

# SAFETY DATA SHEET

## Refrigerant R23

Version 1.0

Revision Date: 15.08.2013



## SAFETY DATA SHEET REFRIGERANT R23

### SECTION 1: IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

#### 1.1. Product Identifier

**Product name:** REFRIGERANT R23  
**EC Number:** 200-872-4  
**REACH Registration Number:** Registration deadline not expired  
**CAS Number:** 75-46-7

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

**Use:** Industrial and professional. Perform risk assessment prior to use. Use as refrigerant.

**Advised Against:** No specific uses advised again have been identified, other than restrictions in the F-Gas Regulations

#### 1.3. Details of the supplier of the safety data sheet

**Company name:** National Refrigerants Ltd.  
4 Watling Close  
Sketchley Meadows Business Park  
Hinckley LE10 3EZ  
Tel: +44(0)1455 630790  
Fax: +44(0) 1455 630791  
Email: [sds@nationalref.com](mailto:sds@nationalref.com)

#### 1.4. Emergency telephone number

Emergency Tel: +44(0) 1865 407333

### SECTION 2: HAZARDS IDENTIFICATION

#### 2.1. Classification of the substance of mixture

**Classification under Directives EC 67/548 or 1999/45/EC:** Not classified as a dangerous substance. Not included in Annex VI.

**Most important adverse effect:** Can asphyxiate without warning.

#### 2.2. Label elements

**Regulation (EC) No. 1272/2008**



**GHS04**  
**Signal Word:** Warning  
**H-Statements:** H280: Contains gas under pressure; may explode if heated.  
**P-Statements:** P403: Store in well ventilated place.

**Directives 67/458/EEC or 1999/45/EC:** No EC labelling required.

#### 2.3. Other hazards

Contact with liquid may cause freeze burns or frostbite.  
Asphyxiant in high concentrations.

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### SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

#### 3.1. Substances

##### Hazardous Ingredients:

TRIFLUOROMETHANE (HFC23)

EINECS	CAS	DSD Classification	CLP Classification	Percent
200-872-4	75-46-7	Not classified	H280: Gas under Pressure	100%

The product contains on other components or impurities which will influence the classification.

### SECTION 4: FIRST AID MEASURES

#### 4.1. Description of first aid measures

- Skin contact:** Take off all contaminated clothing immediately if not stuck to the skin. Flush area with lukewarm water. Do not use hot water. If frostbite has occurred call a physician.
- Eye contact:** Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Get medical attention.
- Ingestion:** This is not considered a potential route of exposure.
- Inhalation:** Remove from exposure, lie down. Move to fresh air. Keep patient warm and at rest. Artificial respiration and/or oxygen may be necessary. Call a physician.

#### 4. 2. Most important symptoms and effects, both acute and delayed

- Skin contact:** Causes shortness of breath, dizziness, severe headache, nausea, and unconsciousness
- Eye contact:** Cause severe pain and cornea damage.
- Ingestion:** Not a route of exposure.
- Inhalation:** Causes shortness of breath, dizziness, severe headache, nausea, and unconsciousness.
- Delayed/immediate effects:** .

#### 4.3. Indication of any immediate medical attention and special treatment needed

- Immediate/special treatment:** Do not give adrenaline or similar drugs.

### SECTION 5: FIRE-FIGHTING MEASURES

#### 5.1. Extinguishing media

- Extinguishing media:** Water spray, Foam, Dry chemical, Carbon dioxide (CO<sub>2</sub>)

#### 5.2. Special hazards arising from the substance or mixture

- Special hazards arising from the substance:**
- Vapours are heavier than air and may spread along floors.  
Fire or intense heat may cause violent rupture of packages.
- Hazardous thermal decomposition products: Carbon oxides, Hydrogen fluoride, Carbonyl fluoride, Fluorocarbons.  
Exposure to decomposition products may be a hazard to health.

