

SAFETY DATA SHEET

Refrigerant R442A

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**1.1. Product identifier**

Trade name: Refrigerant R442A

Other names / Synonyms: Refrigerant RS-50

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

Relevant identified uses of the substance or mixture: Refrigerant
Restricted to professional and industrial use.

Uses advised against : None known.

1.3. Details of the supplier of the safety data sheet

Company and address: **National Refrigerants Limited**
4 Watling Close
Sketchley Meadows Business Park

LE10 3EZ Hinckley
England
+44 (0)1455 630 790
www.nationalref.com

Contact person: sds@nationalref.com

Revision: 13/03/2026

SDS Version: 1.0

1.4. Emergency telephone number

Healthcare professionals: Dial 0344 892 0111 to reach The National Poisons Information Service (NPIS) (24 hour service)

General public:

England - Dial 111 to reach NHS 111 (24 hour service)

Scotland - Dial 111 to reach NHS 24 (24 hour service)

Wales - Dial 111 or 0845 4647 to reach NHS Direct (24 hour service)

See section 4 "First aid measures".

Emergency Telephone: Carechem24 +44 (0)1865 407333

SECTION 2: HAZARDS IDENTIFICATION

Classified according to Regulation (EC) No. 1272/2008 (CLP) as retained and amended in UK law.

2.1. Classification of the substance or mixture

Press. Gas (Liq.); H280, Contains gas under pressure; may explode if heated.

2.2. Label elements

Hazard pictogram(s):



Signal word:

Warning

Hazard statement(s):

Contains gas under pressure; may explode if heated.
(H280)

Precautionary statement(s):

General:

Not applicable.

Prevention:

Not applicable.

Response:

Not applicable.

Storage:

Protect from sunlight. Store in a well-ventilated place.
(P410+P403)

Disposal:

Not applicable.

Hazardous substances:

Pentafluoroethane (HFC-125)
Difluoromethane HFC-32
1,1,1,2-tetrafluoroethane (HFC-134a)
1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea)
1,1-difluoroethane

Additional labelling:

2.3. Other hazards

Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

Rapid evaporation of the liquid may cause frostbite.

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Additional warnings:

In the event of leaks, high concentrations of gases can quickly form. They can be toxic, asphyxiating, or explosive.

This mixture/product does not contain any substances known to fulfil the criteria for PBT and vPvB classification. This product does not contain any substances considered to be endocrine disruptors in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2023/707.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Not applicable. This product is a mixture.

3.2. Mixtures

Product/substance	Identifiers	% w/w	Classification	Note
Pentafluoroethane (HFC-125)	CAS No.: 354-33-6 EC No.: 206-557-8 UK-REACH: Index No.:	30-32%	Press. Gas (Liq.) , H280	
Difluoromethane HFC-32	CAS No.: 75-10-5 EC No.: 200-839-4 UK-REACH: Index No.:	30-32%	Flam. Gas 1B, H221 Press. Gas (Liq.) , H280	
1,1,1,2-tetrafluoroethane (HFC-134a)	CAS No.: 811-97-2 EC No.: 212-377-0 UK-REACH: UK-20-0812279581-1-0000 Index No.:	29-31%	EUH044 Press. Gas (Liq.) , H280	
1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea)	CAS No.: 431-89-0 EC No.: 207-079-2 UK-REACH: Index No.:	4-6%	Press. Gas (Liq.) , H280	
1,1-difluoroethane	CAS No.: 75-37-6 EC No.: 200-866-1 UK-REACH: Index No.:	2.5-3.5%	Flam. Gas 1A, H220 Press. Gas (Liq.) , H280	

See full text of H-phrases in section 16. Occupational exposure limits are listed in section 8, if these are available.

Other information

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SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

General information:

In the case of accident: Contact a doctor or casualty department – take the label or this safety data sheet. Contact a doctor if in doubt about the injured person's condition or if the symptoms persist. Never give an unconscious person water or other drink.

Inhalation:

Upon breathing difficulties or irritation of the respiratory tract: Bring the person into fresh air and stay with him/her.

Skin contact:

Exposure is not likely due to the physical state of the product (gas).

