

## Chemical Safety Data Sheet

### 1. IDENTIFICATION

**Product Name:** Trifluoromethane (R23)

**Other Name:** Halocarbon 23

**Chemical formula:** CHF<sub>3</sub>

**Recommended use of the chemical and restrictions on use:** General Industrial

**Supplier's details:**

LINGGAS(TIANJIN),LIMITED

Hexiwu Town, Wuqing District, Tianjin 301714, P.R. China

Tel: 022-29437740; Fax: 022-29437745; Email: info@linggas.com

**Emergency phone number:** 022-29437747; 0532-3889090; 0532-3889191;

### 2. HAZARDS IDENTIFICATION

**Emergency Overview:**

Can cause rapid suffocation.

Compressed liquefied gas.

Avoid breathing gas.

Direct contact with liquid can cause frostbite.

Self contained breathing apparatus (SCBA) may be required

**GHS Label elements, including precautionary statements:**



**Potential Health Effects**

Inhalation: Inhalation of high concentrations may also cause mild central nervous system depression and heartbeat irregularities. In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Asphyxiation may bring about unconsciousness without warning and so rapidly that victim may be unable to protect themselves.

Eye contact: Contact with liquid may cause cold burns/frost bite.

Skin contact: Contact with liquid may cause cold burns/frost bite.

Ingestion: ingestion is not considered a potential route of exposure.

Chronic Health Hazard: Not applicable.

Aggravated Medical Condition: Persons with preexisting cardiac or central nervous system disorders may have increased susceptibility to the effects of overexposure.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**component:**

Components	CAS No.	Concentration(Volume)
Trifluoromethane	75-46-7	100%

### 4. FIRST AID MEASURES

**General advice:**

Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

**Eye contact:**

In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Keep eye wide open while rinsing. Seek medical advice.

**Skin contact:**

Wash frost-bitten areas with plenty of water. Do not remove clothing. Cover wound with sterile dressing.

**Ingestion:**

Ingestion is not considered a potential route of exposure.

**Inhalation:**

Move to fresh air. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately. In case of shortness of breath, give oxygen.

### 5. FIRE-FIGHTING MEASURES

**Suitable extinguishing media:**

All known extinguishing media can be used.

**Specific hazards:**

Exposure to high temperatures may yield toxic by-products which may be corrosive in the presence of moisture. Upon exposure to intense heat or flame, cylinder will vent rapidly and or rupture violently. Product is nonflammable and does not support combustion. Move away from container and cool with water from a protected position. If possible, stop flow of product. Keep adjacent cylinders cool by spraying with large amounts of water until the fire burns itself out.

**Special protective equipment for fire-fighters:**

Wear self contained breathing apparatus for fire fighting if necessary.

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions:**

Evacuate personnel to safe areas. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ventilate the area. Monitor oxygen level.

**Environmental precautions:**

Should not be released into the environment. Do not discharge into any place where its accumulation could be dangerous. Prevent further leakage or spillage. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

**Methods for cleaning up:**

Ventilate the area.

**Additional advice:**

If possible, stop flow of product. Increase ventilation to the release area and monitor concentrations. If leak is from cylinder or cylinder valve, call the Linggas emergency telephone number. If the leak is in the user's system, close the cylinder valve, safely vent the pressure, and purge with an inert gas before attempting repairs.

**7. HANDLING AND STORAGE****Handling:**

Only experienced and properly instructed persons should handle compressed gases. Protect cylinders from physical damage; do not drag, roll, slide or drop. Do not allow storage area temperature to exceed 50°C (122°F). Before using the product, determine its identity by reading the label. Know and understand the properties and hazards of the product before use. When doubt exists as to the correct handling procedure for a particular gas, contact the supplier. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. Use an adjustable strap wrench to remove over-tight or rusted caps. Before connecting the container, check the complete gas system for suitability, particularly for pressure rating and materials. Before connecting the container for use, ensure that back feed from the system into the container is prevented. Ensure the complete gas system is compatible for pressure rating and materials of construction. Ensure the complete gas system has been checked for leaks before use. Employ suitable pressure regulating devices on all containers when the gas is being emitted to systems with lower pressure rating than that of the container.

**Storage:**

Full containers should be stored so that oldest stock is used first. Containers should be stored in the vertical position and properly secured to prevent toppling. The container valves should be tightly closed and where appropriate valve outlets should be capped or plugged.

