

Section 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier**

Product name: REFRIGERANT R744A
REACH registered number(s): 01-2119970538-25
CAS number: 10024-97-2
EINECS number: 233-032-0
Product code: R744A
Synonyms: NITROUS OXIDE
DINITROGEN OXIDE
INCI name: Dinitrogen Oxide

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

Use of substance / mixture: Industrial and Professional use. Perform risk assessment prior to use. Refrigerant

1.3. Details of the supplier of the safety data sheet

Company name: National Refrigerants Ltd
4 Watling Close
Sketchley Meadows Business Park
Hinckley
Leicestershire
LE10 3EZ
United Kingdom
Tel: 01455 630790
Fax: 01455 630791
Email: sds@nationalref.com

1.4. Emergency telephone number

Emergency tel: Carechem24 +44 (0)1865 407333

Section 2: Hazards identification**2.1. Classification of the substance or mixture**

Classification under CLP: Ox. Gas 1: H270; Press. Gas: H280

Most important adverse effects: May cause or intensify fire; oxidiser. Contains gas under pressure; may explode if heated.

2.2. Label elements

Label elements:

Hazard statements: H270: May cause or intensify fire; oxidiser.
H280: Contains gas under pressure; may explode if heated.

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Hazard pictograms: GHS03: Flame over circle

GHS04: Gas cylinder



Signal words: Danger

Precautionary statements: P220: Keep away from clothing and other combustible materials.

P244: Keep valves and fittings free from oil and grease.

P370+P376: In case of fire: stop leak if safe to do so.

P403: Store in a well-ventilated place.

2.3. Other hazards

PBT: This product is not identified as a PBT/vPvB substance.

Section 3: Composition/information on ingredients

3.1. Substances

Chemical identity: REFRIGERANT R744A

CAS number: 10024-97-2

EINECS number: 233-032-0

REACH registered number(s): 01-2119970538-25

Section 4: First aid measures

4.1. Description of first aid measures

Skin contact: Rapid evaporation of liquid may cause frostbite. Thaw frosted parts with lukewarm water. Do not rub affected area. If frostbite has occurred call a physician.

Eye contact: Remove contact lenses if present and easy to do so. Bathe the eye with running water for 15 minutes. Transfer to hospital for specialist examination.

Ingestion: Ingestion is unlikely due to its physical properties and is not expected to be dangerous.

Inhalation: Remove casualty from exposure ensuring one's own safety whilst doing so. If unconscious, check for breathing and apply artificial respiration if necessary. Consult a doctor.

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

Skin contact: There may be redness or whiteness of the skin in the area of exposure. Frost-bite may occur causing the affected area to become white and numb.

Eye contact: There may be irritation and pain. May cause permanent damage.

Ingestion: It is unlikely that this substance will be swallowed due to its physical properties.

Inhalation: Inhalation may produce the following symptoms: Shortness of breath, dizziness, weakness, nausea, headache, narcosis, irregular cardiac activity. Drowsiness or mental confusion may occur.

Delayed / immediate effects: No data available.

[cont...]

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

Immediate / special treatment: Continuous inhalation of high concentrations may cause nausea, dizziness, respiratory difficulty and convulsion.

Section 5: Fire-fighting measures

5.1. Extinguishing media

Extinguishing media: Water spray. Water fog. Dry chemical powder. Alcohol resistant foam. Carbon dioxide.

5.2. Special hazards arising from the substance or mixture

Exposure hazards: Oxidising. Supports combustion.

5.3. Advice for fire-fighters

Advice for fire-fighters: Wear protective clothing to prevent contact with skin and eyes. Wear self-contained breathing apparatus.

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Evacuate the area immediately. Eliminate all sources of ignition. Ventilate the area, especially low or enclosed places where heavy vapours might collect.

6.2. Environmental precautions

Environmental precautions: Stop release if safe to do so. Prevent from entering sewers, basements and work pits, or any place where the accumulation can be dangerous.

6.3. Methods and material for containment and cleaning up

Clean-up procedures: Material evaporates. Ventilate the area, especially low or enclosed places where heavy vapours might collect.

6.4. Reference to other sections

Reference to other sections: Refer to section 8 of SDS. Refer to section 13 of SDS.

Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: Ensure there is exhaust ventilation of the area. Do not handle in a confined space. Avoid direct contact with the substance.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a cool, well ventilated area. Keep away from sources of ignition. Avoid incompatible materials and conditions - see section 10 of SDS. Avoid asphalted locations for storage, transfer and use (ignition risk if spilt).

Suitable packaging: Must only be kept in original packaging.

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7.3. Specific end use(s)

Specific end use(s): No data available.

Section 8: Exposure controls/personal protection

8.1. Control parameters

Workplace exposure limits:

Respirable dust

| State | 8 hour TWA | 15 min. STEL | 8 hour TWA | 15 min. STEL |
|-------|------------|--------------|------------|--------------|
| UK | 100 ppm | - | - | - |

DNEL/PNEC Values

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| Type | Exposure | Value | Population | Effect |
|------|------------|-----------------------|------------|----------|
| DNEL | Inhalation | 183 mg/m ³ | Workers | Systemic |

8.2. Exposure controls

Engineering measures: Ensure there is exhaust ventilation of the area. Ensure all engineering measures mentioned in section 7 of SDS are in place.