#### 5.3. Advice for fire-fighters

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**Advice for fire-fighters:** In the event of fire wear self-contained breathing apparatus.  
Wear neoprene gloves during cleaning work after a fire.

**Further Information:** Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.  
Cool containers/tanks with water spray.

### SECTION 6: ACCIDENTAL RELEASE MEASURES

#### 6.1. Personal precautions, protective equipment and emergency procedures

**Personal precautions:** Evacuate personnel to safe areas.  
Ventilate the area, especially low or enclosed places where heavy vapours might collect.

#### 6.2. Environmental precautions

**Environmental precautions:** Should not be released into the atmosphere.

#### 6.3. Methods and material for containment and cleaning up

**Clean-up procedures:** Product evaporates.

#### 6.4. Reference to other sections

**Reference to other sections:** Refer to Section 7. Refer to Section 8.

### SECTION 7: HANDLING AND STORAGE

#### 7.1. Precautions for safe handling

**Handling requirements:** *Advice on handling:* Avoid breathing vapours or mist. Avoid liquid contact with skin and clothing. Provide sufficient air exchange and/or exhaust in work rooms.  
*Advice on protection against fire and explosion:* No special measures against fire required.

#### 7.2. Conditions for safe storage, including any incompatibilities

**Storage conditions:** Do not drag, slide or roll cylinders. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. Store in cool, dry well ventilated place. Temperature not to exceed 50°C. Keep valves tightly closed.

**Suitable packaging:** Store in original cylinder only.  
Protect from contamination.

#### 7.3. Specific end use(s)

**Specific end use(s)** No data is available.

### SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

**Control Parameters:**  
**Derived No Effect Level (DNEL):** No Data available.  
**Predicted On Effect Concentration (PNEC):** No Data available

#### 8.2. Exposure controls

**Engineering measures:** Ensure adequate ventilation, especially in confined areas. Local exhaust should be used when large amounts are released.

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<b>Respiratory protection:</b>	For rescue and maintenance work in storage tanks use self-contained breathing apparatus. Vapours are heavier than air and can cause suffocation by reducing the oxygen available for breathing. Respiratory protection to comply with EN 137.
<b>Hand protection:</b>	Material: leather gloves The suitability for specific workplace should be discussed with the producers of the protective gloves.
<b>Eye protection:</b>	Wear safety glasses or coverall chemical splash goggles. Eye protection should comply with EN 166 or ANSI Z87.1. Wear a face shield where the possibility exists for face contact due to splashing, spraying or airborne contact with this material.
<b>Skin protection:</b>	Wear suitable protective equipment. Wear as appropriate: impervious clothing.
<b>Environmental:</b>	Product evaporates.

### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

#### 9.1. Information on basic physical and chemical properties

<b>Physical state at 20°C/101.3kPa:</b>	Gas
<b>Colour:</b>	Colourless
<b>Odour:</b>	Ethereal
<b>Odour threshold:</b>	Odour threshold is subjective and inadequate to warn of overexposure.
<b>pH value:</b>	Not applicable
<b>Molar mass (g/mole)</b>	70
<b>Melting point:</b>	-155°C
<b>Boiling point:</b>	-82.2°C
<b>Critical Temperature:</b>	25.6°C
<b>Flash point:</b>	Not applicable to gases and gas mixtures.
<b>Evaporation rate (ether = 1):</b>	Not applicable to gases and gas mixtures.
<b>Flammability range (vol% in air):</b>	Non flammable
<b>Vapour pressure (20°C):</b>	41.6 Bar
<b>Relative density gas (air = 1):</b>	2.4
<b>Relative density liquid (water = 1):</b>	1.4
<b>Solubility in water (mg/l):</b>	1080
<b>Partition coefficient n-octane/water:</b>	Log K <sub>ow</sub> = 0.64
<b>Auto-ignition temperature (°C):</b>	Not applicable
<b>Viscosity at 20°C (mPa.s):</b>	Not applicable
<b>Explosive properties:</b>	Not applicable
<b>Oxidising properties:</b>	None

### SECTION 10. STABILITY AND REACTIVITY

#### 10.1. Reactivity

<b>Reactivity:</b>	No reactivity hazard other than the effects described in the sub-sections below.
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#### 10.2. Chemical stability

<b>Chemical stability:</b>	Stable under normal conditions.
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#### 10.3. Possibility of hazardous reactions

<b>Hazardous reactions:</b>	None.
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#### 10.4. Conditions to avoid

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**Conditions to avoid:** None under recommended storage and handling conditions.

