

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

1.1. Product identifier

Product form	: Substance
Name	: R-1233zd
Chemical name	: Trans-1-chloro-3,3,3-trifluoropropene
EC-No.	: 700-486-0
CAS-No.	: 102687-65-0
REACH registration No	: 01-2119855084-38
Product code	: 101123300
Synonyms	: HCFO 1233zd, Novexpans HCFO 1233zd, Solstice® zd

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

1.2.1. Relevant identified uses

Use of the substance/mixture	: Refrigerant
	Heat transfer fluid
	Foam blowing agent

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Supplier

Dehon Service SAS
26 Avenue du Petit Parc
94683 VINCENNES Cedex
France
T 01 43 98 75 00 - F 01 43 98 21 51
ContactFDS@climalife.dehon.com

Other

Climalife Kft Budepesta sucurcala Bucuresti Romania
Bulevardul Hristo Botev, Nr. 28, Biroul NR 4, Modulul I
Bucuresti Sectorul 3
Romania
ContactFDS@climalife.dehon.com

Other

Dehon Kälte-Fachvertriebs GmbH
Robert-Bosch-Strasse 14
40668 MEERBUSCH
Germany
T 00 49 2150 7073 0 - F 00 49 2150 7073 17
ContactFDS@climalife.dehon.com

Other

Dehon Service Belgium s.a/n.v.
Avenue Carton de Wiart, 79
1090 Bruxelles
Belgium
T 00 32 2 421 01 70 - F 00 32 2 426 96 62
ContactFDS@climalife.dehon.com

Other

Prochimac SA
ZI Petits Champs 15
CH-1400 Yverdon-les-Bains
Switzerland
T 00 41 32 727 36 00 - F 00 41 32 727 36 19
ContactFDS@climalife.dehon.com

Other

Climalife Hongrie Kft
Villányi út 47
1118 Budaörs
Hungary
T (36) 23 431 660 - F (36) 23 431 661
ContactFDS@climalife.dehon.com

Other

Climalife Supplied by Inventec Performance Chemicals Italia SRL
Via del Lavoro, 10/G
20874 Busnago MB
Italia
T +39 39-5973480 - F +39 39-5973490
ContactFDS@climalife.dehon.com

Other

Dehon nordic service
Östra Hamngatan 50B 3tr
41109 GÖTEBORG
Sweden
T 00 46 735 01 90 50
ContactFDS@climalife.dehon.com

Other

Friogas sa
Poligono Industrial SEPES Parcela 10
46500 SAGUNTO (Valencia)
Spain
T 00 34 9 6 266 36 32 - F 00 34 9 6 266 50 25
ContactFDS@climalife.dehon.com

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1.4. Emergency telephone number

Emergency number : +33 (0) 1 72 11 00 03

Country	Organisation/Company	Address	Emergency number	Comment
United Kingdom	National Poisons Information Service (Birmingham Centre) City Hospital	Dudley Road B18 7QH Birmingham	0344 892 0111	Only for healthcare professionals

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Press. Gas (Liq.) H280

Aquatic Chronic 3 H412

Full text of hazard classes, H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)



GHS04

Signal word (CLP)

: Warning

Hazard statements (CLP)

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

H412 - Harmful to aquatic life with long lasting effects.

Precautionary statements (CLP)

: P273 - Avoid release to the environment.

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

2.3. Other hazards

Contains no PBT/vPvB substances $\geq 0.1\%$ assessed in accordance with REACH Annex XIII

SECTION 3: Composition/information on ingredients

3.1. Substances

Name : R-1233zd
CAS-No. : 102687-65-0
EC-No. : 700-486-0

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Trans-1-chloro-3,3,3-trifluoropropene	CAS-No.: 102687-65-0 EC-No.: 700-486-0 REACH-no: 01-2119855084-38	100	Press. Gas (Liq.), H280 Aquatic Chronic 3, H412

