

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

1.1. Product identifier

Product form : Substance
 Name : HFC 227ea FE
 Chemical name : 1,1,1,2,3,3,3-heptafluoropropane
 EC-No. : 207-079-2
 CAS-No. : 431-89-0
 REACH registration No : 01-2119485489-18
 Product code : 100022800

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 : Extinguishing/inerting agent

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Supplier

Galco s.a/n.v.
 Avenue Carton de Wiart, 79
 1090 BRUSSELS - Belgium
 T 00 32 2 421 01 84 - F 00 32 2 421 01 84 / 00 32 2 425 38 12
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

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

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

Other

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 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 44 21 58 80 - F 00 46 44 21 58 80
ContactFDS@climalife.dehon.com

Other

Dehon Service Nerderland B.V.
 Van Konijnenburgweg 84
 NL-4612 PL Bergen Op Zoom - Netherlands
 T 00 31 164 212 830 - F 00 31 164 212 831
ContactFDS@climalife.dehon.com

Other

IDS Refrigeration Limited
 Green Court, Kings Weston Lane
 Avonmouth
 BS11 8AZ Bristol - United Kingdom
 T 00 44 1179 802520 - F 00 44 1179 802521
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

1.4. Emergency telephone number

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

HFC 227ea FE

Safety Data Sheet

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

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	

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

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.

Precautionary statements (CLP) :

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

Extra phrases :

Greenhouse fluorinated gas falling within Kyoto Protocol (GWP=3220).

2.3. Other hazards

Other hazards not contributing to the classification : May cause suffocation by reducing oxygen available for breathing. Contact with the liquid the may cause cold burns/frostbite.

SECTION 3: Composition/information on ingredients

3.1. Substances

Name : HFC 227ea FE

CAS-No. : 431-89-0

EC-No. : 207-079-2

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
1,1,1,2,3,3,3-heptafluoropropane	(CAS-No.) 431-89-0 (EC-No.) 207-079-2 (REACH-no) 01-2119485489-18	> 99	Press. Gas (Liq.), H280

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 : Move the affected person away from the contaminated area and into the fresh air. If you feel unwell, seek medical advice.

First-aid measures after skin contact : In the event of contact with the liquid: treat resulting frostbite as a burn. Immediately remove contaminated clothing or footwear. Immediately rinse with plenty of water. If skin burns appear, call a doctor immediately.

First-aid measures after eye contact : Rinse immediately and thoroughly, pulling the eyelids well away from the eye (15 minutes minimum). Consult an eye specialist immediately.

First-aid measures after ingestion : Not specifically applicable (gas).

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

Symptoms/effects : CNS depression. Narcosis. Cardiac disorders. Lack of oxygen: risk of death.

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

No additional information available

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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Water spray. Foam. Carbon dioxide. Chemical powder.

5.2. Special hazards arising from the substance or mixture

Explosion hazard : Heating will cause a rise in pressure with a risk of bursting. Thermal decomposition can lead to the release of irritating gases and vapours : . Hydrogen fluoride. Carbon oxides (CO, CO₂).

5.3. Advice for firefighters

Firefighting instructions : Use water spray or fog for cooling exposed containers.
Protection during firefighting : Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Avoid contact with skin and eyes. Evacuate the danger area. Do not breathe smoke. Stop the leak. In closed premises : Ventilate or wear self-contained breathing apparatus (risk of asphyxia). Remove all sources of ignition. Do not smoke.

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.

6.3. Methods and material for containment and cleaning up

Other information : Mechanically ventilate the spillage area.

6.4. Reference to other sections

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 : Ventilation. Remove all sources of ignition. Use personal protective equipment as required.
Hygiene measures : Do not drink, eat or smoke in the workplace.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a dry, well ventilated place away from sources of heat, ignition and direct sunlight. Store in original container.
Incompatible materials : alkali metals. Alkaline earth metals. Strong oxidizing agents.
Storage temperature : < 52 °C
Packaging materials : Recommended materials: Carbon steel, Aluminium.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

HFC 227ea FE (431-89-0)

EU - Occupational Exposure Limits

No specific limit

HFC 227ea FE (431-89-0)

DNEL/DMEL (Workers)

Acute - systemic effects, inhalation 61279 mg/m³

DNEL/DMEL (General population)

Acute - systemic effects, inhalation 6355 mg/m³

PNEC (Water)

PNEC aqua (freshwater) 0.1 mg/l

PNEC aqua (intermittent, freshwater) 1 mg/l

PNEC (Sediment)

PNEC sediment (freshwater) 1.3 mg/kg dwt

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HFC 227ea FE (431-89-0)	
PNEC (STP)	
PNEC sewage treatment plant	1.73 mg/l
1,1,1,2,3,3,3-heptafluoropropane (431-89-0)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, inhalation	36767 - 61279 mg/m ³
DNEL/DMEL (General population)	
Long-term - systemic effects, inhalation	6355 mg/m ³
PNEC (Water)	
PNEC aqua (freshwater)	0.1 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	1.3 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	1.73 mg/l
8.2. Exposure controls	
Hand protection:	
Leather protective gloves. Nitrile-rubber protective gloves. VITON gloves	
Eye protection:	
Safety glasses with side shields	
Skin and body protection:	
Majority cotton protective clothing	
Respiratory protection:	
In the event of insufficient ventilation: Gas mask with filter type AX. In a confined area : Self-contained breathing apparatus	

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: Press. Gas (Liq.).
Colour	: Colourless.
Odour	: No data available
Odour threshold	: No data available
pH	: Not applicable
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: No data available
Freezing point	: -131 °C
Boiling point	: -17 °C
Flash point	: None
Auto-ignition temperature	: 532 °C
Decomposition temperature	: No data available
Flammability (solid, gas)	: Non flammable.
Vapour pressure	: 3.9 bar (20°C)
Vapour pressure at 50 °C	: 9.6 bar (50°C)
Relative vapour density at 20 °C	: 4.2
Relative density	: No data available
Density	: 1.41 g/cm ³ (20°C)
Solubility	: Water: 0.23 g/l (25°C)
Log Pow	: 2.11
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: Not explosive material according to EC criteria.

