

Section 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier****Product name:** REFRIGERANT R424A**REACH registered number(s):** MIXTURE**Product code:** R424A**Synonyms:** * RS-44**1.2. Relevant identified uses of the substance or mixture and uses advised against****Use of substance / mixture:** * PC16: Heat transfer fluids. 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:** Press. Gas: H280; -: EUH044**Most important adverse effects:** Contains gas under pressure; may explode if heated. Risk of explosion if heated under confinement.**2.2. Label elements****Label elements:****Hazard statements:** * H280: Contains gas under pressure; may explode if heated.
EUH044: Risk of explosion if heated under confinement.**Hazard pictograms:** GHS04: Gas cylinder

SAFETY DATA SHEET

REFRIGERANT R424A

Page: 2

Signal words: Warning

Precautionary statements: P410+403: Protect from sunlight. 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

3.2. Mixtures

Hazardous ingredients:

REFRIGERANT R125 - REACH registered number(s): 01-2119485636-25

EINECS	CAS	PBT / WEL	CLP Classification	Percent
206-557-8	354-33-6	Substance with a Community workplace exposure limit.	Press. Gas: H280	50-70%

REFRIGERANT R134A - REACH registered number(s): 01-2119459374-33

212-377-0	811-97-2	Substance with a Community workplace exposure limit.	Press. Gas: H280	30-50%
-----------	----------	--	------------------	--------

BUTANE

203-448-7	106-97-8	Substance with a Community workplace exposure limit.	Flam. Gas 1: H220; Press. Gas: H280	<1%
-----------	----------	--	-------------------------------------	-----

Non-classified ingredients:

ISOBUTANE

EINECS	CAS	PBT / WEL	CLP Classification	Percent
200-857-2	75-28-5	-	Flam. Gas 1: H220; Press. Gas: H280	<1%

ISOPENTANE

201-142-8	78-78-4	-	Flam. Liq. 1: H224; Asp. Tox. 1: H304; STOT SE 3: H336; Aquatic Chronic 2: H411; -: EUH066	<1%
-----------	---------	---	--	-----

Section 4: First aid measures

4.1. Description of first aid measures

Skin contact: Remove all contaminated clothes and footwear immediately unless stuck to skin. Drench the affected skin with running water for 10 minutes or longer if substance is still on skin. Do not use hot water. If frostbite has occurred call a physician.

Eye contact: * 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. Since this product is a gas, refer to the inhalation section.

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.

[cont...]

SAFETY DATA SHEET

REFRIGERANT R424A

Page: 3

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 severe pain. Corneal burns may occur. May cause permanent damage.

Ingestion: * Ingestion is unlikely due to the physical properties of the product. As product is a gas refer to inhalation section.

Inhalation: Inhalation may produce the following symptoms: Shortness of breath, dizziness, weakness, nausea, headache, narcosis, irregular cardiac activity. asphyxia May cause cardiac arrhythmia.

Delayed / immediate effects: May cause cardiac arrhythmia.

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

Immediate / special treatment: Not applicable.

Section 5: Fire-fighting measures

5.1. Extinguishing media

Extinguishing media: Alcohol resistant foam. Water spray. Carbon dioxide. Dry chemical powder. Suitable extinguishing media for the surrounding fire should be used. Use water spray to cool containers.

5.2. Special hazards arising from the substance or mixture

Exposure hazards: In combustion emits toxic fumes. Non flammable gas.

5.3. Advice for fire-fighters

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

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: * Refer to section 8 of SDS for personal protection details. For large escapes notify police and fire brigade. If outside keep bystanders upwind and away from danger point. Ventilate the area, especially low or enclosed places where heavy vapours might collect. Vapours heavier than air and can cause suffocation by reducing oxygen available for breathing.

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.

[cont...]

SAFETY DATA SHEET

REFRIGERANT R424A

Page: 4

6.4. Reference to other sections

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

Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: * Ensure there is sufficient ventilation of the area. 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 container tightly closed. Store at a temperature not exceeding 45°C.

Suitable packaging: Must only be kept in original packaging.

7.3. Specific end use(s)

Specific end use(s): * PC16: Heat transfer fluids.

Section 8: Exposure controls/personal protection

8.1. Control parameters

Hazardous ingredients:

REFRIGERANT R125

Workplace exposure limits:

Respirable dust

State	8 hour TWA	15 min. STEL	8 hour TWA	15 min. STEL
EU	1000 ppm	-	-	-

REFRIGERANT R134A

EU	4240 mg/m3	-	-	-
----	------------	---	---	---

BUTANE

UK	1450 mg/m3	1810 mg/m3	-	-
----	------------	------------	---	---

DNEL/PNEC Values

Hazardous ingredients:

REFRIGERANT R125

Type	Exposure	Value	Population	Effect
DNEL	Inhalation	16444 mg/m3	Workers	Systemic
DNEL	Inhalation	1753 mg/m3	Consumers	Systemic
PNEC	Fresh water	0.1 mg/l	-	-
PNEC	Fresh water sediments	0.6 mg/kg	-	-

[cont...]