Full text of H- and EUH-statements: see section 16

3.2. Mixtures

Not applicable

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SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation	: Remove victim to fresh air. Artificial respiration and/or oxygen if necessary. Call a physician immediately.
First-aid measures after skin contact	: After contact with skin, wash immediately and thoroughly with plenty of water. Immediately remove contaminated clothing or footwear. Wash contaminated clothing before reuse. Call a physician immediately.
First-aid measures after eye contact	: Rinse immediately and thoroughly, pulling the eyelids well away from the eye (15 minutes minimum). Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately.
First-aid measures after ingestion	: Rinse mouth. Do not induce vomiting. Call a physician immediately.

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

No additional information available

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

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Water spray. Foam. Dry powder. Carbon dioxide.
Unsuitable extinguishing media	: Strong water jet.

5.2. Special hazards arising from the substance or mixture

Fire hazard	: Heating will cause a rise in pressure with a risk of bursting. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
Reactivity in case of fire	: Toxic and corrosive vapours may be released.

5.3. Advice for firefighters

Precautionary measures fire	: Cool down the containers exposed to heat with a water spray.
Protection during firefighting	: Complete protective clothing. Self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Evacuate personnel to a safe area. Only qualified personnel equipped with suitable protective equipment may intervene. Ensure adequate ventilation.
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6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Avoid release to the environment. Do not discharge into drains or rivers.

6.3. Methods and material for containment and cleaning up

For containment	: Dike and contain spill. Liquid spill: take up in dry sand/earth/vermiculite. Place in an appropriate container and dispose of the contaminated material at a licensed site.
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6.4. Reference to other sections

For disposal of solid materials or residues refer to section 13 : "Disposal considerations". For further information refer to section 8: "Exposure controls/personal protection".

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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	: Ensure adequate ventilation, especially in confined areas. Do not breathe vapour/aerosol. Remove all sources of ignition.
Hygiene measures	: Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	: Keep only in the original container in a cool, well ventilated place away from : acids. Store away from direct sunlight or other heat sources.
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7.3. Specific end use(s)

For use in industrial installations or professional treatment only.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

Trans-1-chloro-3,3,3-trifluoropropene (102687-65-0)

EU - Indicative Occupational Exposure Limit (IOEL)

IOEL TWA [ppm]	800 ppm (recommended)
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8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

Trans-1-chloro-3,3,3-trifluoropropene (102687-65-0)

DNEL/DMEL (Workers)

Long-term - systemic effects, inhalation	1779 mg/m³
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DNEL/DMEL (General population)

Long-term - systemic effects, oral	109 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	379 mg/m³

PNEC (Water)

PNEC aqua (freshwater)	0.038 mg/l
PNEC aqua (marine water)	0.0038 mg/l
PNEC aqua (intermittent, freshwater)	0.38 mg/l

PNEC (Sediment)

PNEC sediment (freshwater)	0.691 mg/kg dwt
PNEC sediment (marine water)	0.0691 mg/kg dwt

PNEC (Soil)

PNEC soil	0.126 mg/kg dwt
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8.1.5. Control banding

No additional information available

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8.2. Exposure controls

8.2.1. Appropriate engineering controls

No additional information available

8.2.2. Personal protection equipment

Personal protective equipment symbol(s):



8.2.2.1. Eye and face protection

Eye protection:

Safety glasses

8.2.2.2. Skin protection

Skin and body protection:

safety foot-wear

Hand protection:

VITON gloves

8.2.2.3. Respiratory protection

Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment. Gas mask with filter type AX

8.2.2.4. Thermal hazards

No additional information available

8.2.3. Environmental exposure controls

No additional information available

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: Press. Gas (Liq.).
Molecular mass	: 130.5 g/mol
Colour	: Colourless.
Odour	: No data available
Odour threshold	: No data available
pH	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: < -90 °C
Freezing point	: No data available
Boiling point	: 19 °C
Flash point	: Not applicable
Auto-ignition temperature	: 380 °C (986,9 - 1035,9 hPa)
Decomposition temperature	: No data available
Flammability (solid, gas)	: Non flammable.
Vapour pressure	: 1065 hPa (20°C)
Vapour pressure at 50 °C	: 1516 hPa (30°C)
Relative vapour density at 20 °C	: No data available
Relative density	: 1.27
Solubility	: Water: 1.9 g/l (20°C)
Partition coefficient n-octanol/water (Log Pow)	: 2.2 (25°C)
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: Not explosive.