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Oxidising properties : Non oxidizing material according to EC criteria.
Explosive limits : No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Contains gas under pressure; may explode if heated.

10.2. Chemical stability

Stable at ambient temperature and under normal conditions of use.

10.3. Possibility of hazardous reactions

No dangerous polymerization.

10.4. Conditions to avoid

Ignition sources. Heat or source of heat. Avoid contact with hot surfaces.

10.5. Incompatible materials

Strong oxidizing agents. alkali metals. Alkaline earth metals.

10.6. Hazardous decomposition products

On thermal decomposition (pyrolysis), releases : Carbon oxides (CO, CO₂), 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
Additional information : Asphyxiating

HFC 227ea FE (431-89-0)

LC50 inhalation rat (mg/l)	> 788696
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1,1,1,2,3,3,3-heptafluoropropane (431-89-0)

LC50 inhalation rat (ppm)	> 788696 ppm/4h
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Skin corrosion/irritation : Not classified
pH: Not applicable
Additional information : Contact with the liquid the may cause cold burns/frostbite
Serious eye damage/irritation : Not classified
pH: Not applicable
Additional information : Contact with the liquefied gas may cause severe ocular lesions
Respiratory or skin sensitisation : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified
Reproductive toxicity : Not classified
STOT-single exposure : Not classified
STOT-repeated exposure : Not classified
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) : Not classified

1,1,1,2,3,3,3-heptafluoropropane (431-89-0)

LC50 fish 1	> 100 mg/l (brachydanio rerio)
EC50 Daphnia 1	> 200 mg/l
EC50 72h algae (1)	> 114 mg/l (Scenedesmus capricornutum)

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12.2. Persistence and degradability

1,1,1,2,3,3,3-heptafluoropropane (431-89-0)

Persistence and degradability : Not readily biodegradable. 1 % biodegradation after 28 days. Half-life in air : 25 y.

12.3. Bioaccumulative potential

HFC 227ea FE (431-89-0)

Log Pow : 2.11

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

Component

1,1,1,2,3,3,3-heptafluoropropane (431-89-0) : This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

12.6. Other adverse effects

Other adverse effects : Ozone depletion factor ODP (R-11=1) = 0. Total global warming potential (GWP) : 3220.

SECTION 13: Disposal considerations




13.1. Waste treatment methods

Product/Packaging disposal recommendations : Methods of disposal of packaging. Reuse or recycle following decontamination. Destroy at an authorised site.

Additional information : The user's attention is drawn to the possible existence of specific european, national or local regulations regarding disposal.

SECTION 14: Transport information

In accordance with ADR / IATA / IMDG

ADR	IMDG	IATA
14.1. UN number		
UN 3296	UN 3296	UN 3296
14.2. UN proper shipping name		
HEPTAFLUOROPROPANE (REFRIGERANT GAS R 227)	HEPTAFLUOROPROPANE (REFRIGERANT GAS R 227)	Heptafluoropropane
Transport document description		
UN 3296 HEPTAFLUOROPROPANE (REFRIGERANT GAS R 227), 2.2, (C/E)	UN 3296 HEPTAFLUOROPROPANE (REFRIGERANT GAS R 227), 2.2	UN 3296 Heptafluoropropane, 2.2
14.3. Transport hazard class(es)		
2.2	2.2	2.2
		
14.4. Packing group		
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
No supplementary information available		
14.6. Special precautions for user		

Overland transport

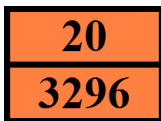
Classification code (ADR) : 2A
Special provisions (ADR) : 662
Limited quantities (ADR) : 120ml

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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 : 2T

Transport by sea

Limited quantities (IMDG) : 120 ml
EmS-No. (Fire) : F-C
EmS-No. (Spillage) : S-V

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

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

HFC 227ea FE is not on the REACH Candidate List

HFC 227ea FE is not on the REACH Annex XIV List

HFC 227ea FE 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.

HFC 227ea FE 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

Other information, restriction and prohibition regulations : * Regulation (EC) No 517/2014 : Greenhouse fluorinated gas falling within Kyoto Protocol.

15.1.2. National regulations

Ensure all national/local regulations are observed.

Germany

Reference to AwSV : Water hazard class (WGK) 1, Slightly hazardous to water (Classification according to AwSV; ID No. 4098)

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

15.2. Chemical safety assessment

Not applicable.

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SECTION 16: Other information

Indication of changes:

Section	Changed item	Change	Comments
1.1	Article number	Modified	
1.3	Supplier	Modified	

Other information : For more information regarding the use of this product, please refer to our technical information or contact the sales department in your region.

Full text of H- and EUH-statements:

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

SDS EU (REACH Annex II)

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.