

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

#### 1.1. Product identifier

Product form : Substance  
 Name : Solstice® zd (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

#### 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](mailto:ContactFDS@climalife.dehon.com)

##### Other

Climalife Kft Budepesta sucursală Bucuresti Romania  
 Bulevardul Hristo Botev, Nr. 28,  
 Biroul NR 4, Modulul I  
 Bucuresti Sectorul 3 - Romania  
[ContactFDS@climalife.dehon.com](mailto: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](mailto: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](mailto:ContactFDS@climalife.dehon.com)

##### Other

Prochimac SA  
 Rue du Château 10  
 CH-2000 NEUCHÂTEL - Switzerland  
 T 00 41 32 727 36 00 - F 00 41 32 727 36 19  
[ContactFDS@climalife.dehon.com](mailto:ContactFDS@climalife.dehon.com)

#### 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	

# Solstice® zd (R-1233zd)

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### 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 and H-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

No additional information available

### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

Name : Solstice® zd (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-statements: see section 16

#### 3.2. Mixtures

Not applicable

### 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.

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### 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.

#### 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.

### 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".

## 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.

### 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

Trans-1-chloro-3,3,3-trifluoropropene (102687-65-0)	
EU - Occupational Exposure Limits	
IOELV TWA (ppm)	800 ppm (recommended)
Trans-1-chloro-3,3,3-trifluoropropene (102687-65-0)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, inhalation	1779 mg/m <sup>3</sup>
DNEL/DMEL (General population)	
Long-term - systemic effects, oral	109 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	379 mg/m <sup>3</sup>
PNEC (Water)	
PNEC aqua (freshwater)	0.038 mg/l
PNEC aqua (marine water)	0.0038 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	0.691 mg/kg dwt
PNEC sediment (marine water)	0.0691 mg/kg dwt

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

#### PNEC (Soil)

PNEC soil 0.126 mg/kg dwt

### 8.2. Exposure controls

#### Hand protection:

VITON gloves

#### Eye protection:

Safety glasses

#### Skin and body protection:

safety foot-wear

#### Respiratory protection:

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

## 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)
Log Pow	: 2.2 (25°C)
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: Not explosive.
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.

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### 10.6. Hazardous decomposition products

Thermal decomposition may produce : Carbon oxides (CO, CO<sub>2</sub>). 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 /4h
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 ppmv/6h/day (OECD 413 method)
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Aspiration hazard : Not classified

## 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 (oncorhynchus mykiss)
EC50 Daphnia 1	82 mg/l (daphnia magna)
EC50 72h algae (1)	> 215 mg/l (pseudokirchneriella subcapitata)

### 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

#### Solstice® zd (R-1233zd) (102687-65-0)

Log Pow	2.2 (25°C)
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#### Trans-1-chloro-3,3,3-trifluoropropene (102687-65-0)

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

Regional legislation (waste) : Switzerland : OTD : RS 814.600 / OMoD : RS 814.610.  
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.

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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 / IATA / IMDG / RID

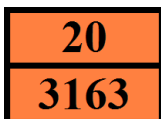
ADR	IMDG	IATA	RID
<b>14.1. UN number</b>			
UN 3163	UN 3163	UN 3163	UN 3163
<b>14.2. UN proper shipping name</b>			
LIQUEFIED GAS, N.O.S. (Trans-1-chloro-3,3,3-trifluoropropene)	LIQUEFIED GAS, N.O.S. (Trans-1-chloro-3,3,3-trifluoropropene)	Liquefied gas, n.o.s. (Trans-1-chloro-3,3,3-trifluoropropene)	LIQUEFIED GAS, N.O.S. (Trans-1-chloro-3,3,3-trifluoropropene)
<b>Transport document description</b>			
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
<b>14.3. Transport hazard class(es)</b>			
2.2	2.2	2.2	2.2
			
<b>14.4. Packing group</b>			
Not applicable	Not applicable	Not applicable	Not applicable
<b>14.5. Environmental hazards</b>			
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			

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

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PCA max net quantity (IATA)	: 75kg
CAO packing instructions (IATA)	: 200
CAO max net quantity (IATA)	: 150kg

### 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

No REACH Annex XVII restrictions

Solstice® zd (R-1233zd) is not on the REACH Candidate List

Solstice® zd (R-1233zd) is not on the REACH Annex XIV List

Solstice® zd (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.

Solstice® zd (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

#### 15.1.2. National regulations

##### Germany

12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

##### Netherlands

SZW-lijst van kankerverwekkende stoffen : The substance is not listed

SZW-lijst van mutagene stoffen : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : The substance is not listed

##### Switzerland

Swiss National Regulations : ORRChim RS 814.81.

### 15.2. Chemical safety assessment

Not applicable.

## SECTION 16: Other information

### Indication of changes:

Section	Changed item	Change	Comments
1.1	Synonyms	Added	
1.2	Use of the substance/mixture	Added	

### Full text of H- and EUH-statements:

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

SDS EU (REACH Annex II)

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*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.*