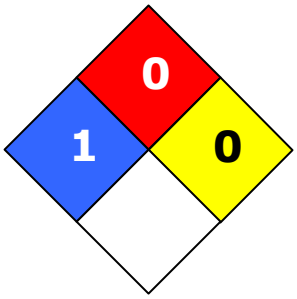
Criteria		Category	Signal Word	Pictograms
Gas under pressure	Liquefied gas	3	Warning	

Other Classifications

HMIS® RATING

HEALTH:	**1**
FLAMMABILITY:	**0**
PHYSICAL HAZARD:	**0**
PERSONAL PROTECTION:	

NFPA® 704 CODES



Approximate HMIS and NFPA Risk Ratings Legend:
0 (Low or none); 1 (Slight); 2 (Moderate); 3 (Serious); 4 (Severe)

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Label Elements

Signal Word	**WARNING**
Pictograms	**Hazard Statements**
	H280: Contains gas under pressure; may explode if heated
	Precautionary Statements
Prevention	P251: Do not pierce or burn, even after use.
Storage	P410 + P412: Protect from sunlight. Do not expose to temperatures exceeding 50 °C [122 °F].

Hazards Not Otherwise Classified

HCS2012 Criteria	Hazard Statements/Precautionary Statement	Signal Word
Simple Asphyxiant	May displace oxygen and cause rapid suffocation.	Warning

The ejected liquid or jet may cause frostbite in contact with skin or eyes.

Inhalation overexposure through intentional abuse or use in confined space may cause cardiac or central nervous systems effects.

Section 3: Hazardous Ingredients

CAS #	Chemical Name	Wt%
811-97-2	1,1,1,2-tetrafluoroethane	>99%

Note: Commonly referred to as HFC 134a

Section 4: First Aid Measures

Exposure Condition	*GHS Code: Precautionary Statement*
IF IN EYES	P305, P351+ P338, P337+P313, P336+P315
Immediate Symptoms	*frostbite, cold burns, irritation, tearing, redness*
Response	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention if irritation persists.
If frostbite occurs	Thaw frosted parts with lukewarm water. Do not use hot water. Do not rub affected area. Get immediate medical attention.
IF ON SKIN	P302, P352, P332+P313, P336+P315
Immediate Symptoms	*frostbite, cold burns, irritation*
Response	Wash with plenty of water. Get medical advice/attention if skin irritation occurs.
If frostbite occurs	Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical attention.
IF INHALED	P304, P340, P310
Immediate Symptoms	*dizziness, drowsiness, heart thumping, lightheadedness*
Response	Remove person to fresh air (out of the contaminated zone) and keep comfortable for breathing.
If feeling unwell	Get medical advice/attention
IF SWALLOWED	P301, P330, P310 (*Not a likely route of exposure under normal use*)
Immediate Symptoms	*frostbite (mouth), irritation*
Response	Rinse mouth with lukewarm water. Do NOT induce vomiting. Get medical advice/attention if feeling unwell.

Medical Advice

Avoid giving catecholoamine drugs (such as epinephrine) due to possible cardiac disturbance. Treat symptomatically.

Section 5: Fire Fighting Measures

Autoignition Temperature	>750 °C [797 °F]	**Flash Point**	Not applicable	**LFL [LEL]**[a)] **UFL [UEL]**	Not applicable

In case of fire	P370 +P378
Response	Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish. Use water spray to cool containers.
Combustion Products	Produces 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) LF[E]L = Lower Flammability [or Explosion] Limit (in volume %);
UF[E]L = Upper Flammability [or Explosion] Limit (in volume %)

Section 6: Accidental Release Measures

Personal Protection	See Section 8. Avoid breathing the mist/vapors. For very large spills, wear self-contained breathing apparatus before approaching the spill. Wear cold-insulating clothing and gloves.
Containment	For aerosol can size spill, leave the immediate spill area to avoid contact with the liquid. No containment required under normal circumstances. If it can safely be done, extinguish open flames or remove high temperature sources to avoid producing toxic decomposition products.
Cleaning	Ensure adequate ventilation, especially in low or enclosed areas. The product will turn gaseous and be dispersed.
Disposal	Not applicable

Section 7: Handling and Storage

Prevention Do not get in eye, on skin, or on clothing.

Do not breathe mist/vapors/spray. In cases of inadequate ventilation wear respiratory protection.

Do not pierce or burn, even after use.

Handling Wear cold-insulating gloves if exposure to liquid or aerosol jet is likely. Wear protective gloves/eye protection.

Storage Protect from sunlight. Do not expose to temperatures exceeding 50 °C [122 °F].

RECOMMENDATION: Keep in well ventilated room.

Section 8: Exposure Controls/Personal Protection

Routes of Entry

Inhalation, skin, eyes

Substances with Occupational Exposure Limit Values

Chemical Name	Country or Vendor	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
1,1,1,2-tetrafluoroethane	*MG Chemicals* [a)]	1,000 ppm	
	ACGIH	Not established	Not established
	U.S.A. OSHA PEL	Not established	Not established
	Canada	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 by RTECS database[2] of the Canadian Centre for Occupational Health and Safety (CCOHS) a 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

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Engineering Controls

Ventilation

Normal ventilation is generally adequate, except in enclosed or low lying area.

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: If exposure to jet or liquid is likely, use cold-insulating gloves to protect against skin.

Respiratory Protection

In high exposure scenarios, use a full-face respirator with multipurpose combination of (US) or type AXBEK (EN 13387) to supplement engineering control. For extreme exposures, use full-face, self-contained breathing apparatus or supplied by air.

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.

General Hygiene Considerations

Wash hands thoroughly with water and soap after handling.

