Material Safety Data Sheet

Chlorotrifluoromethane (Halocarbon R-13)

Section 1. Chemical product and company identification

Product Name : Chlorotrifluoromethane (Halocarbon R-13)

Supplier : AIRGAS INC., on behalf of its subsidiaries
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

Product use : Synthetic/Analytical chemistry. Refrigerant.

MSDS# : 001083

Date of Preparation/Revision : **10/6/2005.**

In case of emergency : 1-866-734-3438

Section 2. Composition, Information on Ingredients

Name	CAS number	% Volume
Chlorotrifluoromethane (Halocarbon R-13)	75-72-9	100

Exposure limits

BMWA_MAK (Austria, 4/2004).
Spitzenbegrenzung: 8660 mg/m^3 3 times per shift, 60 minute(s). Form: All forms
Spitzenbegrenzung: 2000 ppm 3 times per shift, 60 minute(s). Form: All forms
TWA: 4330 mg/m^3 8 hour(s). Form: All forms
TWA: 1000 ppm 8 hour(s). Form: All forms

SUVA (Switzerland, 11/2004). Notes: definitive Festlegung
MAK: 4330 mg/m^3 8 hour(s). Form: All forms
MAK: 1000 ppm 8 hour(s). Form: All forms

178/2001 (Czech Republic, 12/2002).
STEL: 6000 mg/m^3 10 minute(s). Form: All forms
STEL: 1640.4 ppm 10 minute(s). Form: All forms
TWA: 4000 mg/m^3 8 hour(s). Form: All forms
TWA: 1093.6 ppm 8 hour(s). Form: All forms

MAK-Werte Liste (Germany, 7/2004).
Spitzenbegrenzung: 34400 mg/m^3 15 minute(s). Form: All forms
Spitzenbegrenzung: 8000 ppm 15 minute(s). Form: All forms
TWA: 4300 mg/m^3 8 hour(s). Form: All forms
TWA: 1000 ppm 8 hour(s). Form: All forms

TRGS900 MAK (Germany, 8/2004).
Spitzenbegrenzung: 17200 mg/m^3 15 minute(s). Form: All forms
Spitzenbegrenzung: 4000 ppm 15 minute(s). Form: All forms
TWA: 4300 mg/m^3 8 hour(s). Form: All forms
TWA: 1000 ppm 8 hour(s). Form: All forms

Arbejdstilsynet (Denmark, 10/2002).
GV: 4270 mg/m^3 8 hour(s). Form: All forms
GV: 1000 ppm 8 hour(s). Form: All forms

INSHT (Spain, 1/2005).
VLA-ED: 4300 mg/m^3 8 hour(s). Form: All forms
VLA-ED: 1000 ppm 8 hour(s). Form: All forms

Nationale MAC-lijst (Netherlands, 3/2005). Notes: Legal

TGG: 8700 mg/m^3 8 hour(s). Form: All forms
TGG: 2000 ppm 8 hour(s). Form: All forms
Uradni list Republike Slovenije (Slovenia, 5/2000).
PEAK: 17320 mg/m^3 4 times per shift, 15 minute(s). Form: All forms
PEAK: 4000 ppm 4 times per shift, 15 minute(s). Form: All forms
TWA: 4330 mg/m^3 8 hour(s). Form: All forms
TWA: 1000 ppm 8 hour(s). Form: All forms

Section 3. Hazards identification

Physical state : Gas.

Emergency overview : Warning!
CONTENTS UNDER PRESSURE.
Do not puncture or incinerate container.
Contact with rapidly expanding gases can cause frostbite.

Routes of entry : Inhalation

Potential acute health effects

Eyes : No known significant effects or critical hazards.

Skin : No known significant effects or critical hazards.

Inhalation : Acts as a simple asphyxiant.

Ingestion : Ingestion is not a normal route of exposure for gases

Potential chronic health effects : **CARCINOGENIC EFFECTS** Not available.
MUTAGENIC EFFECTS Not available.
TERATOGENIC EFFECTS: Not available.

Medical conditions aggravated by overexposure : Acute or chronic respiratory conditions may be aggravated by overexposure to this gas.

See toxicological Information (section 11)

Section 4. First aid measures

No action shall be taken involving any personal risk or without suitable training.If fumes are still suspected to be present, the rescuer should wear an appropriate mask or a self-contained breathing apparatus.It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin contact : In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Inhalation : If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Ingestion : Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.

Section 5. Fire fighting measures

Flammability of the product : Non-flammable.

Fire fighting media and instructions : Use an extinguishing agent suitable for surrounding fires.

If involved in fire, shut off flow immediately if it can be done without risk. Apply water from a safe distance to cool container and protect surrounding area.