<i>Eye contact:</i>	If in eyes: Flush eyes with water or saline water (20-30 °C) for at least 5 minutes. Remove contact lenses. Seek medical assistance and continue flushing during transport.
<i>Ingestion:</i>	Exposure is not likely due to the physical state of the product (gas).
<i>Burns:</i>	Rinse with water until pain stops then continue to rinse for 30 minutes.

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

None known.

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

Treat symptomatically.

Information to medics

Bring this safety data sheet or the label from this product.

SECTION 5: FIREFIGHTING MEASURES**5.1. Extinguishing media**

Suitable extinguishing media: Alcohol-resistant foam, carbon dioxide, powder, water mist.
Unsuitable extinguishing media: Waterjets should not be used, since they can spread the fire.

5.2. Special hazards arising from the substance or mixture

Contains gas under pressure; may explode if heated.
Given that it does not present a risk gas supplies shall be disrupted immediately. Removal of pressurized containers or attempting to cool with water shall be entrusted the fire brigade. If the product is exposed to high temperatures, e.g. in the event of fire, dangerous decomposition compounds are produced. These are:
Halogenated compounds
Carbon oxides (CO / CO₂)

5.3. Advice for firefighters

Wear self-contained breathing apparatus and protective clothing to prevent contact. Upon direct exposure contact The National Poisons Information Service (dial 111, 24 h service) in order to obtain further advice.
Hazchem Code: 2TE

SECTION 6: ACCIDENTAL RELEASE MEASURES**6.1. Personal precautions, protective equipment and emergency procedures**

Accidental releases always pose a serious risk of fire or explosion.
Storages not yet ignited must be cooled by water mist. Remove flammable materials if conditions allow it. Ensure sufficient ventilation.
Disconnect the gas supply provided it does not present a risk. Avoid breathing fumes. Make sure to have a self-contained breathing apparatus available and ready-to-use in the event of an emergency.
Ensure adequate ventilation, especially in confined areas.

6.2. Environmental precautions

In the event of leakage to the surroundings, contact local environmental authorities.

6.3. Methods and material for containment and cleaning up

Disconnect the gas supply. Allow liquefied gas to evaporate and dilute into safe concentration levels in the surrounding atmosphere. If necessary control the dilution of the gas with a mist of water. Ventilate rooms in order to remove the gas.

6.4. Reference to other sections

See section 13 "Disposal considerations" on handling of waste.

See section 8 "Exposure controls/personal protection" for protective measures.

SECTION 7: HANDLING AND STORAGE**7.1. Precautions for safe handling**

Smoking, drinking and consumption of food is not allowed in the work area.

See section 8 "Exposure controls/personal protection" for information on personal protection.

7.2. Conditions for safe storage, including any incompatibilities

Vapours may propagate along the floor. Prevent the forming of flammable or explosive vapour concentrations by applying sufficient ventilation. Do not use this product in close proximity to sources of ignition.

Protect electrical equipment in accordance with current standards. To divert static electricity during transmission, containers must be grounded and connected by wire with the receiving containers. Do not use spark-forming tools.

Pressurized gas packs (spray cans, aerosol cans) must be stored behind a wire mesh, which allows gases to escape and holds back packs flying around.

Recommended storage material: Keep only in original packaging.

Storage conditions: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.
Dry, cool and well ventilated
Protect from direct sunlight
< 50°C

Incompatible materials: Strong acids
Strong oxidizing agents
Combustible materials

7.3. Specific end use(s)

This product should only be used for applications quoted in section 1.2.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**8.1. Control parameters**

Pentafluoroethane (HFC-125)

Long term exposure limit (8 hours) (ppm): 1000

Difluoromethane HFC-32

Long term exposure limit (8 hours) (ppm): 1000

1,1,1,2-tetrafluoroethane (HFC-134a)
 Long term exposure limit (8 hours) (ppm): 1000
 Long term exposure limit (8 hours) (mg/m³): 4240

1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea)
 Long term exposure limit (8 hours) (ppm): 1000

1,1-difluoroethane
 Long term exposure limit (8 hours) (ppm): 990
 Long term exposure limit (8 hours) (mg/m³): 2713

The Control of Substances Hazardous to Health Regulations 2002. SI 2002/2677 The Stationery Office 2002.
 EH40/2005 Workplace exposure limits (Fourth Edition 2020).