### 10.5. Incompatible material

**Materials to avoid:** Heat, hot surfaces, flames.  
The product is not flammable in air under ambient conditions of temperature and pressure. When pressurised with air or oxygen, the mixture may become flammable. Certain mixtures of HCFC's or HFC's with chlorine may become flammable or reactive under certain conditions.

### 10.6. Hazardous decomposition products

**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:** No known toxicological effects from this product.  
**Skin contact/irritation:** No known effects from this product.  
**Eye contact/irritation:** No known effects from this product.  
**Respiratory or skin sensitisation:** No known effects from this product.  
**Carcinogenicity:** No known effects from this product.  
**Grem cell mutagenicity:** No known effects from this product.  
**Reproductive toxicity:** No known effects from this product.  
**STOT-single exposure:** No known effects from this product.  
**STOT- repeated exposure:** No known effects from this product.  
**Other:** The gas asphyxiates by displacing oxygen from the air.

## SECTION 12. ECOLOGICAL INFORMATION

### 12.1. Toxicity

**Toxicity to fish:** No data available.  
**Toxicity to Aquatic plants:** No data available.  
**Acute Toxicity to aquatic plants:** No data available.  
**Ecotoxic values:**

### 12.2. Persistence and degradability

**Persistence and degradability:** No data available.

### 12.3. Bio accumulative potential

**Bio-accumulative potential:** Not expected to bio accumulate due to low log Kow (log Kow < 4). Refer to section 9.

### 12.4. Mobility in soil

**Mobility:** Due to its high volatility the product is unlikely to cause ground or water pollution.

### 12.5. Results of PBT and vPvB assessment

**PBT identification:** No data available.

### 12.6. Other adverse effects

**Other adverse effects:**  
Ozone Depletion Potential (ODP): 0 (R11 = 1)  
Global Warming Potential (GWP): 14 800 (CO<sub>2</sub> = 1)  
Contains fluorinated greenhouse gases covered by the Kyoto protocol.

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### SECTION 13. DISPOSAL CONSIDERATIONS

#### 13.1. Waste treatment methods

**Disposal operations:** Avoid discharging to atmosphere.  
**Disposal of packaging:** Do not discharge in any place where Product evaporates.  
**N.B.** Return cylinders to supplier.  
The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

### SECTION 14. TRANSPORT INFORMATION

#### 14.1. ADR

**UN Number:** 1984  
**Proper Shipping Name:** TRIFLUOROMETHANE (REFRIGERANT GAS R23)  
**Class/Division:** 2.2  
**Tunnel Code:** C/E  
**Hazard Identification Number:** 20  
**Labelling ADR:** 2.2  
**Further Information**

#### 14.2. IATA

**UN Number:** 1984  
**Proper Shipping Name:** TRIFLUOROMETHANE (REFRIGERANT GAS R23)  
**Class/Division:** 2.2  
**Passenger & Cargo Aircraft:** Allowed.  
**Packing Instruction:** 200

#### 14.3. IMDG

**UN Number:** 1984  
**Proper Shipping Name:** TRIFLUOROMETHANE (REFRIGERANT GAS R23)  
**Class/Division:** 2.2  
**Hazard Identification Number:** C/E  
**EmS:** F-C, S-V  
**IMDG- Marine Pollutant:** No

### SECTION 15. REGULATORY INFORMATION

#### 15.1. Safety, health and environment regulations/legislation specific for the substance or mixture

**Restrictions On Use:** None  
**Seveso directive 96/82/EC:** Not Covered.  
**National Legislation:** Ensure all national/local regulations are observed.

