

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

1.1. Product identifier

Product name: REFRIGERANT R452B

REACH registered number(s): MIXTURE

Product code: R452B

Synonyms: SOLSTICE L41Y
OPTEON XL55

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 1: H220; Press. Gas: H280

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

2.2. Label elements

Label elements:

Hazard statements: H220: Extremely flammable gas.

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

Hazard pictograms: GHS02: Flame

GHS04: Gas cylinder



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Signal words: Danger

Precautionary statements: 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.

P381: Eliminate all ignition sources if safe to do so.

P410+403: Protect from sunlight. Store in a well-ventilated place.

2.3. Other hazards

Other hazards: In use, may form flammable / explosive vapour-air mixture.

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

Section 3: Composition/information on ingredients

3.2. Mixtures

Hazardous ingredients:

DIFLUOROMETHANE - REACH registered number(s): 01-2119471312-47

EINECS	CAS	PBT / WEL	CLP Classification	Percent
200-839-4	75-10-5	Substance with a Community workplace exposure limit.	Flam. Gas 1: H220; Press. Gas: H280	67.000%

2,3,3,3-TETRAFLUOROPROP-1-EN - REACH registered number(s): 01-0000019665-61

-	754-12-1	Substance with a Community workplace exposure limit.	Flam. Gas 1: H220; Press. Gas: H280	26.000%
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PENTAFLUOROETHANE - REACH registered number(s): 01-2119485636-25

206-557-8	354-33-6	Substance with a Community workplace exposure limit.	Press. Gas: H280	7.000%
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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. Consult a doctor.

Ingestion: Not applicable.

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 pain and redness. 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.

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Inhalation: Inhalation may produce the following symptoms: Shortness of breath, dizziness, weakness, nausea, headache, narcosis, irregular cardiac activity. Gas reduces oxygen available for breathing. Causes asphyxiation in high concentrations. The victim will not realize that he/she is suffocating. 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. Use water spray to cool containers. Suitable extinguishing media for the surrounding fire should be used.

5.2. Special hazards arising from the substance or mixture

Exposure hazards: Flammable. In combustion emits toxic fumes. Forms explosive air-vapour mixture.

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. Eliminate all sources of ignition. If outside keep bystanders upwind and away from danger point. 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: Do not use equipment in clean-up procedure which may produce sparks. 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: Smoking is forbidden. Use non-sparking tools. Do not handle in a confined space. Avoid direct contact with the substance. Ensure there is sufficient ventilation of the area.

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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 sources of ignition. Prevent the build up of electrostatic charge in the immediate area. Ensure lighting and electrical equipment are not a source of ignition. Keep away from direct sunlight.

Suitable packaging: Must only be kept in original packaging.

7.3. Specific end use(s)

Specific end use(s): No data available.

Section 8: Exposure controls/personal protection

8.1. Control parameters

Hazardous ingredients:

DIFLUOROMETHANE

Workplace exposure limits:

Respirable dust

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

2,3,3,3-TETRAFLUOROPROP-1-EN

EU	500 ppm	-	-	-
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PENTAFLUOROETHANE

EU	1000 ppm	-	-	-
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DNEL/PNEC Values

Hazardous ingredients:

DIFLUOROMETHANE

Type	Exposure	Value	Population	Effect
DNEL	Inhalation (developmental tox)	13936 mg/m ³	Workers	Systemic
DNEL	Inhalation (developmental tox)	2476 mg/m ³	Consumers	Systemic
PNEC	Fresh water	0.142 mg/l	-	-
PNEC	Fresh water sediments	0.534 mg/kg	-	-

2,3,3,3-TETRAFLUOROPROP-1-EN

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	-	-

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PNEC	Soil (agricultural)	> 1.54 mg/kg	-	-
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PENTAFLUOROETHANE

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	-	-

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: Respiratory protection not required. 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: Material: Leather gloves. Protective gloves. The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection: Safety glasses with side-shields. Safety goggles. Face-shield. Ensure eye bath is to hand.

Skin protection: Protective clothing. Avoid skin contact with leaking liquid (danger of frostbite).

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: No data available.

Solubility in water: Slightly soluble

Viscosity: No data available.

Boiling point/range°C: -51.0 to -50.3

Melting point/range°C: No data available.

Flammability limits %: lower: 11.9

upper: No data available.

Flash point°C: No data available.

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

Autoflammability°C: No data available.

Vapour pressure: 1537.4kPa@25c

Relative density: Liq. 993 kg/m3 @ 25C

pH: Not applicable.

VOC g/l: Not applicable.

9.2. Other information

Other information: No data available.

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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.

10.4. Conditions to avoid

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

10.5. Incompatible materials

Materials to avoid: Potassium. Finely powdered metals. Aluminium. Magnesium. Zinc. Strong oxidising agents.
Strong acids.

10.6. Hazardous decomposition products

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

Section 11: Toxicological information

11.1. Information on toxicological effects

Hazardous ingredients:

DIFLUOROMETHANE

GASES	RAT	LD50	520000	ppmV
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2,3,3,3-TETRAFLUOROPROP-1-EN

GASES	RAT	4H LC50	> 400000	ppmV
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PENTAFLUOROETHANE

GASES	RAT	4H LC50	800000	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 pain and redness. 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.

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Inhalation: Inhalation may produce the following symptoms: Shortness of breath, dizziness, weakness, nausea, headache, narcosis, irregular cardiac activity. Gas reduces oxygen available for breathing. Causes asphyxiation in high concentrations. The victim will not realize that he/she is suffocating. May cause cardiac arrhythmia.

Section 12: Ecological information

12.1. Toxicity

Hazardous ingredients:

DIFLUOROMETHANE

ALGAE	96H ErC50	142	mg/l
Daphnia magna	48H EC50	652	mg/l
FISH	96H LC50	1.057	mg/l

2,3,3,3-TETRAFLUOROPROP-1-EN

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

12.2. Persistence and degradability

Persistence and degradability: Biodegradable.

12.3. Bioaccumulative potential

Bioaccumulative potential: No bioaccumulation potential.

12.4. Mobility in soil

Mobility: 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: Negligible ecotoxicity. Ozone Depletion Potential (ODP): 0 (R11 = 1) R452B GWP: 698 (AR4); 676 (AR5)

Section 13: Disposal considerations

13.1. Waste treatment methods

Disposal operations: 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.

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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.
(PENTAFLUOROETHANE; 2,3,3,3-TETRAFLUOROPROP-1-EN)

14.3. Transport hazard class(es)

Transport class: 2

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: B/D

Transport category: 2

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 on Fluorinated Greenhouse Gases 842/2006/EC: Listed 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: H220: Extremely flammable gas.

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.