DNEL

1,1-difluoroethane

Duration:	Route of exposure:	DNEL:
Long term – Systemic effects - General population	Inhalation	270.14 mg/m ³
Long term – Systemic effects - Workers	Inhalation	1085.98 mg/m ³

1,1,1,2-tetrafluoroethane (HFC-134a)

Duration:	Route of exposure:	DNEL:
Long term – Systemic effects - General population	Inhalation	2476 mg/m ³
Long term – Systemic effects - Workers	Inhalation	13936 mg/m ³

Difluoromethane HFC-32

Duration:	Route of exposure:	DNEL:
Long term – Systemic effects - Workers	Inhalation	13936 mg/m ³

Pentafluoroethane (HFC-125)

Duration:	Route of exposure:	DNEL:
Long term – Systemic effects - Workers	Inhalation	16444 mg/m ³
Long term – Systemic effects - Workers	Inhalation	16444 mg/m ³

PNEC

1,1-difluoroethane

Route of exposure:	Duration of Exposure:	PNEC:
Freshwater		48-168.28 µg/L
Freshwater sediment		190-1140.59 µg/kg
Intermittent release (freshwater)		480-1682.76 µg/L
Marine water		4.8-16.83 µg/L
Marine water sediment		19-114.06 µg/kg
Sewage treatment plant		4.726 mg/L

Soil		96.01-141 µg/kg
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1,1,1,2-tetrafluoroethane (HFC-134a)

Route of exposure:	Duration of Exposure:	PNEC:
Freshwater		100 µg/L
Freshwater sediment		750 µg/kg
Intermittent release (freshwater)		1 mg/L
Marine water		10 µg/L
Sewage treatment plant		73 mg/L

1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea)

Route of exposure:	Duration of Exposure:	PNEC:
Freshwater		100 µg/L
Freshwater sediment		1.3 mg/kg
Intermittent release (freshwater)		1 mg/L
Sewage treatment plant		1.73 mg/L

Difluoromethane HFC-32

Route of exposure:	Duration of Exposure:	PNEC:
Freshwater		142 µg/L
Freshwater sediment		534 µg/kg

Pentafluoroethane (HFC-125)

Route of exposure:	Duration of Exposure:	PNEC:
Freshwater		100 µg/L
Freshwater sediment		600 µg/kg
Intermittent release (freshwater)		1 mg/L

8.2. Exposure controls

Compliance with the given occupational exposure limits values should be controlled on a regular basis.

General recommendations:

Smoking, drinking and consumption of food is not allowed in the work area.

Exposure scenarios:

There are no exposure scenarios implemented for this product.

Exposure limits:

Professional users are subjected to the legally set maximum concentrations for occupational exposure. See occupational hygiene limit values above.

Appropriate technical measures:

Adequate ventilation must be ensured for all gases. Where natural ventilation is not possible (cellar rooms), artificial ventilation must be installed. It is advantageous to store it in a lattice shed outdoors, as ventilation is no longer necessary in this case.



Hygiene measures: In between use of the product and at the end of the working day all exposed areas of the body must be washed thoroughly. Pay special attention to hands, forearms and face.

Measures to avoid environmental exposure: No special when used as intended.




Individual protection measures, such as personal protective equipment

Generally: Use only UKCA marked protective equipment.




Respiratory Equipment:

Type	Class	Colour	Standards	
Respiratory protection is not needed in the event of adequate ventilation.				
Self contained breathing apparatus			EN137, EN139	
Combination filter AXP3		Brown/White	EN14387, E143	



Skin protection:

Recommended	Type/Category	Standards	
Safety shoes	II	EN ISO 20345 / EN ISO 20347	
In the likelihood of direct or incidental exposure, wear whole-body protection, due to the risk of frost bites or skin burns.	-	-	
Dedicated work clothing should be worn. Wear a protective suit in the event of prolonged periods of work with the product.	-	-	

Hand protection:

Material	Glove thickness (mm)	Breakthrough time (min.)	Standards	
Heat Resistant			EN374, EN511	
Leather	-	-	EN388	
Vinyl/PVC	-	-	EN388, EN511	

Eye protection:

Type	Standards	
Safety glasses with side shields.	EN166	
In the likelihood of direct or incidental exposure, use face protection.	EN166	

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

<i>Physical state:</i>	Gas Liquefied Gas
<i>Colour:</i>	Colourless
<i>Odour / Odour threshold:</i>	Slight, ether-like
<i>pH:</i>	No data available
<i>Density (g/cm³):</i>	1.129 (20 °C)
<i>Relative density:</i>	Does not apply to gases.
<i>Kinematic viscosity:</i>	Not applicable
<i>Particle characteristics:</i>	Not applicable - product is a gas

Phase changes

<i>Melting point/Freezing point (°C):</i>	No data available
<i>Softening point/range (°C):</i>	Does not apply to gases.
<i>Boiling point (°C):</i>	-46.5
<i>Vapour pressure:</i>	14.27 hPa (25 °C)
<i>Relative vapour density:</i>	1.126 (20 C)
<i>Decomposition temperature (°C):</i>	Not applicable

Data on fire and explosion hazards

<i>Flash point (°C):</i>	Not applicable - product is a gas
<i>Flammability (°C):</i>	Not applicable
<i>Auto-ignition temperature (°C):</i>	No data available
<i>Lower and upper explosion limit (% v/v):</i>	Not explosive

Solubility

<i>Solubility in water:</i>	Insoluble
<i>n-octanol/water coefficient (LogKow):</i>	Not applicable
<i>Solubility in fat (g/L):</i>	No data available.

9.2. Other information

<i>Evaporation rate (n-butylacetate = 100):</i>	Not applicable
<i>Oxidizing properties:</i>	The mixture is not classified as an oxidiser.
<i>Other physical and chemical parameters:</i>	No data available.

SECTION 10: STABILITY AND REACTIVITY**10.1. Reactivity**

No data available.

10.2. Chemical stability

The product is stable under the conditions, noted in section 7 "Handling and storage".

10.3. Possibility of hazardous reactions

None known.

10.4. Conditions to avoid

Extremes of temperature

Ignition sources: Heat, flames and sparks.

Heating of cylinders, as this will cause pressure to rise with risk of bursting.

Protect from sunlight and do not expose to temperatures exceeding 50 degrees C.

10.5. Incompatible materials

Strong oxidizing agents

Finely divided metals, alkali metals (sodium, potassium), alkaline earth metals (barium, magnesium), alloys containing more than 2% magnesium.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Halogenated compounds

Hydrogen fluoride

Carbonyl halides

Carbon oxides

SECTION 11: TOXICOLOGICAL INFORMATION**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008 as retained and amended in UK law****Acute toxicity**

Product/substance Pentafluoroethane (HFC-125)
Species: Rat
Route of exposure: Inhalation
Test: LC50 (4 hours)
Result: 800000 ppmV

Product/substance Difluoromethane HFC-32
Species: Rat
Test: LD50
Result: 520000 ppmV

Product/substance Difluoromethane HFC-32
Species: Rat
Test: LC50 (4 hours)
Result: >400000 ppmV

Product/substance 1,1,1,2-tetrafluoroethane (HFC-134a)
Species: Rat
Route of exposure: Inhalation
Test: LC50 (4 hours)
Result: 567000 ppmV

Product/substance 1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea)
Species: Rat
Route of exposure: Inhalation
Test: LC50 (4 hours)
Result: >788696 ppmV

Product/substance 1,1-difluoroethane
Other information:
Toxicological effects not expected from this product if occupational exposure limit values are not exceeded.

Based on available data, the classification criteria are not met.

Skin corrosion/irritation

Product/substance Pentafluoroethane (HFC-125)
Result:

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.

Product/substance 1,1,1,2-tetrafluoroethane (HFC-134a)
Other information: No data available

Product/substance 1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea)
Result:

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

Product/substance	1,1-difluoroethane
Result:	No known effects from this product.

Based on available data, the classification criteria are not met.

Serious eye damage/irritation

Product/substance	Pentafluoroethane (HFC-125)
Result:	There may be irritation and pain

Product/substance	1,1,1,2-tetrafluoroethane (HFC-134a)
Other information:	No data available

Product/substance	1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea)
Result:	There may be severe pain. Corneal burns may occur. May cause permanent damage.

