

SECTION 1: Identification

1.1. Product identifier

Product form : Substance
Name : Halocarbon 1113
CAS No : 79-38-9
Formula : C2ClF3
Other means of identification : Chlorotrifluoroethylene
Product group : Core Products

1.2. Recommended use and restrictions on use

Recommended uses and restrictions : Industrial use
Use as directed

1.3. Supplier

Praxair Canada inc.
1200 – 1 City Centre Drive
Mississauga - Canada L5B 1M2
T 1-905-803-1600 - F 1-905-803-1682
www.praxair.ca

1.4. Emergency telephone number

Emergency number : 1-800-363-0042
Call emergency number 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product.
For routine information, contact your supplier or Praxair sales representative.

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

GHS-CA classification

Flam. Gas 1 H220
Liquefied gas H280
Acute Tox. 3 (Inhalation:gas) H331

2.2. GHS Label elements, including precautionary statements

GHS-CA labelling

Hazard pictograms :



GHS02

GHS04

GHS06

Signal word : DANGER

Hazard statements : EXTREMELY FLAMMABLE LIQUID AND VAPOUR
CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED
TOXIC IF INHALED

Precautionary statements : 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 gas, vapours
Use and store only outdoors or in a well-ventilated area
Store in a well-ventilated place. Keep container tightly closed
Store locked up
Protect from sunlight. Store in a well-ventilated place



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Dispose of contents/container in accordance with container Supplier/owner instructions
Protect from sunlight when ambient temperature exceeds 52°C (125°F)
Use a back flow preventive device in the piping
Close valve after each use and when empty
Never put cylinders into unventilated areas of passenger vehicles
Do not open valve until connected to equipment prepared for use

2.3. Other hazards

Other hazards not contributing to the classification : Contact with liquid may cause cold burns/frostbite.

2.4. Unknown acute toxicity (GHS-CA)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	CAS No.	% (Vol.)	Common Name (synonyms)
Halocarbon 1113 (Main constituent)	(CAS No) 79-38-9	100	2-Chloro-1,1,2-trifluoroethylene / 1-Chloro-1,2,2-trifluoroethylene / Ethene, chlorotrifluoro- / Ethylene, chlorotrifluoro- / Ethylene, trifluorochloro- / Monochlorotrifluoroethylene / 1,1,2-Trifluoro-2-chloroethylene / Trifluorochloroethylene / Trifluoromonochloroethylene / Trifluorovinyl chloride / Trifluorochloroethylene, stabilized / Chlorotrifluoroethene / Ethene, 1-chloro-1,2,2-trifluoro- / 1,1,2-Trifluorochloroethylene

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

First-aid measures after skin contact : In case of skin contact, wearing rubber gloves rub 2.5% calcium gluconate gel continuously into the affected area for 1.5 hours or until further medical care is available.

First-aid measures after eye contact : Adverse effects not expected from this product.

First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects (acute and delayed)

No additional information available

4.3. Immediate medical attention and special treatment, if necessary

Other medical advice or treatment : Obtain medical assistance.

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media

Suitable extinguishing media : Water spray or fog. Dry powder.

5.2. Unsuitable extinguishing media

Unsuitable extinguishing media : Do not use water jet to extinguish. Carbon dioxide.

5.3. Specific hazards arising from the hazardous product

Reactivity : No reactivity hazard other than the effects described in sub-sections below.

5.4. Special protective equipment and precautions for fire-fighters

Firefighting instructions : **DANGER! Toxic, flammable liquefied gas**

Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with their provincial and local fire code regulations.

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- Special protective equipment for fire fighters : Wear gas tight chemically protective clothing in combination with self contained breathing apparatus. EN 943-2: Protective clothing against liquid and gaseous chemicals, aerosols and solid particles. Gas-tight chemical protective suits for emergency teams. Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
- Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas containers to rupture. Cool endangered containers with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems
- Stop flow of product if safe to do so
- Use water spray or fog to knock down fire fumes if possible
- Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Evacuate area. Ensure adequate air ventilation. Wear self-contained breathing apparatus when entering area unless atmosphere is proven to be safe. Eliminate ignition sources. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Monitor concentration of released product. Consider the risk of potentially explosive atmospheres. Try to stop release.

