

Section 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier****Product name:** REFRIGERANT R404A**Product code:** R404A**Synonyms:** GENETRON 404A**1.2. Relevant identified uses of the substance or mixture and uses advised against****Use of substance / mixture:** Industrial and Professional use. Advised Against: Consumer use.**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**Most important adverse effects:** Contains gas under pressure; may explode if heated.**2.2. Label elements****Label elements:****Hazard statements:** H280: Contains gas under pressure; may explode if heated.**Hazard pictograms:** GHS04: Gas cylinder**Signal words:** Warning**Precautionary statements:** P410+403: Protect from sunlight. Store in a well-ventilated place.

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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 R143A - REACH registered number(s): 01-2119492869-13

EINECS	CAS	PBT / WEL	CLP Classification	Percent
206-996-5	420-46-2	Substance with a Community workplace exposure limit.	Flam. Gas 1: H220; Press. Gas: H280	50-70%

PENTAFLUOROETHANE - REACH registered number(s): 01-2119485636-25

206-557-8	354-33-6	Substance with a Community workplace exposure limit.	Press. Gas: H280	30-50%
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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	1-10%
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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: Not applicable.

Inhalation: Remove casualty from exposure ensuring one's own safety whilst doing so. If conscious, ensure the casualty sits or lies down. 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. There may be severe pain. Corneal burns may occur. May cause permanent damage.

Ingestion: Not applicable.

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: No data available.

[cont...]

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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. Carbon dioxide. Alcohol resistant foam. 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 of carbon dioxide / carbon monoxide. In combustion emits toxic fumes of hydrogen fluoride.

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: Evacuate the area immediately. Ventilate the area, especially low or enclosed places where heavy vapours might collect.

6.2. Environmental precautions

Environmental precautions: The product evaporates readily. 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.

Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: Ensure there is sufficient ventilation of the area. Ensure there is exhaust ventilation of the area. Do not handle in a confined space.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a cool, well ventilated area. Keep container tightly closed. Keep away from direct sunlight. Store at a temperature not exceeding 45°C.

Suitable packaging: Must only be kept in original packaging.

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7.3. Specific end use(s)

Specific end use(s): ES1 - Formulation, blending, repacking - Industrial use.

Section 8: Exposure controls/personal protection

8.1. Control parameters

Hazardous ingredients:

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Workplace exposure limits:

Respirable dust

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

PENTAFLUOROETHANE

EU	1000 ppm	-	-	-
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EU	4240 mg/m ³	-	-	-
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DNEL/PNEC Values

Hazardous ingredients:

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Type	Exposure	Value	Population	Effect
DNEL	Inhalation	38800 mg/m ³	Workers	Systemic
DNEL	Inhalation	10700 mg/m ³	General Population	Systemic

PENTAFLUOROETHANE

Type	Exposure	Value	Population	Effect
DNEL	Inhalation	16444 mg/m ³	Workers	Systemic
DNEL	Inhalation	1753 mg/m ³	Consumers	Systemic
PNEC	Fresh water	0.1 mg/l	-	-
PNEC	Fresh water sediments	0.6 mg/kg	-	-

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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

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PNEC	Fresh water sediments	0.75 mg/kg	-	-
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8.2. Exposure controls

Engineering measures: Ensure there is exhaust ventilation of the area. Use only in closed systems.

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.

Skin protection: Protective clothing.

Environmental: Gas escapes to be kept to the minimum by engineering processes and operating methods.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

State: Gas

Colour: Colourless

Odour: Characteristic odour

Evaporation rate: Not applicable.

Oxidising: Not applicable.

Solubility in water: No data available.

Boiling point/range°C: -45.5

Melting point/range°C: No data available.

Flammability limits %: lower: Not applicable.

upper: Not applicable.

Flash point°C: Not applicable.

Part.coeff. n-octanol/water: No data available.

Autoflammability°C: Not applicable.

Vapour pressure: 12 546 hPa at 25oC

Relative density: 1,05 g/cm³ at 25oC

pH: Approx. 7

9.2. Other information

Other information: No data available.

Section 10: Stability and reactivity

10.1. Reactivity

Reactivity: Stable under recommended transport or storage conditions.

10.2. Chemical stability

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.

10.4. Conditions to avoid

Conditions to avoid: Heat. Hot surfaces. Direct sunlight.

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10.5. Incompatible materials

Materials to avoid: Alkali metals. Alkali earth metals. Finely powdered metals. Strong oxidising agents.

10.6. Hazardous decomposition products

Haz. decomp. products: In combustion emits toxic fumes of hydrogen fluoride. In combustion emits toxic fumes of carbon dioxide / carbon monoxide.

Section 11: Toxicological information

11.1. Information on toxicological effects

Hazardous ingredients:

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GASES	RAT	4H LC50	2030	mg/l
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PENTAFLUOROETHANE

GASES	RAT	4H LC50	800000	ppmV
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REFRIGERANT R134A

GASES	RAT	4H LC50	567000	ppmV
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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. There may be severe pain. Corneal burns may occur. May cause permanent damage.

Ingestion: Not applicable.

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: No data available.

Section 12: Ecological information

12.1. Toxicity

Hazardous ingredients:

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ALGAE		72H ErC50	71	mg/l
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Daphnia magna	48H EC50	300	mg/l
FISH	96H LC50	109	mg/l

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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

12.2. Persistence and degradability

Persistence and degradability: No data available.

12.3. Bioaccumulative potential

Bioaccumulative potential: No data available.

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) R404A Global Warming Potential (GWP): 3922 (CO₂=1) Contains fluoronated greenhouse gases covered by the Kyoto Protocol.

Section 13: Disposal considerations

13.1. Waste treatment methods

Disposal operations: Product evaporates.

Recovery operations: Consult manufacturer or supplier for information regarding recovery and recycling of the product. If recovery is not possible, incinerate at a licenced instalation.

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: UN3337

14.2. UN proper shipping name

Shipping name: REFRIGERANT GAS R 404A

14.3. Transport hazard class(es)

Transport class: 2

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14.4. Packing group

14.5. Environmental hazards

Environmentally hazardous: No

Marine pollutant: No

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: Not applicable.

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: H220: Extremely flammable gas.

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

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