Product/substance	1,1-difluoroethane
Result:	No known effects from this product.

Based on available data, the classification criteria are not met.

Respiratory sensitisation

Product/substance	Pentafluoroethane (HFC-125)
Result:	Inhalation may produce the following symptoms: Shortness of breath, dizziness, weakness, nausea, headache, narcosis, irregular cardiac activity. Drowsiness or mental confusion may occur. There may be loss of consciousness.

Product/substance	1,1,1,2-tetrafluoroethane (HFC-134a)
Other information:	No data available

Product/substance	1,1-difluoroethane
Result:	No known effects from this product

Based on available data, the classification criteria are not met.

Skin sensitisation

Product/substance	1,1,1,2-tetrafluoroethane (HFC-134a)
Other information:	No data available

Product/substance	1,1-difluoroethane
Result:	No known effects from this product

Based on available data, the classification criteria are not met.

Germ cell mutagenicity

Product/substance	1,1,1,2-tetrafluoroethane (HFC-134a)
Test method:	OECD 471
Conclusion:	No adverse effect observed

Product/substance	1,1-difluoroethane
Conclusion:	No known effects from this product

Based on available data, the classification criteria are not met.

Carcinogenicity

Product/substance 1,1,1,2-tetrafluoroethane (HFC-134a)
Other information: Not classified based on available information.

Product/substance 1,1-difluoroethane
Conclusion: No known effects from this product

Based on available data, the classification criteria are not met.

Reproductive toxicity

Product/substance 1,1,1,2-tetrafluoroethane (HFC-134a)
Species: Rabbit
Test: General Toxicity - Maternal: NOEL:
Result: 2,500 ppm

Product/substance 1,1,1,2-tetrafluoroethane (HFC-134a)
Species: Rabbit
Test: Embryo-foetal Toxicity: NOEL:
Result: 40,000 ppm

Product/substance 1,1-difluoroethane
Conclusion: No known effects from this product

Based on available data, the classification criteria are not met.

STOT-single exposure

Product/substance 1,1,1,2-tetrafluoroethane (HFC-134a)
Other information: No data available

Product/substance 1,1-difluoroethane
Conclusion: No known effects from this product

Based on available data, the classification criteria are not met.

STOT-repeated exposure

Product/substance 1,1,1,2-tetrafluoroethane (HFC-134a)
Other information: No data available

Product/substance 1,1-difluoroethane
Conclusion: No known effects from this product

Based on available data, the classification criteria are not met.

Aspiration hazard

Product/substance 1,1,1,2-tetrafluoroethane (HFC-134a)
Other information: No data available

Product/substance 1,1-difluoroethane
Other information: Not applicable for gases and gas mixtures.

Based on available data, the classification criteria are not met.

Symptoms related to the physical, chemical and toxicological characteristics

None known.

11.2. Information on other hazards

Endocrine disrupting properties

Product/substance 1,1,1,2-tetrafluoroethane (HFC-134a)
 Other information: No data available

Product/substance 1,1-difluoroethane
 Other information: The substance/mixture has no endocrine disrupting properties.

This mixture/product does not contain any substances known to have hormone-disrupting properties in relation to health.

Other information

None known.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Product/substance Pentafluoroethane (HFC-125)
 Other information: No data available

Product/substance Difluoromethane HFC-32
 Species: Algae
 Duration: 96 hours
 Test: ErC50
 Result: 142 mg/L

Product/substance Difluoromethane HFC-32
 Species: Daphnia
 Duration: 48 hours
 Test: EC50
 Result: 652 mg/L

Product/substance Difluoromethane HFC-32
 Species: Fish
 Duration: 96 hours
 Test: LC50
 Result: 1.507 mg/L

Product/substance 1,1,1,2-tetrafluoroethane (HFC-134a)
 Species: Daphnia
 Duration: 48 hours
 Test: EC50
 Result: 980 mg/L

Product/substance 1,1,1,2-tetrafluoroethane (HFC-134a)
 Species: Fish
 Duration: 96 hours
 Test: LC50
 Result: 450 mg/L

Product/substance 1,1,1,2-tetrafluoroethane (HFC-134a)