#### 15.2. Chemical Safety Assessment

This product is either exempt from REACH, does not meet the minimum volume threshold for CRS or the CSA has not been carried out.

### 16. OTHER INFORMATION

**Other information:** This safety sheet is prepared in accordance with Commission Regulation (EU) No. 453/2010.  
\* Indicates text in SDS which has changed since the last revision.  
**Training Advice:** The hazard of asphyxiation is often overlooked and must be stressed during operation training.  
**List of full text of H-Statements in Section 3:** H280: Contains gas under pressure, may explode if heated.

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### GENERAL SAFETY & HANDLING DATA

#### 1. GENERAL

Only trained persons should handle compressed gases. Observe all regulations and local requirements regarding the storage of Cylinders.  
Do not remove or deface labels provided by the supplier for the identification of the Cylinder contents.  
Ascertain the identity of the gas before using it.  
Know and understand the properties and hazards associated with each gas before using it.  
When doubt exists as to the correct handling procedure for a particular gas contact the supplier.

#### HANDLING AND USE

Wear stout gloves.  
Never lift a Cylinder by the cap or guard unless the supplier states it is designed for that purpose.  
Use trolley or other suitable device or technique for transporting heavy Cylinders, even for a short distance.  
Where necessary wear suitable eye and face protection.  
The choice between safety glasses, chemical goggles, or full face shield will depend on the pressure and nature of the gas being used.

Where necessary for toxic gases see that self-contained positive pressure breathing apparatus or full face airline respirator is available in the vicinity of the working area.  
Employ suitable pressure regulating device on all Cylinders when gas is being emitted to systems with lower pressure rating than that of the Cylinder.  
Ascertain that all electrical systems in the area are suitable for service with each gas.

Never use direct flame or electrical heating devices to raise the pressure of a Cylinder, Cylinders should not be subjected to temperatures above 45°C.  
Never re-compress a gas mixture without consulting the supplier. Never attempt to transfer gases from one Cylinder to another.  
Do not use Cylinders as rollers or supports, or for any other purpose other than to contain the gas as supplied.  
Never permit oil, grease or other readily combustible substances to come into contact with valves of Cylinders containing oxygen or other oxidants.  
Keep Cylinder valves clean and free from contaminants particularly oil and water.

Do not subject Cylinders to mechanical shocks which may cause damage to their valves or safety devices.

Never attempt to repair or modify Cylinder valves or safety relief devices. Damaged valves should be reported immediately to the supplier.  
Close the Cylinder valve whenever gas is not required even if the Cylinder is still connected to the equipment.

#### 2. STORAGE

Cylinders should be stored in a well-ventilated area. Some gases will require a purpose built area.  
Store Cylinders in a location free from fire risk and away from sources of heat and ignition. Designate as a no smoking area.

Gas Cylinders should be segregated in the storage according to the various categories.

The storage area should be kept clear and access should be restricted to authorized persons only, the area should be clearly marked as a storage area and appropriate hazard warning signs displayed (Flammable, Toxic etc.).

The amount of flammable or toxic gases should be kept to a minimum.

Flammable gases should be stored away from other combustible materials.

Cylinders held in storage should be periodically checked for general condition and leakage.

Cylinders in storage should be properly secured to prevent toppling or rolling.

Vertical storage is recommended where the Cylinder is designed for this.

Cylinder valves should be tightly closed and, where appropriate, valves should be capped or plugged.

Protect Cylinders stored in the open against rusting and extremes of weather.

Cylinders should not be stored in conditions likely to encourage corrosion.

Store full and empty Cylinders separately and arrange full Cylinders so that the oldest stock is used first.

FOR FURTHER INFORMATION CONTACT YOU'RE NEAREST DISTRIBUTION CENTRE