Respiratory protection: Respiratory protection not required. Self-contained breathing apparatus must be available in case of emergency.

Hand protection: EN 388 Protective gloves against mechanical risks.

Eye protection: EN 166 Safety goggles. Face-shield.

Skin protection: Protective clothing.

Environmental: No special requirement.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

State: Liquified gas

Colour: Colourless

Odour: Sweet-smelling

Evaporation rate: Not applicable.

Oxidising: Oxidising (by EC criteria)

Solubility in water: Soluble

Viscosity: No data available.

Boiling point/range°C: -88.48

Melting point/range°C: -90.8

Flammability limits %: lower: Not applicable.

upper: Not applicable.

Flash point°C: Not applicable.

Part.coeff. n-octanol/water: 0.36

Autoflammability°C: Not applicable.

Vapour pressure: 5719.51kPa at 25degC

Relative density: 1.226 mg/l @ -89degC

pH: Not applicable.

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9.2. Other information

Other information: R744a: Dencity: 1.53 (Air=1) Decomposition Temp. 575deg C.

Section 10: Stability and reactivity

10.1. Reactivity

Reactivity: Stable under recommended transport or storage conditions.

10.2. Chemical stability

Chemical stability: Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions: Oxidiser: will readily oxidize other materials that come into contact with it.

10.4. Conditions to avoid

Conditions to avoid: Heat.

10.5. Incompatible materials

Materials to avoid: Organic materials. Reducing agents. Flammable gases and other flammable materials.

10.6. Hazardous decomposition products

Haz. decomp. products: In combustion emits toxic fumes of nitrogen oxides. R744a: Thermal decomposition yields toxic products which can be corrosive in the presence of moisture.

Section 11: Toxicological information

11.1. Information on toxicological effects

Toxicity values: No data available.

Symptoms / routes of exposure

Skin contact: There may be redness or whiteness of the skin in the area of exposure. Frost-bite may occur causing the affected area to become white and numb.

Eye contact: There may be irritation and pain. May cause permanent damage.

Ingestion: It is unlikely that this substance will be swallowed due to its physical properties.

Inhalation: Inhalation may produce the following symptoms: Shortness of breath, dizziness, weakness, nausea, headache, narcosis, irregular cardiac activity. Drowsiness or mental confusion may occur.

Delayed / immediate effects: No data available.

Other information: Not applicable.

Section 12: Ecological information

12.1. Toxicity

Ecotoxicity values: No data available.

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12.2. Persistence and degradability

Persistence and degradability: Not applicable.

12.3. Bioaccumulative potential

Bioaccumulative potential: No bioaccumulation potential.

12.4. Mobility in soil

Mobility: Highly volatile.

12.5. Results of PBT and vPvB assessment

PBT identification: This product is not identified as a PBT/vPvB substance.

12.6. Other adverse effects

Other adverse effects: R744a: Global Warming Potential (GWP): 298 (CO₂=1)

Section 13: Disposal considerations

13.1. Waste treatment methods

Disposal operations: Product evaporates. Recover to a recovery cylinder and return to a refrigerant recovery facility.

Recovery operations: Consult manufacturer or supplier for information regarding recovery and recycling of the product.

Waste code number: 16 05 04

Disposal of packaging: Return to supplier.

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

Section 14: Transport information

14.1. UN number

UN number: UN1070

14.2. UN proper shipping name

Shipping name: NITROUS OXIDE

14.3. Transport hazard class(es)

Transport class: 2 (5.1)

14.4. Packing group

14.5. Environmental hazards

Environmentally hazardous: No

Marine pollutant: No

14.6. Special precautions for user

Tunnel code: C/E

Transport category: 3

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Section 15: Regulatory information

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

Specific regulations: Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of the 16th December 2008 on Classification, labeling and Packaging of Substances and Mixtures. Regulation (EC) No 1907/2006 concerning the Regulation, Evaluation, Authorisation and restriction of Chemicals (REACH) as amended up to and including Regulation (EC) No 588/2018 & 589/2018. Dangerous Substances and Explosive Atmospheres Regulations (DSEAR 2002 No. 2776) Management of Health and Safety at Work Regulations (1999 No. 3242). The Regulation Reform (Fire Safety) Order 2005 (2005 NO. 1541). Control of Substances Hazardous to Health Regulations (COSHH 2002 No. 2677). Personal Protective Equipment Regulations (1992 No. 2966).

15.2. Chemical Safety Assessment

Chemical safety assessment: A chemical safety assessment has been carried out for the substance or the mixture by the supplier.

Section 16: Other information

Other information

Other information: This safety data sheet is prepared in accordance with Commission Regulation (EU) No 2015/830.

* indicates text in the SDS which has changed since the last revision.

Phrases used in s.2 and s.3: H270: May cause or intensify fire; oxidiser.

H280: Contains gas under pressure; may explode if heated.

Legal disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.