Species: Algae
Duration: 72 hours
Test: ErC50
Result: 118 mg/L

Product/substance 1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea)
Species: Fish
Duration: 96 hours
Test: LC50
Result: >200 mg/L

Product/substance 1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea)
Species: Daphnia
Duration: 48 hours
Test: EC50
Result: >200 mg/L

Product/substance 1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea)
Species: Algae
Duration: 72 hours
Test: ErC50
Result: >114 mg/L

Product/substance 1,1-difluoroethane
Species: Daphnia
Duration: 48 hours
Test: EC50
Result: 147 mg/L

Product/substance 1,1-difluoroethane
Species: Algae
Duration: 72 hours
Test: EC50
Result: No data available

Product/substance 1,1-difluoroethane
Species: Fish
Duration: 96 hours
Test: LC50
Result: 296 mg/L

Based on available data, the classification criteria are not met.

12.2. Persistence and degradability

Product/substance 1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea)
Conclusion: -

Product/substance 1,1-difluoroethane
Conclusion: -

12.3. Bioaccumulative potential

Product/substance Refrigerant R442A
Conclusion: -

Other information: The product has no potential for bioaccumulation.

Product/substance: Pentafluoroethane (HFC-125)
Conclusion: -
Other information: No data available

Product/substance: Difluoromethane HFC-32
Conclusion: -

Product/substance: 1,1,1,2-tetrafluoroethane (HFC-134a)
Conclusion: -
Other information: No data available

Product/substance: 1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea)
Conclusion: -

Product/substance: 1,1-difluoroethane
Conclusion: -

12.4. Mobility in soil

Difluoromethane HFC-32
LogKoc = 1.52, High mobility potential.

12.5. Results of PBT and vPvB assessment

This mixture/product does not contain any substances known to fulfil the criteria for PBT and vPvB classification.

12.6. Endocrine disrupting properties

Product/substance: Refrigerant R442A
Other information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57f.

Product/substance: Difluoromethane HFC-32
Other information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57f.

Product/substance: 1,1,1,2-tetrafluoroethane (HFC-134a)
Other information: No data available

Product/substance: 1,1-difluoroethane
Other information: The substance/mixture has no endocrine disrupting properties.

This mixture/product does not contain any substances considered to have endocrine-disrupting properties in relation to the environment.

12.7. Other adverse effects

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Contains fluorinated greenhouse gases covered by the Kyoto Protocol.
Global Warming Potential: 1,888 (CO₂=1)

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods

Product is covered by the regulations on hazardous waste. (*)

Regulation (EU) No 1357/2014 of 18 December 2014 on waste as retained and amended in UK law.

EWC code

14 06 01* Chlorofluorocarbons, HCFC, HFC

Specific labelling




Contaminated packing

EWC code:

16 05 04*

Gases in pressure containers (including halons) containing dangerous substances

SECTION 14: TRANSPORT INFORMATION

	14.1 UN / ID	14.2 UN proper shipping name	14.3 Hazard class(es)	14.4 PG*	14.5 Env**	Other information:
ADR/A DN/RI D	UN1078	REFRIGERANT GAS, N.O.S. (Pentafluoroethane (HFC-125), Difluoromethane HFC-32, 1,1,1,2-tetrafluoroethane (HFC-134a), 1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea), 1,1-difluoroethane)	Transport hazard class: 2 Label: 2.2 Classification code: 2A 	-	No	Limited quantities: 120 ml Tunnel restriction code: (C/E) See below for additional information.
IMDG	UN1078	REFRIGERANT GAS, N.O.S. (Pentafluoroethane (HFC-125), Difluoromethane HFC-32, 1,1,1,2-tetrafluoroethane (HFC-134a), 1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea), 1,1-difluoroethane)	Transport hazard class: 2 Label: 2.2 Classification code: 2A 	-	No	Limited quantities: 120 ml EmS: F-C S-V See below for additional information.
IATA	UN1078	REFRIGERANT GAS, N.O.S. (Pentafluoroethane (HFC-125), Difluoromethane HFC-32, 1,1,1,2-tetrafluoroethane (HFC-134a), 1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea), 1,1-difluoroethane)	Transport hazard class: 2 Label: 2.2 Classification code: 2A 	-	No	See below for additional information.

