

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2020/878

Reference number: 100140700 Revision date: 1/9/2023 Supersedes version of: 7/9/2015 Version: 4.0

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

1.1. Product identifier

Product form : Mixture R-407A Name Product code : 100140700

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

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

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Other

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ContactFDS@climalife.dehon.com

Other

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ContactFDS@climalife.dehon.com

Other

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Other

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Poligono Industrial SEPES Parcela 10

46500 SAGUNTO (Valencia)

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ContactFDS@climalife.dehon.com

Other

Prochimac SA ZI Petits Champs 15 CH-1400 Yverdon-les-Bains

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Other

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Netherlands

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Other

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BS32 4JT Bristol United Kingdom

T 00 44 1179 802520 - F 00 44 1179 802521

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Other

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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	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 (Lig.) H280

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

Adverse physicochemical, human health and environmental effects

Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. Contact with the liquid may cause frostbite and serious damage to eyes.

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=2107).

2.3. Other hazards

Contains no PBT/vPvB substances ≥ 0.1% assessed in accordance with REACH Annex XIII

Component	
Pentafluoroethane (354-33-6)	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
1,1,1,2-Tetrafluoroethane (811-97-2)	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

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

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3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Pentafluoroethane	CAS-No.: 354-33-6 EC-No.: 206-557-8 REACH-no: 01-2119485636- 25	40	Press. Gas (Liq.), H280
1,1,1,2-Tetrafluoroethane	CAS-No.: 811-97-2 EC-No.: 212-377-0 REACH-no: 01-2119459374- 33	40	Press. Gas (Liq.), H280
Difluoromethane	CAS-No.: 75-10-5 EC-No.: 200-839-4 REACH-no: 01-2119471312- 47	20	Flam. Gas 1B, H221 Press. Gas (Liq.), H280

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

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

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : All extinguishing agents can be used.

Unsuitable extinguishing media : None to our knowledge. If there is a fire close by, use suitable extinguishing agents.

5.2. Special hazards arising from the substance or mixture

Explosion hazard : pressure rise and possible bursting of container. On heating : Toxic and corrosive vapours

are released.

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.

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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Avoid contact with skin and eyes. Remove all sources of ignition. Do not smoke. Evacuate

the danger area. Do not breathe smoke. Stop the leak.

6.1.1. For non-emergency personnel

Emergency procedures : Evacuate area.

6.1.2. For emergency responders

Emergency procedures : Evacuate the danger area.

6.2. Environmental precautions

No additional information available

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". For disposal of solid materials or residues refer to section 13: "Disposal considerations".

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Avoid breathing mist, vapours. Do not get in eyes, on skin, or on clothing. Ventilation.

Vapours are heavier than air and may spread along floors. Under certain temperature and

pressure conditions may form a flammable mixture in the presence of air.

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 cool, well-ventilated area, away from any source of heat, away from any source

of ignition.

Incompatible materials : Strong oxidizing agents. Alkaline hydroxide. Alkaline earth metals. Finely divided metals (Al,

Mg, Zn).

Packaging materials Stainless steel, Carbon steel. Do not use: Alloys containing more

than 2% magnesium, Plastic materials.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

Pentafluoroethane (354-33-6)		
EU - Indicative Occupational Exposure Limit (IOEL)		
IOEL TWA 4900 mg/m³ (recommended)		
IOEL TWA [ppm] 1000 ppm (recommended)		
Difluoromethane (75-10-5)		
EU - Indicative Occupational Exposure Limit (IOEL)		
IOEL TWA 2200 (recommended)		

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Difluoromethane (75-10-5)		
IOEL TWA [ppm]	1000 ppm (recommended)	
1,1,1,2-Tetrafluoroethane (811-97-2)		
United Kingdom - Occupational Exposure Limits		
Local name	1,1,1,2-Tetrafluoroethane (HFC 134a)	
WEL TWA (OEL TWA) [1]	4240 mg/m³	
WEL TWA (OEL TWA) [2]	1000 ppm	
Regulatory reference	EH40. HSE	

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

Pentafluoroethane (354-33-6)		
DNEL/DMEL (Workers)		
Long-term - systemic effects, inhalation 16444 mg/m³		
DNEL/DMEL (General population)		
Long-term - systemic effects, inhalation 1753 mg/m³		
PNEC (Water)		
PNEC aqua (freshwater)	0.1 mg/l	
PNEC aqua (intermittent, freshwater)	1 mg/l	
PNEC (Sediment)		
PNEC sediment (freshwater)	0.6 mg/kg dwt	

