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**SAFETY DATA SHEET**

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This Safety Data Sheet is provided in compliance with the EC Directive 1907/2006-453/2010

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**SECTION 1 Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

- Product Name: REFRIGERANT R 401B
- Product Part Number: R-401B

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

- Use of the substance/mixture:
- 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 4877 777 Fax: +31 4877 888
- Head office: Wilhelmsen Ships Service AS
- Strandveien 20, N1324 Lysaker
- Norway, Tel: (47) 6349 440 35
- Other suppliers SEE SECTION 16!!!
- For quotations contact your local Customer Services
- Responsible Person: Product HSE Manager,
- Email: Email: WSS.GLOBAL.SDSINFO@wilhelmsen.com
- Telephone: Tel.: +31 10 4877775

**1.4 Emergency telephone number**

- \*\*\*\*ONLY TO BE USED IN CASE OF AN INCIDENT\*\*\*\*
- International 24hrs Emergency NCEC: + 44 1865 407333
- American Chemistry Council 24hrs +1 703 527 3887
- American 24hrs Emergency CHEMTREC (800) 424 9300
- Greece: Poisoning emergency center, +30 210 7793777
- Norway: Poison information centre, +47 22591300
- Sweden: Poison information centre, +46 08 33 12 31
- China NRCC 24hrs emergency telephone number: +86-0532-8388 9090
- Wilhelmsen Ships Service, Melbourne, AUSTRALIA Emergency 24hrs: +61 3 9630 0998

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

- Council Directive 1999/45/EEC Classification, packing and labelling of dangerous preparations.
- Refer to current The Dangerous Substances Directive (67/548/EEC)
- Symbols: N
- Dangerous for the ozone layer (R59)
-

**SECTION 2 Hazards identification (....)**

- Regulations 1272/2008/EEC. Classification, labeling and packing of dangerous substances and preparations
- Signal Word: Warning
- Symbols: GHS04
- Contains gas under pressure; may explode if heated (H280).
- Hazardous to the ozone layer (EUH059).

**2.2 Label elements**

- Signal Word: Warning
- 
- Contains:
- Chlorodifluoromethane
- 1-Chloro-1,2,2,2-tetrafluoroethane
- 1,1-Difluoroethane
- 
- Hazard phrases
  - Contains gas under pressure; may explode if heated (H280).
  - Hazardous to the ozone layer (EUH059).
  - OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION.
- Precautionary Phrases
  - Protect from sunlight. Store in a well-ventilated place (P410+P403).

**2.3 Other hazards**

- Odour: Sweet ether-like odour
- Appearance: Liquefied pressure gas
- Contact with eyes: May cause 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

**SECTION 3 Composition/information on ingredients****3.1 Mixtures**

- Chlorodifluoromethane (R-22)
  - Concentration: 60-65%
  - CAS Number: 75-45-6
  - EC Number: 200-871-9
  - R/H Phrases: R59 - EUH059, H420
  - Symbols: N, GHS04
  - Categories: Not available
- 1,1-Difluoroethane (R-152a)
  - Concentration: 10-15%
  - CAS Number: 75-37-6
  - EC Number: 200-866-1
  - R/H Phrases: R12 - H220
  - Symbols: F+, GHS02, GHS04

**SECTION 3 Composition/information on ingredients (....)**

Categories: Not available

- 1 Chloro-1,2,2,2-tetrafluoroethane (R-124)
    - Concentration: 25-30%
    - CAS Number: 2837-89-0
    - EC Number: 220-629-6
    - R/H Phrases: R59 - EUH059
    - Symbols: N, GHS04
    - Categories: Not available
- 

**SECTION 4 First aid measures****4.1 Description of first aid measures**

- IF ON SKIN: Immerse in cool water/wrap in wet bandages (P302+P334).
- Thaw frosted parts with lukewarm water. Do not rub affected area (P336).
- 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 (P305+P351+P338).
- Obtain immediate medical attention
- 
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing (P304+P340).
- Wear Breathing Apparatus
- Apply artificial respiration only if patient is not breathing

**4.2 Most important symptoms and effects, both acute and delayed**

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

**4.3 Indication of any immediate medical attention and special treatment needed**

Do not give adrenaline or equivalent medicines.

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**SECTION 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
  - Wear chemical protection suit and positive-pressure breathing apparatus
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**SECTION 6 Accidental release measures**

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**SECTION 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 (P273).

**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**

- See Section 13
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**SECTION 7 Handling and storage****7.1 Precautions for safe handling**

- Ensure adequate ventilation
- Do not smoke
- Avoid breathing dust/fume/gas/mist/vapours/spray (P261).
- Do not get in eyes, on skin, or on clothing (P262).
- Restricted to professional users

**7.2 Conditions for safe storage, including any incompatibilities**

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

**7.3 Specific end use(s)**

- Contact supplier for further information
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**SECTION 8 Exposure controls/personal protection****8.1 Control parameters**

- TLV (TWA) 1000 ppm (Chlorodifluoromethane)
- TLV (TWA) 1000 ppm (1,1-Difluoroethane (R-152a))
- TLV (TWA) 1000 ppm (1 Chloro-1,2,2,2-tetrafluoro-ethane (R-124))

**8.2 Exposure controls**

- Ensure adequate ventilation

**8.3 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.
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**SECTION 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
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**SECTION 9 Physical and chemical properties (....)**

- Boiling point -33 °C to 760 °C
- Vapour pressure 690 kPa @ 25 °C
- Vapour density (air = 1) 3.2
- Freezing point < -100 °C to 760 °C
- Insoluble in water
- Density 1200 kg/m<sup>3</sup> 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
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**SECTION 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

**10.4 Conditions to avoid**

- Avoid overheating
- Keep away from naked flames, incandescent or hot surfaces

**10.5 Incompatible materials**

- Avoid contact with magnesium and alloys containing more than 2% magnesium.

