

# GLOBAL REFRIGERANTS (S) PTE LTD



R23

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## Material Safety Data Sheet

Date: 28 Sep 2018

### SECTION I – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION<sup>N</sup>

Product Name in English: Refrigerants Gas R23  
Synonyms: Fluoroform, Freon 23, R-23, Trifluoromethane (Halocarbon R-23)  
Formula:  $CF_3H$   
Supplier: Global Refrigerants (S) Pte Ltd  
Address: No.9 TUAS LINK 1, SINGAPORE 638587  
Website: [www.globalrefrigerants.com.sg](http://www.globalrefrigerants.com.sg)  
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Telephone: +6568633983  
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### SECTION II- COMPOSITION/ INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS NUMBER	Concentration %
Trifluoromethane(R23)	75-46-7	>99.9

### SECTION III – HAZARDS IDENTIFICATION

**Hazardous Classification:** Class 2.2 Compressed Gas and Non-combustible Gas

**Emergency Overview:** This product does not contain oxygen and may cause asphyxia if released in a confined area. Do not puncture or incinerate container. Contact with rapidly expanding gases can cause frostbite.

**Potential Health Hazards:**

**Skin:** Skin contact may cause frostbite from exposure to the liquid.

**Eyes:** Irritant. Liquid contact will irritate and may cause conjunctivitis.

**Inhalation:** Inhalation may include nonspecific discomfort, such as nausea, headache, or weakness; or temporary nervous system depression with anesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness.

**Combustion/explosion Hazards:** No known effect.

**Medical Conditions Aggravated by overexposure:** Pre-existing heart condition.

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### SECTION IV – FIRST AID MEASURES

**Eyes:** Immediately flush eyes with large amounts of water for at least 15 minutes (in case of frostbite, water should not hot) lifting eyelids occasionally to facilitate irrigation. Get medical attention if symptoms persist.

**Skin:** Promptly flush skin with water until all chemical is removed. If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water. If water is not available, cover with a clean, soft cloth or similar covering. Get medical attention if symptoms persist.

**Inhalation:** Immediately remove patient to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. Get medical attention immediately. DO NOT give epinephrine(adrenaline).

**Advice to Physician or First-Aiders:** A patient adversely affected by exposure to this product should not be given adrenalin (epinephrine) or similar heart stimulant since these would increase the risk of cardiac arrhythmias.

### SECTION V – FIRE FIGHTING MEASURES

**Flammability of the Product:** Non-flammable.

**Hazardous Combustion Products:** None. Decomposes to toxic gases at fire temperatures.

**Fire and Explosion Hazards:** If involved in a fire, product may decompose yielding toxic products, which may include hydrofluoric acid.

**Fire Fighting Media and Instructions:** 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.

**Special Protective Equipment for Fire-Fighters:** Fire fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face piece operated in positive pressure mode.

### SECTION VI – ACCIDENTAL RELEASE MEASURES

**Personal Precautions:** Immediately contact emergency personnel. Use suitable protective equipment. 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.

**Methods for Cleaning-up:** Evaporates.

**In Case of Spill or Other Release:** (Always wear recommended personal protective equipment.) Evacuate unprotected personnel. Protected personnel should remove ignition sources and shut off leak, if without risk, and provide ventilation. Unprotected personnel should not return until air has been tested and determined safe, including low areas.

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### SECTION VII – HANDLING AND STORAGE

**Handling:** Avoid breathing vapours and liquid contact with eyes, skin or clothing. Do not puncture or drop cylinders, expose them to open flame or excessive heat. Use authorized cylinders. Follow standard safety precautions for handling and use of compressed gas cylinders. R408A should not mixed with air above atmospheric pressure for leak testing or any other purpose.

**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.

### SECTION VIII – EXPOSURE CONTROLS / PERSONAL PROTECTION

**Authorized Limit Values:** Trifluoromethane

USA TVL – TWA = 1,000 ppm

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

**Respiratory Protection:** 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.

**Hand Protection:** Chemical-resistant, impervious gloves or gauntlets 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.