Container valve guards or caps should be in place. Observe all regulations and local requirements regarding storage of containers. Stored containers should be periodically checked for general condition and leakage. Protect containers stored in the open against rusting and extremes of weather. Containers should not be stored in conditions likely to encourage corrosion. Containers should be stored in a purpose build compound which should be well ventilated, preferably in the open air. Keep containers tightly closed in a cool, well-ventilated place. Store containers in location free from fire risk and away from sources of heat and ignition. Full and empty cylinders should be segregated. Do not allow storage temperature to exceed 40°C. Return empty containers in a timely manner.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Engineering measures:

Provide natural or mechanical ventilation to prevent oxygen deficient atmospheres below 19.5% oxygen.

### Personal protective equipment:

**Respiratory protection:** Self contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmosphere. Air purifying respirators will not provide protection. Users of breathing apparatus must be trained.

**Hand protection:** Sturdy work gloves are recommended for handling cylinders. The breakthrough time of the selected glove(s) must be greater than the intended use period.

**Eye protection:** Safety glasses recommended when handling cylinders.

**Skin and body protection:** Safety shoes are recommended when handling cylinders.

**Special instructions for protection and hygiene:** Ensure adequate ventilation, especially in confined areas.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Liquefied gas.
Color:	Colorless gas
Odor:	Ether-like. Poor warning properties at low concentrations.
Molecular Weight:	70.01g/mol
Relative vapor density:	2.417 (air = 1)
Relative density:	1.4 (water = 1)
Vapor pressure:	603.34psia (41.60 bar) at 20 °C
Density:	0.0029 g/cm <sup>3</sup> at 70 °F (21 °C) Note: (as vapor)
Specific Volume:	0.3421 m <sup>3</sup> /kg) at 70 °F (21 °C)
Boiling point/range:	-82.2 °C
Critical temperature:	25.9 °C

Melting point/range: -155.2 °C

Water solubility: 1.08 g/l

## 10. STABILITY AND REACTIVITY

**Stability:** Stable under normal conditions.

**Conditions to avoid:** Alkali and alkaline earth metals - powdered aluminum, zinc, etc.

**Hazardous reactions:** Thermal decomposition yields toxic products that can be corrosive in the presence of moisture.

## 11. TOXICOLOGICAL INFORMATION

### Acute Health Hazard:

**Ingestion:** No data is available on the product itself.

**Inhalation:** No data is available on the product itself.

**Skin:** No data is available on the product itself.

**Chronic Health Hazard:** This material has been evaluated in a battery of tests and has not caused mutations or chromosomal damage. Animals exhibited anesthetic effects and weight loss from acute high level exposure to Trifluoromethane. Dogs that were exposed to 80% Trifluoromethane for five to ten minutes and then challenged with epinephrine did not exhibit cardiac sensitization. Baboons that were exposed to 70% Trifluoromethane before or after epinephrine challenge did not exhibit cardiac sensitization; they did exhibit a dose-related decrease in heart and respiratory rates during exposure. Cats exposed to 70% Trifluoromethane exhibited cardiac sensitization and moderate changes in cerebral electrical activity. Rats that were exposed six hours per day, for ninety days to 1% Trifluoromethane exhibited no toxic effects. The maternal and developmental "No Observed Adverse Effect Level" (NOAEL) is 50% Trifluoromethane. No developmental or reproductive effects were observed.

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity effects

**Aquatic toxicity:** No data is available on the product itself.

**Toxicity to other organisms:** No data available.

### Persistence and degradability

**Mobility:** No data available.

**Bioaccumulation:** No data is available on the product itself.

### Further information:

This product has no known eco-toxicological effects. Not covered by the 'Montreal Protocol'.

## 13. DISPOSAL CONSIDERATIONS

**Waste from residues / unused products:**

In accordance with local and national regulations. Contact supplier if guidance is required.

**Contaminated packaging:** Return cylinder to supplier.

**14. TRANSPORT INFORMATION**

**UN No:** 1984

**Proper shipping name:** Halocarbon 23

**Class:** 2.2

**Risk label:** non-flammable gas



**Packing:** gas cylinder

**Further Information:** Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.

**15. REGULATORY INFORMATION**

The following laws, regulations and standards have made the clear legal provisions to the safe use, storage, transportation, loading and unloading, classification and marking of chemicals.

Production safety law of the People's Republic of China;

Occupational Disease Prevention and Treatment of the People's Republic of China;

Environmental Protection Law of the People's Republic of China;

Hazardous Chemicals Control Ordinance;

The list of dangerous chemicals;

The general principles of the classification of dangerous chemicals and the risk of the public (GB 13690-2009)

**16. OTHER INFORMATION**

**Reference:**

UN RTDG

Globally Harmonized System of Classification and Labeling of Chemicals

ICSC

**Apply date:** 2013-2-25

**Revision Date:** 2015-12-20

**Edit department:** Safety and Environmental Protection Department



**Data audit unit:** LINGGAS TIANJIN LIMITED.

**Edit Description:** Modify when policies change or every 3 years.