6.2. Methods and materials for containment and cleaning up

6.3. Reference to other sections

For further information refer to section 8: Exposure controls/personal protection

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : PRECAUTIONS TO BE TAKEN IN HANDLING: Do not get liquid in eyes, on skin, or on clothing. Keep away from heat, flame, and sparks. Never allow any unprotected part of your body to touch uninsulated pipes or vessels containing cryogenic fluids. Flesh will stick to the extremely cold metal and will tear when you try to pull free. For liquid withdrawal, wear face shield and cryogenic gloves (see section 8). Air will condense on exposed liquid or cold-gas surfaces such as vaporizers and piping. Nitrogen, which has a lower boiling point than oxygen, will evaporate first, leaving oxygen-enriched condensation on the surface. To prevent possible ignition of grease, oil, or other combustibles, keep all areas of potential condensation free of these substances. Use only spark-proof tools and explosion-proof equipment.
- Use a suitable hand truck for container movement. Cryogenic containers must be handled and stored in an upright position. Do not drop or tip containers, or roll them on their sides. Hydrogen is the lightest known gas. It may leak out of systems that are air-tight for other gases and may collect in poorly ventilated upper reaches of buildings. All piped hydrogen systems and associated equipment must be grounded. Electrical equipment must be non-sparking or explosion-proof. Leak check system with soapy water; never use a flame. If valve is hard to open, discontinue use and contact your supplier. For other precautions in using hydrogen, see section 16.
- Safe use of the product : The substance must be handled in accordance with good industrial hygiene and safety procedures. Only experienced and properly instructed persons should handle gases under pressure. Consider pressure relief device(s) in gas installations. Ensure the complete gas system was (or is regularly) checked for leaks before use. Do not smoke while handling product. Avoid exposure, obtain special instructions before use. Avoid contact with aluminium. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Installation of a cross purge assembly between the cylinder and the regulator is recommended. Avoid suck back of water, acid and alkalis. Assess the risk of potentially explosive atmospheres and the need for explosion-proof equipment. Purge air from system before introducing gas. Take precautionary measures against static discharge. Keep away from ignition sources (including static discharges). Consider the use of only non-sparking tools.

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7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store and use with adequate ventilation. Store in a cool, dry place away from combustible materials. Keep storage containers closed. Store only where temperature will not exceed 52 °C (125 °F). Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Appropriate engineering controls

Appropriate engineering controls : Consider work permit system e.g. for maintenance activities. Preferably use only permanent leak-tight installations (e.g. welded pipes). Systems under pressure should be regularly checked for leakages. Provide adequate general and local exhaust ventilation. Ensure exposure is below occupational exposure limits (where available). Product to be handled in a closed system. Alarm detectors should be used when toxic gases may be released.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment : Safety glasses. Face shield. Gloves.



Hand protection : Wear working gloves when handling gas containers. Standard EN 388 - Protective gloves against mechanical risk.

Eye protection : Wear goggles and a face shield when transfilling or breaking transfer connections. Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.

Respiratory protection : **Respiratory protection:** Use respirable fume respirator or air supplied respirator when working in confined space or where local exhaust or ventilation does not keep exposure below TLV. Select in accordance with provincial regulations, local bylaws or guidelines. Selection should be based on the current CSA standard Z94.4, "Selection, Care, and Use of Respirators." Respirators should also be approved by NIOSH and MSHA. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).

Environmental exposure controls : Refer to local regulations for restriction of emissions to the atmosphere.

Other information : **Other protection :** Safety shoes for general handling at customer sites. Metatarsal shoes and cuffless trousers for cylinder handling at packaging and filling plants. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines. For working with flammable and oxidizing materials, consider the use of flame resistant anti-static safety clothing.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Gas

Appearance : No data available

Molecular mass : 116.5 g/mol

Colour : Colourless.

Odour : Ethereal.

Odour threshold : Odour threshold is subjective and inadequate to warn of overexposure.

pH : If dissolved in water pH-value will be affected.

pH solution : No data available

Relative evaporation rate (butylacetate=1) : No data available

Relative evaporation rate (ether=1) : Not applicable.

Melting point : -158 °C

Freezing point : 115.15 °K

Boiling point : 244.75 °K

Flash point : No data available



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Critical temperature	: 379.15 °K
Auto-ignition temperature	: 813.15 °K
Decomposition temperature	: No data available
Vapour pressure	: 560 kPa
Vapour pressure at 50 °C	: No data available
Critical pressure	: 4050 kPa
Relative vapour density at 20 °C	: No data available
Relative density	: 1.5
Relative density of saturated gas/air mixture	: No data available
Density	: 4.976 kg/m ³
Relative gas density	: 4
Solubility	: Water: No reliable data available.
Log Pow	: Not known.
Log Kow	: No data available
Viscosity, kinematic	: Not applicable.
Viscosity, dynamic	: Not applicable.
Viscosity, kinematic (calculated value) (40 °C)	: No data available
Explosive properties	: Not applicable.
Oxidizing properties	: None.
Flammability (solid, gas)	: FLAMMABLE GAS