Section 9: Physical and Chemical Properties

Physical State	Liquefied gas	**Appearance**	Colorless
Odor	Slight, ether-like	**Odor Threshold**	Not available
pH	Not available	**Specific Gravity**	1.22
Solubility in Water @ 25 °C	0.15% (wt)	**Melting/Freezing Point**	-101 °C [-105 °F]
Boiling Point	-26.2°C [-15.2 °F]	**Evaporation Rate**	≥1 (Ether = 1)
Flash Point	Not applicable	**Vapor Pressure @ 25 °C**	630 kPa [4 725 mmHg]
Lower Flammability Limit	Not applicable	**Upper Flammability Limit**	Not applicable
Auto-ignition Temperature	750 °C [1 382 °F]	**Decomposition Temperature**	Not available
Viscosity	Not applicable	**Vapor Density**	3.5 (Air =1)
Partition Coefficient	1.06 [a)]		

Note: Literature values are used.
a) Octanol-water LogP value

Section 10: Stability and Reactivity

Stabilities	Chemically stable at normal temperatures and pressures
Conditions to Avoid	Ignition sources, excessive heat, 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

Routes of Exposure

Eyes, inhalation, and skin

Symptoms Summary

Eyes	See skin summary.
Skin	Contact with the liquid may cause frostbite due to heat lost caused by rapid evaporation. Aerosol jet can reach -55 °C; exposure to jet can lead to frostbites.
Inhalation	Extreme exposure may cause central nervous system depression and irregular heart beat.
Ingestion	See inhalation and skin summaries.
Chronic	None known.

Acute Toxicity (Lethal Exposure Concentrations)

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation	TCLo inhalation
1,1,1,2-tetrafluoroethane	Not available	Not available	1,500 g/m^3 4 h Rat	Not available

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.

Other Toxicological Effects

Skin corrosion/irritation	May cause skin irritation.
Serious eye damage/irritation	May cause eye irritation.
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 mutagenic effects observed in four tests.
Reproductive Toxicity (risk to sex functions)	No data available

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Teratogenicity (risk of fetus malformation)	No observed effect level (NOEL) for rabbit and rat is 40 000 ppm.
STOT-single exposure	Can affect the central nervous system and cardiovascular systems by inhalation at extreme doses that do not give rise to classification
STOT-repeated exposure	Chronic no observed effect level 10 000 ppm.
Aspiration hazard	Not applicable

Section 12: Ecological Information

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.

The 1,1,1,2-tetrafluoroethane substance is not classifiable as an environmental toxicant.

Acute Ecotoxicity

Available toxicity data does not meet classification thresholds

Chronic Ecotoxicity

Not data available

Biodegradability

Not data available

Global Warming Potential

The 100 years global warming potential is 1430.

Other Effects

VOC exempt (0% by EPA and WHIMS guidelines)

**VOC = Regulated Volatile Organic Content*

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

Limited Quantity 	Canada and USA **UN number**: Not applicable **Shipping Name:** Not applicable **Class:** Not applicable **Packing Group**: Not applicable **Marine Pollutant:** No

CANADA—Permit for Equivalent Level of Safety: Refer to TC-SU4836.
http://wwwapps.tc.gc.ca/wwwdocs/TDGCertificates/doc/4836-eng.doc

USA—Special Provision: Refer to DOT-SP 10232. A copy of this special permit is required.
http://www.sextoncan.com/pdf/certification/10232-2010040083-MMS.pdf

Air

Refer to ICAO-IATA Dangerous Goods Regulations.

Limited Quantity 	USA **UN number**: UN3159 **Shipping Name:** 1,1,1,2-Tetrafluoroethane **Class:** 2.2 **Packing Group**: Not applicable **Marine Pollutant:** No

USA—Special Provision: Refer to DOT-SP 10232. A copy of this special permit is required.
http://www.sextoncan.com/pdf/certification/10232-2010040083-MMS.pdf

Limited Quantity 	Canada and Global (Excluding USA) **UN number**: UN1950 **Shipping Name:** AEROSOL, non-flammable **Class:** 2.2 **Packing Group**: Not applicable **Marine Pollutant:** No

CANADA—Permit for Equivalent Level of Safety: Refer to TC-SU4836.
http://wwwapps.tc.gc.ca/wwwdocs/TDGCertificates/doc/4836-eng.doc

Note: Avoid shipping by air if possible.

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Sea

Refer to ICAO-IATA Dangerous Goods Regulations.

Limited Quantity 	USA **UN number**: UN3159 **Shipping Name:** 1,1,1,2-Tetrafluoroethane **Class:** 2.2 **Packing Group**: Not applicable **Marine Pollutant:** No

USA—Special Provision: Refer to DOT-SP 10232. A copy of this special permit is required.
http://www.sextoncan.com/pdf/certification/10232-2010040083-MMS.pdf

Limited Quantity 	Canada and Global (Excluding USA) **UN number**: UN1950 **Shipping Name:** AEROSOL, non-flammable **Class:** 2.2 **Packing Group**: Not applicable **Marine Pollutant:** No

CANADA—Permit for Equivalent Level of Safety: Refer to TC-SU4836.
http://wwwapps.tc.gc.ca/wwwdocs/TDGCertificates/doc/4836-eng.doc

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/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.

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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 contains does not contain substances 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, Sept 2, 2011 revision, USA).

This product does not contain any of the listed substances.

Europe

This product is not classified under the DPD regulations.

Section 16: Other Information

MSDS Prepared by Michel Hachey

Date of Issue 05 November 2013

Supersedes 17 April 2013

Reason for Changes: Change to HCS2012 GHS format

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®)

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Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists (USA)
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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