

SAFETY DATA SHEET**1 Identification of the substance or preparation and of the company/undertaking****1.1 Product identifier**Product Name: **REFRIGERANT R 23**Datasheet Number: **R-23-r 1.0.0**Head Office: **Wilhelmsen Ships Service AS**Address: **Strandveien 20, N1324 Lysaker, Norway, Tel: +47 67 58 45 50****1.2 Relevant identified uses of the substance or mixture and uses advised against****Refrigerant****1.3 Details of the supplier of the safety data sheet**Name of Supplier: **Wilhelmsen Ships Service AS**Address of Supplier: **Willem Barentszstraat 50****3165AB Rotterdam****The Netherlands**Telephone: **+31 10 4877 777**Fax: **+31 10 4877 888**Responsible Person: **Patrick Rijssdijk, Product HSE Manager, Tel.: +31 6 349 440 35**Email: **patrick.rijssdijk@wilhelmsen.com****1.4 Emergency telephone number******ONLY TO BE USED IN CASE OF AN INCIDENT****

NCEC: +44 1865 407333, CHEMTREC (800) 424 9300

American Chemistry Council +1 703 527 3887,

Greece +30 210 7793777

Australia: +61 3 9630 0998

2 Hazards identification**2.1 Classification of the substance or mixture**

- Regulations 1272/2008/EEC. Classification, labeling and packing of dangerous substances and preparations
- This Safety Data Sheet is provided in compliance with The Dangerous Substances Directive (67/548/EEC)
- Council Directive 1999/45/EEC Classification, packing and labelling of dangerous preparations.

2.2 Label elements

- Signal Word: Warning
- Symbols: GHS04
- Contains: Trifluoromethane (R23)
- Pressurized container

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2 Hazards identification (....)

Hazard phrases

- Contains gas under pressure; may explode if heated.

Precautionary Phrases

- Store in a well-ventilated place.

Risk Phrases

- Not applicable

Safety Phrases

- Not applicable

2.3 Other hazards

- Odour: Sweet ether-like odour
- Appearance: colourless, Liquefied pressure gas
- Contact with eyes: May cause severe irritation
- Contact with skin: Possible frost-bite of affected areas
- Inhalation: May cause dizziness, confusion, headache or stupor, In cases of severe exposure, anaesthesia may develop

3 Composition/information on ingredients

3.1 Substances

Chemical Name	Concentration	CAS Number	EC Number	R/H Phrases*	Symbols
Trifluoromethane (R-23)	100%	75-46-7	200-872-4	-	-
CLP classification:					
Liq Gas					

*See Section 16

4 First aid measures

4.1 Description of first aid measures

- IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing.
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- Wear Breathing Apparatus
- Apply artificial respiration only if patient is not breathing
- If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
-
- IF ON SKIN: Immerse in cool water/wrap in wet bandages.
- Obtain immediate medical attention
-
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- Obtain immediate medical attention

4.2 Most important symptoms and effects, both acute and delayed

- In cases of severe exposure, respiratory failure may develop
- In cases of severe exposure, breathing difficulty may develop

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4 First aid measures (....)

- In cases of severe exposure, dizziness, confusion, headache or stupor may develop
- In cases of severe exposure, anaesthesia may develop
- Possible frost-bite of affected areas

4.3 Indication of immediate medical attention and special treatment needed

Do not give andrenalin or equivalent medicines.

5 Fire-fighting measures

5.1 Extinguishing media

- Not flammable. In case of fire use extinguishing media appropriate to surrounding conditions

5.2 Special hazards arising from the substance or mixture

- Inform Fire Brigade of potential danger of exploding and rocketing cylinders
- Smoke from fires is corrosive. Take precautions to protect personnel from exposure

5.3 Advice for firefighters

- Keep container(s) exposed to fire cool, by spraying with water
- Smoke from fires is corrosive. Take precautions to protect personnel from exposure
- Inform Fire Brigade of potential danger of exploding and rocketing cylinders
- Wear chemical protection suit and positive-pressure breathing apparatus

6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- Shut off source of leak if safe to do so
- In poorly ventilated areas or confined spaces, use an airline respirator or self-contained breathing apparatus

6.2 Environmental Precautions

- Avoid release to the environment.

6.3 Methods and material for containment and cleaning up

- Shut off source of leak if safe to do so
- Allow product to evaporate
- Ventilate area

6.4 Reference to other sections

- None

7 Handling and storage

7.1 Precautions for safe handling

- Restricted to professional users
- Do not breathe dust/fume/gas/mist/vapours/spray.
- Do not get in eyes, on skin, or on clothing.
- Pressurized container: Do not pierce or burn, even after use.

7.2 Conditions for safe storage, including any incompatibilities

- Keep in a cool, dry, well ventilated place
- Do not store above 45 °C

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7 Handling and storage (....)

7.3 Specific end use(s)

8 Exposure controls/personal protection

8.1 Control parameters

- There are no recommended or established controls for this product

8.2 Exposure controls

- Ensure adequate ventilation

Occupational exposure controls

- In poorly ventilated areas or confined spaces, use an airline respirator or self-contained breathing apparatus
- Wear safety boots when handling cylinders.