9.2. Other information

Gas group	: Liquefied gas
Additional information	: Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	: No reactivity hazard other than the effects described in sub-sections below.
Chemical stability	: May polymerise. Inhibitor usually added. Stable under normal conditions.
Possibility of hazardous reactions	: May react violently with oxidants. Can form explosive mixture with air.
Conditions to avoid	: May decompose violently at high temperature and/or pressure or in the presence of a catalyst. Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Incompatible materials	: May react violently with alkalis. May react with bases, copper, silver, mercury, magnesium, zinc and their alloys. Reacts with water to form corrosive acids. May react with aluminium. Air, Oxidizer. For additional information on compatibility refer to ISO 11114.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Inhalation:gas: TOXIC IF INHALED.

Halocarbon 1113 (V)79-38-9	
LC50 inhalation rat (ppm)	1000 ppm/4h
ATE CA (gases)	1000.00000000 ppmv/4h

Skin corrosion/irritation	: Not classified pH: If dissolved in water pH-value will be affected.
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Serious eye damage/irritation	: Not classified
	pH: If dissolved in water pH-value will be affected.
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : No data available.

12.2. Persistence and degradability

Halocarbon 1113 (79-38-9)

Persistence and degradability	No data available.
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12.3. Bioaccumulative potential

Halocarbon 1113 (79-38-9)

Log Pow	Not known.
Bioaccumulative potential	No data available.

12.4. Mobility in soil

Halocarbon 1113 (79-38-9)

Log Pow	Not known.
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.

12.5. Other adverse effects

Other adverse effects : May cause pH changes in aqueous ecological systems.
Effect on the ozone layer : None
Effect on global warming : No known effects from this product

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Toxic and corrosive gases formed during combustion should be scrubbed before discharge to atmosphere. Must not be discharged to atmosphere. Refer to supplier's waste gas recovery programme. Ensure that the emission levels from local regulations or operating permits are not exceeded. Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at <http://www.eiga.org> for more guidance on suitable disposal methods.

Additional information : None.

SECTION 14: Transport information

14.1. Basic shipping description

In accordance with TDG

TDG

UN-No. (TDG)	: UN1082
TDG Primary Hazard Classes	: 2.3 - Class 2.3 - Toxic Gas.
TDG Subsidiary Classes	: 2.1
Proper shipping name	: REFRIGERANT GAS R 1113

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ERAP Index : 500
Explosive Limit and Limited Quantity Index : 0
Passenger Carrying Ship Index : Forbidden
Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index : Forbidden

14.3. Air and sea transport

IMDG

UN-No. (IMDG) : 1082
Class (IMDG) : 2 - Gases
MFAG-No : 119P

IATA

UN-No. (IATA) : 1082
Class (IATA) : 2

SECTION 15: Regulatory information

15.1. National regulations

Halocarbon 1113 (79-38-9)

Listed on the Canadian NDSL (Non-Domestic Substances List)

15.2. International regulations

Halocarbon 1113 (79-38-9)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Listed on INSQ (Mexican National Inventory of Chemical Substances)

SECTION 16: Other information

Date of issue : 15/10/1979
Revision date : 23/09/2016
Supersedes : 15/10/2013

Indication of changes:

Training advice : Users of breathing apparatus must be trained. Ensure operators understand the toxicity hazard.
Ensure operators understand the flammability hazard.

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Other information

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NFPA health hazard

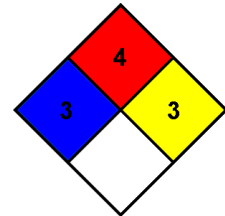
: 3 - Short exposure could cause serious temporary or residual injury even though prompt medical attention was given.

NFPA fire hazard

: 4 - Will rapidly or completely vaporize at normal pressure and temperature, or is readily dispersed in air and will burn readily.

NFPA reactivity

: 3 - Capable of detonation or explosive reaction, but requires a strong initiating source or must be heated under confinement before initiation, or reacts explosively with water.



HMIS III Rating

Health

: 1 Slight Hazard - Irritation or minor reversible injury possible

Flammability

: 4 Severe Hazard - Flammable gases, or very volatile flammable liquids with flash points below 73 F, and boiling points below 100 F. Materials may ignite spontaneously with air. (Class IA)

Physical

: 2 Moderate Hazard - Materials that are unstable and may undergo violent chemical changes at normal temperature and pressure with low risk for explosion. Materials may react violently with water or form peroxides upon exposure to air.

SDS Canada (GHS) - Praxair

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