**10.6 Hazardous Decomposition Products**

- Decomposition products may include halogen compounds
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**SECTION 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
  - In cases of severe exposure, respiratory failure may develop
  - In cases of severe exposure, dizziness, confusion, headache or stupor may develop
- 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

**11.2 Contact with eyes**

- May cause frost-bite

**11.3 Contact with skin**

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## **SECTION 11 Toxicological information (....)**

- May cause frost-bite

### 11.4 Ingestion

- Not regarded as a potential route of exposure.

### 11.5 Inhalation

- In cases of severe exposure, anaesthesia may develop
- May disturb the respiration, heart and nervous system
- In cases of severe exposure, respiratory failure may develop
- In cases of severe exposure, dizziness, confusion, headache or stupor may develop

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## **SECTION 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

- Dangerous for the ozone layer (R59)
- This product is controlled under the "Montreal Protocol" (1992 revision).
- Global Warming Potential: 1200 (CO<sub>2</sub> = 1; 100 years)
- Ozone Depletion Potential: 0.028
- 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

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## **SECTION 13 Disposal considerations**

### 13.1 Waste treatment methods

- Do not discharge into drains or the environment, dispose to an authorised waste collection point
- Refer to manufacturer/supplier for information on recovery/recycling (P502).

### 13.2 Classification

- Not applicable

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## **SECTION 14 Transport information**



### 14.1 UN

- UN No.: UN1078

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**SECTION 14 Transport information (....)**

- Proper Shipping Name: REFRIGERANT GAS, N.O.S.  
(CHLORODIFLUOROMETHANE,  
1-CHLORO-1,2,2,2 TETRAFLUOROETHANE,  
1,1-DIFLUOROETHANE, MIXTURE)
- Hazard Class: 2.2
- Packing Group: n/a

**14.2 Environmental hazards**

- Not applicable

**14.3 Special precautions for user**

- Gas cylinders must be equipped with valve protection caps during transport.

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

- Not applicable

**14.5 Road/Rail (ADR/RID)**

- ADR UN No.: UN1078
- Proper Shipping Name: REFRIGERANT GAS, N.O.S.  
(CHLORODIFLUOROMETHANE,  
1-CHLORO-1,2,2,2 TETRAFLUOROETHANE,  
1,1-DIFLUOROETHANE, MIXTURE)
- ADR Hazard Class: 2.2
- ADR Packing Group: n/a

**14.6 Sea (IMDG)**

- IMDG UN No.: UN1078
- Proper Shipping Name: REFRIGERANT GAS, N.O.S.  
(CHLORODIFLUOROMETHANE,  
1-CHLORO-1,2,2,2 TETRAFLUOROETHANE,  
1,1-DIFLUOROETHANE, MIXTURE)
- IMDG Hazard Class: 2.2
- IMDG Pack Group.: n/a
- IMDG EmS: F-C, S-V

**14.7 Air (ICAO/IATA)**

- ICAO UN No.: UN1078
- Proper Shipping Name: REFRIGERANT GAS, N.O.S.  
(CHLORODIFLUOROMETHANE,  
1-CHLORO-1,2,2,2 TETRAFLUOROETHANE,  
1,1-DIFLUOROETHANE, MIXTURE)
- ICAO Hazard Class: 2.2
- ICAO Packing Group: n/a

**14.8 DOT / CFR (US Department of Transportation)**

- Identification Number: UN1078
- DOT Proper Shipping Name: REFRIGERANT GAS, N.O.S.  
(CHLORODIFLUOROMETHANE,  
1-CHLORO-1,2,2,2 TETRAFLUOROETHANE,  
1,1-DIFLUOROETHANE, MIXTURE)
- DOT Labels: 2.2
- Product RQ (lbs): n/a

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**SECTION 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.

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**SECTION 15 Regulatory information (....)**

- Council Directive 1999/45/EEC Classification, packing and labelling of dangerous preparations.
- Refer to current The Dangerous Substances Directive (67/548/EEC)
- Regulations 1272/2008/EEC. Classification, labeling and packing of dangerous substances and preparations

**15.2 Chemical Safety Assessment**

- None
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**SECTION 16 Other information**

Text not given with phrase codes where they are used elsewhere in this safety data sheet:-  
EUH059: Hazardous to the ozone layer. H220: Extremely flammable gas. H420: Harms public health and the environment by destroying ozone in the upper atmosphere. R12: Extremely Flammable. R59: Dangerous for the ozone layer.

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

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

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 most up-to-date version of this MSDS can be found on [www.wilhelmsen.com/shipsservice](http://www.wilhelmsen.com/shipsservice)

**OTHER CONTACT INFORMATION MAJOR CHEMICAL OFFICES**

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