**Eye Protection:** 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 Protection:** 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.

### SECTION IX – PHYSICAL & CHEMICAL PROPERTIES

**Appearance:** Liquefied gas

**Colour:** Colourless

**Odour:** Slight, ether-like

**pH:** Neutral

**Boiling Point:** -82.2°C (1,013 hPa)

**Melting Point:** -163°C

**Flash Point:** does not flash

**Vapour Pressure:** 45,166 hPa (25°C) 41,600 hPa (20°C)

**Vapour Density (air=1):** 2.4

**Solubility:** 1.08g/l Water:(20°C)

**Partition Coefficient (noctanol.water):** log <sub>D<sub>OW</sub></sub>:0.64

**Specific Use(s):** Refrigerant and substitute for Halon fire extinguishant.

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### SECTION X – Stability AND REACTIVITY

**Stability:** The product is stable. Do not mix with oxygen or air above atmospheric pressure. Any source high temperatures, such as lighted cigarettes, flames, hot spots or welding may yield toxic and/or corrosive decomposition products.

**Incompatibility With other Materials:** Avoid contact with strong alkali or alkaline earth metals, finely powdered metals such as aluminium, magnesium or zinc and strong oxidizers since they may react with or accelerate decomposition of this material.

**Hazardous Decomposition Products:** Thermal decomposition products include hydrogen fluoride, hydrogen chloride, carbon monoxide, carbon dioxide and chlorine and possibly carbonyl halides. These materials are toxic and irritating. Contact should be avoided.

**Hazardous Polymerization:** Will not occur.

### SECTION XI - - TOXICOLOGICAL INFORMATION

**Acute Toxicity:** Inhalation, LC50, 4 H, RAT, > 800000 (V/V)ppm

**Subacute Toxicity:** No data available

**Irritant Effects:** No data available

**Sensitization:** No data available

**Mutagenicity:** No data available

**Teratogenicity:** No data available

**Carcinogenicity:** Did not show carcinogenic effects in animal experiments.

**Other:**

**Toxicity to reproduction:** Did not show mutagenic or teratogenic effects in animal experiments.

### SECTION XII – ECOLOGICAL INFORMATION

**General:** The products of degradation are more toxic than the product itself. May have damaging effect on ozone layer. When discharged in large quantities may contribute to the greenhouse effect.

**Ecological Effects Information:** No data is available on the product itself.

**Ozone Depletion Potential:** 0

**Global Warming Potential (GWP):** 0.11

**Products of Degradation:**

These products are carbon oxides (CO, CO<sub>2</sub>) and water, halogenated compounds.

**Toxicity of the products of Biodegradation:**

The products of degradation are more toxic than the product itself.

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### SECTION XIII – DISPOSAL CONSIDERATIONS

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**Nature of the Waste:** Not a RCRA hazardous waste.

**Waste Treatment:** Waste from residues / unused products: Can be used after re-conditioning. Product removed from the cylinder must be disposed of in accordance with appropriate National and local regulation. Return cylinders with residual product to the supplier.

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### SECTION XIV – TRANSPORT INFORMATION

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**Classification Code:** 22032:

**UN-NO.:** 1984.

**Marking :** 5

**Primary label:** Non-combustible Gas

**Packing group:** III.

**Packing Method:** Steel cylinders

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### SECTION XV – REGULATORY INFORMATION

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\*Common dangerous chemical classification and labelling (GB13690-92).

\*Regulations on the Control over Safety of Dangerous Chemicals (State Council Decree 344 [2002])

\*Regulations on the Safety Use of Chemicals in workplaces (Department of Labor, Reg 423 [1996], are enacted to control the safe use, production, storage, transport, operation, trade and disposal of dangerous chemicals.

\*Regulations on the Control over Safety Dangerous Chemicals (State Council Decree 344 [2002])

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