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

No additional information available

8.2.2. Personal protection equipment

8.2.2.1. Eye and face protection

Eye protection:

Safety glasses with side shields

8.2.2.2. Skin protection

Skin and body protection:

Majority cotton protective clothing

Hand protection:

Leather protective gloves. Nitrile-rubber protective gloves. VITON gloves

8.2.2.3. Respiratory protection

Respiratory protection:

In the event of insufficient ventilation: Gas mask with filter type AX. In a confined area: Self-contained breathing apparatus

8.2.2.4. Thermal hazards

No additional information available

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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 : Colourless. Colour : Liquefied gas. Appearance Odour : slightly ethereal. Odour threshold Not available Melting point Not applicable Freezing point : Not applicable : -45 °C Boiling point

Flammability : Non flammable.

: Not explosive material according to EC criteria. Explosive properties Oxidising properties : Non oxidizing material according to EC criteria.

: Not available Explosive limits : Not available Lower explosion limit Upper explosion limit : Not available Flash point : Not applicable Auto-ignition temperature : Not available : > 250 °C Decomposition temperature : Not applicable рΗ Viscosity, kinematic : Not applicable Solubility : Insoluble in water. Partition coefficient n-octanol/water (Log Kow) : Not available Vapour pressure : 12.53 bar (25°C) Vapour pressure at 50°C : 23.24 bar (50°C) Critical pressure : 45.15 bar Density : 1.145 g/cm³ (25°C)

Relative density : Not applicable

Relative vapour density at 20°C : 3.1

Particle characteristics : Not applicable

9.2. Other information

9.2.1. Information with regard to physical hazard classes

: 82.3 °C Critical temperature

9.2.2. Other safety characteristics

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Decomposes on exposure to temperature rise.

10.2. Chemical stability

Stable at ambient temperature and under normal conditions of use.

10.3. Possibility of hazardous reactions

No information available. No polymerization.

10.4. Conditions to avoid

Avoid high temperatures. Avoid naked flame. Heating will cause a rise in pressure with a risk of bursting.

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10.5. Incompatible materials

Alkalis and caustic products. alkali metals. Alkaline earth metals. Finely divided metals (Al, Mg, Zn). Strong oxidizing agents.

10.6. Hazardous decomposition products

On thermal decomposition (pyrolysis), releases: Hydrogen fluoride, Carbon oxides (CO, CO2), Fluorinated hydrocarbons, Carbonyl halogenides.

SECTION 11: Toxicological information

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

P	en	taf	uoroe	thane	(354-	33-6)
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LC50 Inhalation - Rat [ppm] 800000 ppm/4h

Difluoromethane (75-10-5)

LC50 Inhalation - Rat [ppm] > 520000 ppm/4h

1,1,1,2-Tetrafluoroethane (811-97-2)

LC50 Inhalation - Rat [ppm] > 500000 ppm/4h

Skin corrosion/irritation : Not classified

pH: Not applicable

Additional information : Contact with the liquid causes frostbite

Pentafluoroethane (354-33-6)

pH Not applicable

1,1,1,2-Tetrafluoroethane (811-97-2)

pH Not applicable

Serious eye damage/irritation : Not classified

pH: Not applicable

Additional information : Contact with the liquefied gas may cause severe ocular lesions

Pentafluoroethane (354-33-6)

pH Not applicable

1,1,1,2-Tetrafluoroethane (811-97-2)

pH Not applicable

Respiratory or skin sensitisation : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

1,1,1,2-Tetrafluoroethane (811-97-2)

NOAEL (chronic, oral, animal/male, 2 years) 300 mg/kg bodyweight rat

Reproductive toxicity : Not classified STOT-single exposure : Not classified STOT-repeated exposure : Not classified

Difluoromethane (75-10-5)

NOAEC (inhalation, rat, gas, 90 days) 50000 ppmv/6h/day

Aspiration hazard : Not classified

11.2. Information on other hazards

No additional information available

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SECTION 12: Ecological information

12.1. Toxicity

Hazardous to the aquatic environment, short-term : Not classified

(acute)