SAFETY DATA SHEET

REFRIGERANT R424A

Page: 5

REFRIGERANT R134A

Type	Exposure	Value	Population	Effect
DNEL	Inhalation	2476 mg/m ³	Workers	Systemic
DNEL	Inhalation	2476 mg/m ³	Consumers	Systemic
PNEC	Fresh water	0.01 mg/l	-	-
PNEC	Marine water	0.75 mg/l	-	-
PNEC	Microorganisms in sewage treatment	73 mg/l	-	-
DNEL	Inhalation	13936 mg/m ³	Workers	Systemic
PNEC	Fresh water sediments	0.75 mg/kg	-	-

8.2. Exposure controls

Engineering measures: Ensure there is sufficient ventilation of the area.

Respiratory protection: Self-contained breathing apparatus must be available in case of emergency. Vapours are heavier than air and can cause suffocation by reducing the oxygen available for breathing.

Hand protection: Protective gloves.

Eye protection: Safety glasses with side-shields. Safety goggles. Face-shield. Safety glasses.

Skin protection: Protective clothing.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

State: Liquified gas

Colour: Colourless

Odour: Characteristic odour

Solubility in water: Slightly soluble

Boiling point/range°C: -46.2 to 41.5

Flammability limits %: lower: Not applicable.

upper: Not applicable.

Flash point°C: Not applicable.

Vapour pressure: 12.2 Bar at 25°C

Relative density: 3.9 (Air=1)

9.2. Other information

Other information: R424A Liquid Density: 1135.7 kg/m³ at 25 deg. C R424A Vapour density: 74.3 kg/m³ at 25 deg. 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. Stable at room temperature.

10.3. Possibility of hazardous reactions

Hazardous reactions: Hazardous reactions will not occur under normal transport or storage conditions. Decomposition may occur on exposure to conditions or materials listed below.

[cont...]

SAFETY DATA SHEET

REFRIGERANT R424A

Page: 6

10.4. Conditions to avoid

Conditions to avoid: Heat. Hot surfaces. Sources of ignition. Flames.

10.5. Incompatible materials

Materials to avoid: Strong oxidising agents. Strong acids.

10.6. Hazardous decomposition products

Haz. decomp. products: In combustion emits toxic fumes.

Section 11: Toxicological information

11.1. Information on toxicological effects

Hazardous ingredients:

REFRIGERANT R125

GASES	RAT	4H LC50	800000	ppmV
-------	-----	---------	--------	------

REFRIGERANT R134A

GASES	RAT	4H LC50	567000	ppmV
-------	-----	---------	--------	------

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 severe pain. Corneal burns may occur. May cause permanent damage.

Ingestion: * Ingestion is unlikely due to the physical properties of the product. As product is a gas refer to inhalation section.

Inhalation: Inhalation may produce the following symptoms: Shortness of breath, dizziness, weakness, nausea, headache, narcosis, irregular cardiac activity. asphyxia May cause cardiac arrhythmia.

Delayed / immediate effects: May cause cardiac arrhythmia.

Section 12: Ecological information

12.1. Toxicity

Hazardous ingredients:

REFRIGERANT R134A

Daphnia magna	48H EC50	980	mg/l
GREEN ALGA (Selenastrum capricornutum)	72H ErC50	118	mg/l
RAINBOW TROUT (Oncorhynchus mykiss)	96H LC50	450	mg/l

[cont...]

SAFETY DATA SHEET

REFRIGERANT R424A

Page: 7

12.2. Persistence and degradability

Persistence and degradability: Not biodegradable.

12.3. Bioaccumulative potential

Bioaccumulative potential: No bioaccumulation potential.

12.4. Mobility in soil

Mobility: No data available.

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: Ozone Depletion Potential (ODP): 0 (R11 = 1) R424A Global Warming Potential (GWP): 2400 (CO₂=1) Contains fluoronated greenhouse gases covered by the Kyoto Protocol.

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. If recovery is not possible, incinerate at a licensed installation.

Waste code number: 14 06 01

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: UN1078

14.2. UN proper shipping name

Shipping name: REFRIGERANT GAS, N.O.S.
(PENTAFLUOROETHANE; NORFLUANE)

14.3. Transport hazard class(es)

Transport class: 2

14.4. Packing group

14.5. Environmental hazards

Environmentally hazardous: No

Marine pollutant: No

[cont...]

SAFETY DATA SHEET

REFRIGERANT R424A

Page: 8

14.6. Special precautions for user

Special precautions: No special precautions.

Tunnel code: C/E

Transport category: 3

Section 15: Regulatory information

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

Specific regulations: * Contains fluorinated greenhouse gases covered by the Kyoto Protocol. Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of the 16 th December 2008 on Classification, labeling and Packaging of Substances and Mixtures.

15.2. Chemical Safety Assessment

Chemical safety assessment: * A chemical safety assessment has not 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: EUH044: Risk of explosion if heated under confinement.

EUH066: Repeated exposure may cause skin dryness or cracking.

H220: Extremely flammable gas.

H224: Extremely flammable liquid and vapour.

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

H304: May be fatal if swallowed and enters airways.

H336: May cause drowsiness or dizziness.

H411: Toxic to aquatic life with long lasting effects.

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.