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Oxidising properties : Non oxidizing.
Explosive limits : No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

None under normal conditions.

10.2. Chemical stability

The product is stable at normal handling and storage conditions.

10.3. Possibility of hazardous reactions

Polymerisation can occur.

10.4. Conditions to avoid

Heating will cause a rise in pressure with a risk of bursting. Keep away from heat and direct sunlight.

10.5. Incompatible materials

Acids. Strong oxidizing agents. Finely divided aluminium. Magnesium.

10.6. Hazardous decomposition products

Thermal decomposition may produce : Carbon oxides (CO, CO₂). Hydrogen chloride. Hydrogen fluoride.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

Trans-1-chloro-3,3,3-trifluoropropene (102687-65-0)	
LC50 Inhalation - Rat [ppm]	120000 ppm Animal: rat, Guideline: OECD Guideline 403 (Acute Inhalation Toxicity), 95% CL: 108500 - 133800

Skin corrosion/irritation : Not irritating to rabbits on cutaneous application. (OECD 404 method)
Serious eye damage/irritation : Not classified
Respiratory or skin sensitisation : No sensitizing effect known
Germ cell mutagenicity : Mutagenicity tests are negative
Carcinogenicity : Not classified
Reproductive toxicity : Not classified
STOT-single exposure : Not classified
STOT-repeated exposure : Not classified

Trans-1-chloro-3,3,3-trifluoropropene (102687-65-0)	
LOAEC (inhalation, rat, gas, 90 days)	4000 ppm Animal: rat, Animal sex: male, Guideline: OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day Study)

Aspiration hazard : Not classified

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SECTION 12: Ecological information

12.1. Toxicity

Hazardous to the aquatic environment, short-term (acute) : Not classified
Hazardous to the aquatic environment, long-term (chronic) : Harmful to aquatic life with long lasting effects.

Trans-1-chloro-3,3,3-trifluoropropene (102687-65-0)

LC50 - Fish [1]	≈ 38 mg/l Test organisms (species): Oncorhynchus mykiss (previous name: Salmo gairdneri)
EC50 - Crustacea [1]	82 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	> 215 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)

12.2. Persistence and degradability

Trans-1-chloro-3,3,3-trifluoropropene (102687-65-0)

Persistence and degradability	0 % biodegradation after 28 days. Not readily biodegradable. (OECD 301D method).
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12.3. Bioaccumulative potential

R-1233zd (102687-65-0)

Partition coefficient n-octanol/water (Log Pow)	2.2 (25°C)
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Trans-1-chloro-3,3,3-trifluoropropene (102687-65-0)

Partition coefficient n-octanol/water (Log Pow)	2.2
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12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product/Packaging disposal recommendations : Refer to manufacturer or supplier for information on recovery or recycling.
Additional information : Reuse or recycle following decontamination. Destroy at an authorised site.
Ecology - waste materials : Must not be discharged to atmosphere. Refer to manufacturer or supplier for information on recovery or recycling.