Hazardous to the aquatic environment, long-term : Not classified

(chronic)

Pentafluoroethane (354-33-6)		
LC50 - Fish [1]	> 100 mg/l 96 Hours (Oncorhynchus mykiss)	
EC50 - Crustacea [1]	> 100 mg/l 48 Hours (Daphnia magna)	
EC50 72h - Algae [1]	> 114 mg/l 72 Hours (Pseudokirchneriella subcapitata)	
1,1,1,2-Tetrafluoroethane (811-97-2)		
LC50 - Fish [1]	450 mg/l 96 Hours (Oncorhynchus mykiss)	
EC50 - Crustacea [1]	980 mg/l 48 Hours (Daphnia magna)	
EC50 72h - Algae [1]	> 118 mg/l (Selenastrum capricornutum)	

12.2. Persistence and degradability

Pentafluoroethane (354-33-6)		
Persistence and degradability	5 % biodegradation after 28 days.	
1,1,1,2-Tetrafluoroethane (811-97-2)		
Persistence and degradability	Photodegradation in the air : Half-life in air : 9,7 y. 3 % biodegradation after 28 days.	

12.3. Bioaccumulative potential

Pentafluoroethane (354-33-6)		
Partition coefficient n-octanol/water (Log Pow)	1.48	
Difluoromethane (75-10-5)		
Partition coefficient n-octanol/water (Log Pow)	0.21	
1,1,1,2-Tetrafluoroethane (811-97-2)		
Partition coefficient n-octanol/water (Log Pow) 1.06		

12.4. Mobility in soil

Pentafluoroethane (354-33-6)		
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	1.3 – 1.7	
1,1,1,2-Tetrafluoroethane (811-97-2)		
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	1.5	

12.5. Results of PBT and vPvB assessment

Component	
Pentafluoroethane (354-33-6)	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

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Component	
1,1,1,2-Tetrafluoroethane (811-97-2)	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. Endocrine disrupting properties

No additional information available

12.7. Other adverse effects

Other adverse effects : ODP (R-11=1)=0.

Additional information : GWP (CO2=1/100 years) = 2107

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 / IMDG / IATA / RID

ADR	IMDG	IATA	RID
14.1. UN number or ID n	umber		
UN 3338	UN 3338	UN 3338	UN 3338
14.2. UN proper shippin	g name		
REFRIGERANT GAS R 407A	REFRIGERANT GAS R 407A	Refrigerant gas R 407a	REFRIGERANT GAS R 407A
Transport document descr	iption		-
UN 3338 REFRIGERANT GAS R 407A, 2.2, (C/E)	UN 3338 REFRIGERANT GAS R 407A, 2.2	UN 3338 Refrigerant gas R 407a, 2.2	UN 3338 REFRIGERANT GAS R 407A, 2.2
14.3. Transport hazard o	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 haz	ards		'
Dangerous for the environment: No	Dangerous for the environment: No Marine pollutant: No	Dangerous for the environment: No	Dangerous for the environment: No

14.6. Special precautions for user

Overland transport

Classification code (ADR) : 2A

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Special provisions (ADR) : 662 Limited quantities (ADR) 120ml Tank code (ADR) PxBN(M) Transport category (ADR) 3

Hazard identification number (Kemler No.) 20

Orange plates

20 3338

C/E Tunnel restriction code (ADR) EAC code · 2TF

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

Rail transport

· 2A Classification code (RID) Special provisions (RID) : 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. Maritime transport in bulk according to IMO instruments

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

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

REACH Annex XVII (Restriction List)

Contains no substance(s) listed on REACH Annex XVII (Restriction Conditions)

REACH Annex XIV (Authorisation List)

Contains no substance(s) listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Contains no substance(s) listed on the REACH Candidate List

PIC Regulation (Prior Informed Consent)

Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals)

POP Regulation (Persistent Organic Pollutants)

Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants)

Ozone Regulation (1005/2009)

Contains no substance(s) listed on the Ozone Depletion list (Regulation EU 1005/2009 on substances that deplete the ozone layer)

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Explosives Precursors Regulation (2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 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

Ensure all national/local regulations are observed.

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Indication of changes:

All chapters have been modified since the previous version.

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:		
Flam. Gas 1B	Flammable gases, Category 1B	
H221	Flammable gas.	
H280	Contains gas under pressure; may explode if heated.	
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.