No specific hazard.

Special protective equipment for fire-fighters : Fire fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full facepiece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (Section 8). Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 7. Handling and storage

Handling : Do not puncture or incinerate container. High pressure gas. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Storage : Keep container tightly closed. Keep container in a cool, well-ventilated area. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure Controls, Personal Protection

Engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.

Personal protection

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93

Hands : Chemical-resistant, impervious gloves or gauntlets complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Personal protection in case of a large spill : A self-contained breathing apparatus should be used to avoid inhalation of the product.

Consult local authorities for acceptable exposure limits.

Section 9. Physical and chemical properties

Molecular weight : 104.46 g/mole

Molecular formula : CClF3

Boiling/condensation point : -80°C (-112°F)

Melting/freezing point : -181°C (-293.8°F)

Critical temperature : 28.8°C (83.8°F)

Vapor pressure : 458.7 psig

Vapor density : 3.69 (Air = 1)

Specific Volume (ft^3/lb) : 3.53357

Gas Density (lb/ft^3) : 0.283

Physical chemical comments : Not available.

Section 10. Stability and reactivity

Stability and reactivity : The product is stable.

Hazardous decomposition products : These products are halogenated compounds, hydrogen chloride, hydrogen fluoride.

Section 11. Toxicological information

Ingredient name	Test	Result	Route	Species
Chlorotrifluoromethane (Halocarbon R-13)	Not available.	Not available.	Not available.	Not available.

Other toxic effects on humans : No specific information is available in our database regarding the other toxic effects of this material for humans.

Specific effects

Carcinogenic effects : No known significant effects or critical hazards.

Mutagenic effects : No known significant effects or critical hazards.

Reproduction toxicity : No known significant effects or critical hazards.

Section 12. Ecological information

Ingredient name	Species	Period	Result
Chlorotrifluoromethane (Halocarbon R-13)	Not available.	Not available.	Not available.

Products of degradation : These products are carbon oxides (CO, CO_2), halogenated compounds.

Toxicity of the products of biodegradation : The product itself and its products of degradation are not toxic.

Environmental fate : Not available.

Environmental hazards : No known significant effects or critical hazards.

Toxicity to the environment : Not available.

Section 13. Disposal considerations

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation.Return cylinders with residual product to Airgas, Inc.Do not dispose of locally.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	UN1022	CHLOROTRIFLUOROMETHANE OR REFRIGERANT GAS R 13	2.2	Not applicable (gas).		**Limited quantity** Yes. **Packaging instruction** **Passenger Aircraft** Quantity limitation: 75 kg **Cargo Aircraft** Quantity limitation: 150 kg

Chlorotrifluoromethane (Halocarbon R-13)						
TDG Classification	UN1022	CHLOROTRIFLUOROMETHANE; OR REFRIGERANT GAS R 13	2.2	Not applicable (gas).		**Explosive Limit and Limited Quantity Index** 0.125 **Passenger Carrying Road or Rail Index** 75
Mexico Classification	UN1022	CHLOROTRIFLUOROMETHANE OR REFRIGERANT GAS R 13	2.2	Not applicable (gas).		-

Section 15. Regulatory information

United States

U.S. Federal regulations : TSCA 6 final risk management: chlorotrifluoromethane
TSCA 8(b) inventory: chlorotrifluoromethane

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: chlorotrifluoromethane
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: chlorotrifluoromethane: Sudden Release of Pressure, Immediate (Acute) Health Hazard

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean air act (CAA) 112 accidental release prevention: No products were found.

Clean air act (CAA) 112 regulated flammable substances: No products were found.

Clean air act (CAA) 112 regulated toxic substances: No products were found.

SARA 313

		Product name	CAS number	Concentration
Form R - Reporting requirements	:	Chlorotrifluoromethane (Halocarbon R-13)	75-72-9	100
Supplier notification	:	Chlorotrifluoromethane (Halocarbon R-13)	75-72-9	100

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations : New Jersey: chlorotrifluoromethane

Canada

WHMIS (Canada) : Class A: Compressed gas.

CEPA DSL: chlorotrifluoromethane

Section 16. Other information

United States

Label Requirements : CONTENTS UNDER PRESSURE.

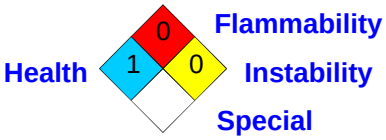
Canada

Label Requirements : Class A: Compressed gas.

Hazardous Material Information System (U.S.A.) :

Health	1
Fire hazard	0
Reactivity	0
Personal protection	C

National Fire Protection Association (U.S.A.) :



Notice to reader

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Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.