* Packing group

** Environmental hazards

Additional information

This product is within scope of the regulations of transport of dangerous goods.

ADR/ADN/RID / See Table A, section 3.2.1 for any information on special provisions, requirements, or warnings in connection with transport. See section 5.4.3, for instructions in writing regarding mitigation of damages in relation to incidents or accidents during transport.

IMDG / See section 3.2.1, for any information on special provisions, requirements, or warnings in connection with transport.

IATA / See Table 4.2 for any information on special provisions, requirements, or warnings in connection with transport.

Hazchem Code: 2TE

14.6. Special precautions for user

Not applicable.

14.7. Maritime transport in bulk according to IMO instruments

No data available.

SECTION 15: REGULATORY INFORMATION

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

Restrictions for application:

Restricted to professional users.

Demands for specific education:

No specific requirements.

Control of Major Accident Hazards (COMAH) - Categories / dangerous substances:

Not applicable.

UK-REACH, Annex XVII:

Difluoromethane HFC-32 is subject to UK-REACH restrictions (entry 40).
1,1-difluoroethane is subject to UK-REACH restrictions (entry 40).

Additional information:

Not applicable.

Sources:

Regulation (EU) No 1357/2014 of 18 December 2014 on waste as retained and amended in UK law.
The Fluorinated Greenhouse Gases (Amendment) Regulations 2023
Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures (CLP) as retained and amended in UK law.
Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as retained and amended in UK law.

15.2. Chemical safety assessment

No

SECTION 16: OTHER INFORMATION

Full text of H-phrases as mentioned in section 3

EUH044, Risk of explosion if heated under confinement.

H220, Extremely flammable gas.
H221, Flammable gas
H280, Contains gas under pressure; may explode if heated.

Abbreviations and acronyms

ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
CAS = Chemical Abstracts Service
CE = Conformité Européenne (European conformity)
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
CSA = Chemical Safety Assessment
CSR = Chemical Safety Report
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
EC = Effective concentration
ED = Effective dose
EINECS = European Inventory of Existing Commercial chemical Substances
EL = Effective Loading
ErC = Concentration associated with x% growth rate response
ES = Exposure Scenario
EUH statement = CLP-specific Hazard statement
EuPCS = European Product Categorisation System
EWC = European Waste Catalogue
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
GWP = Global warming potential
HP = Hazardous Property code
IARC = International Agency for Research on Cancer (IARC)
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IC = X maximum inhibitory concentration
IMDG = International Maritime Dangerous Goods
LC = Lethal concentration
LCLo = Value is the lowest concentration of a material in air reported to have caused the death of animals or humans
LD = Lethal dose
LOAEC = Lowest Observed Adverse Effect Concentration
LOAEL = Lowest Observed Adverse Effect Level
LOEC = Lowest Observed Effect Concentration
LogKow = logarithm of the n-octanol/water coefficient
LL = Lethal Loading
M = For multiplication factor
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
NOAEC = No Observed Adverse Effect Concentration
NOAEL = No Observed Adverse Effect Level
NOEC = No Observed Effect Concentration

NOELR = No Observable Effect Loading Rate
OECD = Organisation for Economic Co-operation and Development
PBT = Persistent, Bioaccumulative and Toxic
PNEC = Predicted No Effect Concentration
RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
RRN = REACH Registration Number
SCL = A specific concentration limit
SVHC = Substances of Very High Concern
STOT-RE = Specific Target Organ Toxicity - Repeated Exposure
STOT-SE = Specific Target Organ Toxicity - Single Exposure
TWA = Time weighted average
UN = United Nations
UVBC = Unknown or variable composition, complex reaction products or of biological materials
VOC = Volatile Organic Compound
vPvB = Very Persistent and Very Bioaccumulative

Additional information

The classification of the mixture in regard to physical hazards has been based on experimental data.

The safety data sheet is validated by

National Refrigerants Ltd

Other

A change (in proportion to the last essential change (first cipher in SDS version, see section 1)) is marked with a triangle.

The information in this safety data sheet applies only to this specific product (mentioned in section 1) and is not necessarily correct for use with other chemicals/products.

It is recommended to hand over this safety data sheet to the actual user of the product.

Information in this safety data sheet cannot be used as a product specification.

Country-language: GB-en