SECTION 14: Transport information





In accordance with ADR / IMDG / IATA / RID

ADR	IMDG	IATA	RID
14.1. UN number			
UN 3163	UN 3163	UN 3163	UN 3163

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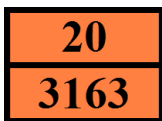
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ADR	IMDG	IATA	RID
14.2. UN proper shipping name			
LIQUEFIED GAS, N.O.S. (Trans-1-chloro-3,3,3-trifluoropropene)	LIQUEFIED GAS, N.O.S. (Trans-1-chloro-3,3,3-trifluoropropene)	Liquefied gas, n.o.s. (Trans-1-chloro-3,3,3-trifluoropropene)	LIQUEFIED GAS, N.O.S. (Trans-1-chloro-3,3,3-trifluoropropene)
Transport document description			
UN 3163 LIQUEFIED GAS, N.O.S. (Trans-1-chloro-3,3,3-trifluoropropene), 2.2, (C/E)	UN 3163 LIQUEFIED GAS, N.O.S. (Trans-1-chloro-3,3,3-trifluoropropene), 2.2	UN 3163 Liquefied gas, n.o.s. (Trans-1-chloro-3,3,3-trifluoropropene), 2.2	UN 3163 LIQUEFIED GAS, N.O.S. (Trans-1-chloro-3,3,3-trifluoropropene), 2.2
14.3. Transport hazard class(es)			
2.2	2.2	2.2	2.2
			
14.4. Packing group			
Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards			
Dangerous for the environment: No	Dangerous for the environment: No Marine pollutant: No	Dangerous for the environment: No	Dangerous for the environment: No
No supplementary information available			
14.6. Special precautions for user			

Overland transport

Classification code (ADR) : 2A
Special provisions (ADR) : 274, 662
Limited quantities (ADR) : 120ml
Tank code (ADR) : PxBN(M)
Transport category (ADR) : 3
Hazard identification number (Kemler No.) : 20
Orange plates :



Tunnel restriction code (ADR) : C/E
EAC code : 2TE

Transport by sea

Special provisions (IMDG) : 274
Limited quantities (IMDG) : 120 ml
EmS-No. (Fire) : F-C
EmS-No. (Spillage) : S-V
Flash point (IMDG) : Not applicable.

Air transport

PCA Limited quantities (IATA) : Forbidden
PCA limited quantity max net quantity (IATA) : Forbidden
PCA packing instructions (IATA) : 200
PCA max net quantity (IATA) : 75kg
CAO packing instructions (IATA) : 200
CAO max net quantity (IATA) : 150kg

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Rail transport

Special provisions (RID) : 274, 662
Limited quantities (RID) : 120ml
Tank codes for RID tanks (RID) : PxBN(M)
Transport category (RID) : 3
Colis express (express parcels) (RID) : CE3
Hazard identification number (RID) : 20

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

REACH Annex XVII (Restriction List)

No REACH Annex XVII restrictions

REACH Annex XIV (Authorisation List)

R-1233zd is not on the REACH Annex XIV List

REACH Candidate List (SVHC)

R-1233zd is not on the REACH Candidate List

PIC Regulation (Prior Informed Consent)

R-1233zd is not subject to Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals.

POP Regulation (Persistent Organic Pollutants)

R-1233zd is not subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

Ozone Regulation (1005/2009)

R-1233zd is not subject to REGULATION (EU) No 1005/2009 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 September 2009 on substances that deplete the ozone layer.

Explosives Precursors Regulation (2019/1148)

Contains no substance subject to Regulation (EU) 2019/1148 of the European Parliament and of the Council of 20 June 2019 on the marketing and use of explosives precursors.

Drug Precursors Regulation (273/2004)

Contains no substance subject to Regulation (EC) 273/2004 of the European Parliament and of the Council of 11 February 2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances.

15.1.2. National regulations

No additional information available

15.2. Chemical safety assessment

Not applicable.

SECTION 16: Other information

Indication of changes

Section	Changed item	Change	Comments
1.1	Product name	Modified	
1.1	Synonyms	Modified	

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Full text of H- and EUH-statements:

Aquatic Chronic 3	Hazardous to the aquatic environment – Chronic Hazard, Category 3
H280	Contains gas under pressure; may explode if heated.
H412	Harmful to aquatic life with long lasting effects.
Press. Gas (Liq.)	Gases under pressure : Liquefied gas

Safety Data Sheet (SDS), EU

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.