Boots



Gloves



No Flames



No Smoking

9 Physical and chemical properties

9.1 Information on basic physical and chemical properties

- Odour: Sweet ether-like odour
- Appearance: Liquefied pressure gas
- pH - not applicable
- Boiling point -82,2 °C
- Vapour pressure 416 kPa @ 25 °C
- Vapour density (air = 1) 2.2
- Freezing point -88 °C at 760 mm/Hg
- Insoluble in water
- Density 1440 kg/m³ at 20 °C
- Not flammable
- Unstable above 250 deg C, Auto-ignition point >700 deg C at 760 mm Hg

9.2 Other information

- No information available

10 Stability and reactivity

10.1 Reactivity

- This article is considered stable under normal conditions

10.2 Chemical stability

- This article is considered stable under normal conditions

10.3 Possibility of hazardous reactions

- No hazardous reactions known if used for its intended purpose

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10 Stability and reactivity (....)

10.4 Conditions to avoid

- Avoid overheating

10.5 Incompatible materials

- None

10.6 Hazardous Decomposition Products

- Decomposition products may include halogen compounds
- Decomposition products may include carbon oxides

11 Toxicological information

11.1 Information on toxicological effects

- No experimental data available

Inhalation

- In cases of severe exposure, anaesthesia may develop
- May disturb the respiration, heart and nervous system
- Asphyxiant

Contact with skin

- May cause frost-bite

Contact with eyes

- May cause frost-bite

Ingestion

- Not regarded as a potential route of exposure.

Carcinogenicity

- No evidence of carcinogenic effects

12 Ecological information

12.1 Toxicity

- On available data, substance is not harmful to aquatic life

12.2 Persistence and degradability

- Not readily biodegradable

12.3 Bioaccumulation Potential

- Bioaccumulation is insignificant

12.4 Mobility in soil

- This substance is volatile
- Insoluble in water

12.5 Results of PBT and vPvB assessment

12.6 Other Adverse Effects

- This product is controlled under the "Montreal Protocol" (1992 revision).
- Global Warming Potential: 12000 (CO₂ = 1; 100 years)
- Ozone Depletion Potential: 0.04

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12 Ecological information (....)

- GWP and ODP values according to IPCC/ASHRAE/ARI.
- IPCC = Intergovernmental Panel on Climate Control
- ASHRAE = American Society of Heating, Refrigeration and Air-Conditioning Engineers
- ARI = American Refrigeration Institute

13 Disposal considerations

13.1 Waste treatment methods

- Do not discharge into drains or the environment, dispose to an authorised waste collection point
- Disposal should be in accordance with manufacturer's instructions

Classification

- EU Waste class: -

14 Transport information



Non-Flammable Compressed Gas

14.1 UN Number

- UN1984

14.2 UN Proper Shipping Name

- TRIFLUOROMETHANE (REFRIGERANT GAS R 23)

14.3 Transport hazard class(es)

- 2.2

14.4 Packing group

- n/a

14.5 Environmental hazards

- On available data, substance is not harmful to the environment

14.6 Special precautions for user

- Gas cylinders must be equipped with valve protection caps during transport.
- Normally supplied/transported in pressurized cylinders

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code

- Not applicable

Other information

Road/Rail (ADR/RID)

Proper Shipping Name:	TRIFLUOROMETHANE (REFRIGERANT GAS R 23)		
ADR UN No.:	UN1984	ADR Hazard Class:	2.2
ADR Packing Group:	n/a	ADR subrisk:	n/a
ADR Flashpoint:	n/a		

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14 Transport information (....)

Sea (IMDG)

Proper Shipping Name:	TRIFLUOROMETHANE (REFRIGERANT GAS R 23)		
IMDG UN No.:	UN1984	IMDG Hazard Class.:	2.2
IMDG Pack Group.:	n/a	IMDG EmS:	F-C, S-V
IMDG subrisk:	n/a	IMDG Flashpoint:	n/a

Air (ICAO/IATA)

Proper Shipping Name:	TRIFLUOROMETHANE (REFRIGERANT GAS R 23)		
ICAO Un No.:	UN1984	ICAO Hazard Class.:	2.2
ICAO Packing Group.:	n/a	ICAO subrisk:	n/a
ICAO Flashpoint:	n/a		

DOT / CFR (US Department of Transportation)

DOT Proper Shipping Name:	TRIFLUOROMETHANE (REFRIGERANT GAS R 23)		
Hazardous Material:	TRIFLUOROMETHANE		
Hazard Class:	2.2	Identification Number:	UN1984
Product RQ (lbs):	n/a	DOT subrisk:	n/a
DOT Flashpoint:	n/a		

15 Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

- This Safety Data Sheet has been prepared in accordance with article 31 and annex II in REACH and Directive 453/2010/EU.

15.2 Chemical Safety Assessment

None

16 Other information

Text of R and S phrase codes used in this safety data sheet:- H280: Contains gas under pressure; may explode if heated..

The information provided about the product on this Safety Data Sheet has been compiled from knowledge of the individual constituents

The data given here is based on current knowledge and experience. This Safety Data Sheet describes the product in terms of safety requirements and does not signify any warranty with regard to the product's properties

The data given here only applies when product used for proper application(s). The product is not sold as suitable for other applications - usage in such may cause risks not mentioned in this sheet. Do not use for other application(s) without seeking advice from manufacturer

