

Section 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier****Product name:** REFRIGERANT R1233ZD**REACH registered number(s):** 01-2119855084-38**CAS number:** 102687-65-0**EINECS number:** 700-486-0**Product code:** R1233ZD**Synonyms:** TRANS-1-CHLORO-3,3,3-TRIFLUOROPROPENE

SOLSTICE ZD SOLSTICE 1233ZD

FORANE FBA 1233ZD

INCI name: TRANS-1-CHLORO-3,3,3-TRIFLUOROPROPENE**1.2. Relevant identified uses of the substance or mixture and uses advised against****Use of substance / mixture:** Refrigerant PC16: Heat transfer fluids. Power cycle fluid**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:** Aquatic Chronic 3: H412; Press. Gas: H280**Most important adverse effects:** Harmful to aquatic life with long lasting effects. Contains gas under pressure; may explode if heated.**2.2. Label elements****Label elements:****Hazard statements:** H412: Harmful to aquatic life with long lasting effects.

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

[cont...]

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Hazard pictograms: GHS04: Gas cylinder



Signal words: Warning

Precautionary statements: P273: Avoid release to the environment.

P281: Use personal protective equipment as required.

P260: Do not breathe vapours.

P308+P313: IF exposed or concerned: Get medical advice.

P410+P403: 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

3.1. Substances

Chemical identity: REFRIGERANT R1233ZD

CAS number: 102687-65-0

EINECS number: 700-486-0

REACH registered number(s): 01-2119855084-38

Section 4: First aid measures

4.1. Description of first aid measures

Skin contact: Wash immediately with plenty of soap and water. Remove all contaminated clothes and footwear immediately unless stuck to skin. Consult a doctor.

Eye contact: Remove contact lenses if present and easy to do so. Bathe the eye with running water for 15 minutes. Consult a doctor.

Ingestion: Do not induce vomiting. Consult a doctor.

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 irritation and redness at the site of contact.

Eye contact: There may be irritation and pain. May cause permanent damage.

Ingestion: Nausea and stomach pain may occur. There may be vomiting.

Inhalation: Gas reduces oxygen available for breathing. Causes asphyxiation in high concentrations.

Delayed / immediate effects: No data available.

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

Section 5: Fire-fighting measures

5.1. Extinguishing media

Extinguishing media: Water spray. Dry chemical powder. Alcohol resistant foam. Carbon dioxide. Cool cylinders with water spray. Do not use water stream.

5.2. Special hazards arising from the substance or mixture

Exposure hazards: In combustion emits toxic fumes of hydrogen fluoride. In combustion emits toxic fumes of hydrogen chloride / phosgene. Pressure build up. Fire or intense heat may cause violent rupture of packages.

5.3. Advice for fire-fighters

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

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: For large escapes notify police and fire brigade. Do not attempt to take action without suitable protective clothing - see section 8 of SDS. If outside keep bystanders upwind and away from danger point.

6.2. Environmental precautions

Environmental precautions: Should not be released into the environment. Do not discharge into drains or rivers. Stop release if safe to do so. Contain the spillage using bunding.

6.3. Methods and material for containment and cleaning up

Clean-up procedures: Absorb into dry earth or sand. Mix with sand or vermiculite. Transfer to a closable, labelled salvage container for disposal by an appropriate method.

6.4. Reference to other sections

Reference to other sections: Refer to section 8 of SDS. Refer to section 13 of SDS.

Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: Ensure there is sufficient 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.

Suitable packaging: Must only be kept in original packaging.

7.3. Specific end use(s)

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

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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
UK	800 ppm	-	-	-

DNEL/PNEC Values

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Type	Exposure	Value	Population	Effect
DNEL	Inhalation	1779 mg/m3	Workers	Systemic
DNEL	Inhalation	379 mg/m3	Consumers	Systemic
PNEC	Fresh water	0.038 mg/l	-	-
PNEC	Marine water	0.0038 mg/l	-	-
PNEC	Fresh water sediments	0.691 mg/kg dw	-	-
PNEC	Marine sediments	0.0691 mg/kg dw	-	-
PNEC	Soil (agricultural)	0.126 mg/kg dw	-	-

8.2. Exposure controls

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

Respiratory protection: Self-contained breathing apparatus must be available in case of emergency. EN 133

Hand protection: Viton gloves. The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection: Safety goggles.

Skin protection: Protective clothing.

Environmental: Handle in accord with local environmental regulations and good industrial practice.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

State: Liquid

Colour: Colourless

Odour: Barely perceptible odour

Solubility in water: 1.90 g/l at 20 deg C

Boiling point/range°C: 19

Melting point/range°C: < -90

Flammability limits %: lower: Not applicable.

upper: Not applicable.

Flash point°C: Not applicable.

Part.coeff. n-octanol/water: log Pow 2.2

Autoflammability°C: 380

Vapour pressure: 1.0650hPa at 20degC

Relative density: 1.27 g/cm3

pH: Not applicable.

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9.2. Other information

Other information: R1233zd Molecular Weight: 130.5 g/mol.

Section 10: Stability and reactivity

10.1. Reactivity

Reactivity: No data available.

10.2. Chemical stability

Chemical stability: No data available.

10.3. Possibility of hazardous reactions

Hazardous reactions: No data available.

10.4. Conditions to avoid

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

10.5. Incompatible materials

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

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 chloride / phosgene. In combustion emits toxic fumes of hydrogen fluoride.

Section 11: Toxicological information

11.1. Information on toxicological effects

Toxicity values:

Route	Species	Test	Value	Units
VAPOURS	RAT	LD50	120000	ppmV

Symptoms / routes of exposure

Skin contact: There may be irritation and redness at the site of contact.

Eye contact: There may be irritation and pain. May cause permanent damage.

Ingestion: Nausea and stomach pain may occur. There may be vomiting.

Inhalation: Gas reduces oxygen available for breathing. Causes asphyxiation in high concentrations.

Delayed / immediate effects: No data available.

Other information: Not applicable.

Section 12: Ecological information

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12.1. Toxicity

Ecotoxicity values:

Species	Test	Value	Units
RAINBOW TROUT (<i>Oncorhynchus mykiss</i>)	96H LC50	38	mg/l
ALGAE	72H ErC50	215	mg/l
Daphnia magna	48H EC50	82	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: No data available.

Section 13: Disposal considerations

13.1. Waste treatment methods

Disposal operations: Transfer to a suitable container and arrange for collection by specialised disposal company. 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.

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: UN3163

14.2. UN proper shipping name

Shipping name: LIQUEFIED GAS, N.O.S.
(TRANS-1-CHLORO-3,3,3-TRIFLUOROPROPENE)

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: Yes

14.6. Special precautions for user

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: US. Toxic Substances Control Act: On TSCA Inventory.

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

H412: Harmful 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.