

Section 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name: 2,3,3,3-TETRAFLUOROPROP-1-ENE
REACH registered number(s): 01-0000019665-61
CAS number: 754-12-1
EINECS number: 468-710-7
Product code: R1234YF
Synonyms: SOLSTICE YF REFRIGERANT

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

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: Flam. Gas 2: H224; Press. Gas: H280; -: H221

Most important adverse effects: Contains gas under pressure; may explode if heated. Flammable gas.

2.2. Label elements

Label elements:

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

H221: Flammable gas.

Hazard pictograms: GHS02: Flame

GHS04: Gas cylinder



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Signal words: Danger

Precautionary statements: P281: Use personal protective equipment as required.
P381: In case of leakage, eliminate all ignition sources.
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P260: Do not breathe vapours.
P410+P403: Protect from sunlight. Store in a well-ventilated place.
P308+P313: IF exposed or concerned: Get medical advice/attention.

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: 2,3,3,3-TETRAFLUOROPROP-1-ENE

CAS number: 754-12-1

EINECS number: 468-710-7

REACH registered number(s): 01-0000019665-61

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

Inhalation: Gas reduces oxygen available for breathing. Causes asphyxiation in high concentrations. The victim will not realize that he/she is suffocating.

Delayed / immediate effects: No data available.

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

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5.1. Extinguishing media

Extinguishing media: Water spray. Alcohol resistant foam. Dry chemical powder. Carbon dioxide. Use water spray to cool containers.

5.2. Special hazards arising from the substance or mixture

Exposure hazards: Extremely flammable. In combustion emits toxic fumes of hydrogen fluoride. In combustion emits toxic fumes of carbon dioxide / carbon monoxide.

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: Eliminate all sources of ignition. Ventilate the area, especially low or enclosed places where heavy vapours might collect. If outside keep bystanders upwind and away from danger point. Do not attempt to take action without suitable protective clothing - see section 8 of SDS.

6.2. Environmental precautions

Environmental precautions: The product evaporates readily. 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. Earth any equipment used in handling. Use non-sparking tools. Smoking is forbidden.

7.2. Conditions for safe storage, including any incompatibilities

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

Suitable packaging: Must only be kept in original packaging.

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7.3. Specific end use(s)

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
EU	500 ppm	-	-	-

DNEL/PNEC Values

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Type	Exposure	Value	Population	Effect
DNEL	Inhalation	273 mg/m ³	Workers	-
PNEC	Fresh water	> 0.1 mg/l	-	-
PNEC	Marine water	> 0.01 mg/l	-	-
PNEC	Fresh water sediments	> 1.77 mg/kg	-	-
PNEC	Soil (agricultural)	> 1.54 mg/kg	-	-

8.2. Exposure controls

Engineering measures: Ensure there is sufficient ventilation of the area. Ensure there is exhaust ventilation of the area. Ensure lighting and electrical equipment are not a source of ignition. Use only in closed systems.

Respiratory protection: Vapours are heavier than air and can cause suffocation by reducing the oxygen available for breathing. Respirator Satandars EN 136, 140, 149.

Hand protection: Protective gloves. EN 374

Eye protection: Safety glasses. EN 166

Skin protection: Protective clothing. EN 340, 463, 468, 943-1, 943-2

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: Characteristic odour

Evaporation rate: No data available.

Oxidising: Not applicable.

Solubility in water: 198.2 mg/l at 24 deg. C.

Boiling point/range°C: -29.4

Melting point/range°C: No data available.

Flammability limits %: lower: 6.2

upper: 12.3

Flash point°C: Not applicable.

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Autoflammability°C: 405

Part.coeff. n-octanol/water: log Pow=2.15

Relative density: 4 (Air=1)

Vapour pressure: 6.83 at 25oC

pH: No data available.

9.2. Other information

Other information: R1234yf Liquid density: 1.1 g/cm³ at 25oC. R1234yf Molecular weight: 114 g/mol.

Section 10: Stability and reactivity

10.1. Reactivity

Reactivity: Stable under recommended transport or storage conditions.

10.2. Chemical stability

Chemical stability: No data available.

10.3. Possibility of hazardous reactions

Hazardous reactions: Hazardous reactions will not occur under normal transport or storage conditions.

10.4. Conditions to avoid

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

10.5. Incompatible materials

Materials to avoid: Alkali metals. Alkali earth metals. Iron. Magnesium.

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

Toxicity values:

Route	Species	Test	Value	Units
GASES	RAT	4H LC50	> 400000	ppmV

Symptoms / routes of exposure

Inhalation: Gas reduces oxygen available for breathing. Causes asphyxiation in high concentrations. The victim will not realize that he/she is suffocating.

Delayed / immediate effects: No data available.

Section 12: Ecological information

12.1. Toxicity

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Ecotoxicity values:

Species	Test	Value	Units
FISH	96H ErC50	>197	mg/l
Daphnia magna	48H EC50	> 83	mg/l
ALGAE	96H LC50	> 100	mg/l

12.2. Persistence and degradability

Persistence and degradability: Not readily biodegradable.

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: R1234yf Global Warming Potential (GWP): 4 (CO₂=1). Ozone Depletion Potential (ODP): 0 (R11 = 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 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: UN3161

14.2. UN proper shipping name

Shipping name: LIQUEFIED GAS, FLAMMABLE, N.O.S.
(2,3,3,3-Tetrafluoroprop-1-en)

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

Tunnel code: B/D

Transport category: 2

Section 15: Regulatory information

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

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: H221: Flammable gas.

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

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