

SAFETY DATA SHEET

Regulation (EC) No 1907/2006 (REACH), Annex II
(COMMISSION REGULATION (EU) No 453/2010)

Version 1
Product Name R407C

Issue Date 11-Oct-2020
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SECTION 1: Identification of the substance /mixture and of the company/undertaking

1.1. Product identifier

Product Name R407C
Chemical Name Difluoromethane and pentafluoroethane and 1,1,1,2-tetrafluoroethane mixture
REACH registration number No information available

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

Recommended Use Used as refrigerants in all kinds of air conditioners and non-centrifugal refrigeration system instead of HCFC-22 chronically
Uses advised against No information available

1.3. Details of the supplier of the safety data sheet

Supplier
Address
Postal Code
Phone
FAX
E-mail

1.4. Emergency telephone number

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Gases under pressure Liquefied gas - (H280)

2.2. Label elements

Symbols/Pictograms



Signal word

Warning

Hazard Statements

H280 - Contains gas under pressure; may explode if heated

Precautionary Statements

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

2.3. Other hazards

No information available.

SECTION 3: Composition/information on ingredients

3.1 Mixture

Chemical Name	EC No	CAS No	Weight-%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
1,1,1,2-Tetrafluoroethane	212-377-0	811-97-2	52	Liq. Gas H280

Pentafluoroethane	206-557-8	354-33-6	25	Press. Gas H280
Methylene fluoride	200-839-4	75-10-5	23	Flam. Gas 1 H220 Liq. Gas H280

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice

Do not get in eyes, on skin, or on clothing. Do not breathe dust/fume/gas/mist/vapors/spray. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing. Administer oxygen if breathing is difficult. Get medical advice/attention if you feel unwell.

Skin Contact

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Wash contaminated clothing before reuse. If skin irritation persists, call a physician.

Eye contact

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion

Not an expected route of exposure. If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label. Never give anything by mouth to an unconscious person.

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

No information available.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media

No information available.

5.2. Special hazards arising from the substance or mixture

Thermal decomposition can lead to release of irritating and toxic gases and vapors, such as carbon monoxide, carbon dioxide, hydrogen fluoride, fluorocarbon.

5.3. Advice for firefighters

Evacuate personnel to safe areas. Move containers from fire area if you can do it without risk. Cool drums with water spray. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Stay upwind. Ensure adequate ventilation, especially in confined areas.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Evacuate personnel to safe areas. Ensure adequate ventilation, especially in confined areas. Remove all sources of ignition. Do not touch or walk through spilled material. Avoid contact with skin, eyes or clothing. Avoid breathing dust/fume/gas/mist/vapors/spray. Use personal protection recommended in Section 8.

6.2. Environmental precautions

Local authorities should be advised if significant spillages cannot be contained. Prevent entry into waterways, sewers, basements or confined areas.

6.3. Methods and material for containment and cleaning up

Allow substance to evaporate. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid release to the environment.

6.4. Reference to other sections

See Section 7 for more information

See section 8 for more information

See section 13 for more information

SECTION 7: Handling and storage**7.1. Precautions for safe handling**

Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation, especially in confined areas. Avoid contact with skin, eyes or clothing. Wash contaminated clothing before reuse. Do not breathe dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Use personal protection recommended in Section 8.

7.2. Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition. Storage temperature: <52 °C. Keep locked up and out of reach of children. Keep only in original container. Keep away from food, drink and animal feeding stuffs. Store in accordance with local regulations.

7.3. Specific end use(s)

Apart from the uses mentioned in SECTION 1.2 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection**8.1. Control parameters**

Chemical Name	Australia	Austria	Belgium	Denmark	European Union
1,1,1,2-Tetrafluoroethane (CAS #: 811-97-2)	1000 ppm 4240 mg/m ³	STEL 4000 ppm STEL 16800 mg/m ³ TWA: 1000 ppm TWA: 4200 mg/m ³	-	-	-

Chemical Name	Latvia	France	Finland	Germany	Italy
1,1,1,2-Tetrafluoroethane (CAS #: 811-97-2)		-	-	STEL 8000 ppm STEL 33600 mg/m ³ TWA: 1000 ppm TWA: 4200 mg/m ³	-
Pentafluoroethane (CAS #: 354-33-6)	TWA: 2 ppm TWA: 20 mg/m ³	-	-	-	-
Methylene fluoride (CAS #: 75-10-5)	TWA: 2 ppm TWA: 20 mg/m ³	-	-	-	-

Chemical Name	Poland	Portugal	Spain	Switzerland	Netherlands
1,1,1,2-Tetrafluoroethane (CAS #: 811-97-2)	-	-	-	TWA: 1000 ppm TWA: 4200 mg/m ³	-

Chemical Name	Norway	United Kingdom	ACGIH TLV	OSHA PEL	NIOSH IDLH
1,1,1,2-Tetrafluoroethane (CAS #: 811-97-2)	-	TWA: 1000 ppm TWA: 4200 mg/m ³	-	-	-

Derived No Effect Level (DNEL)

No information available

Predicted No Effect Concentration (PNEC)

No information available

8.2. Exposure controls**Engineering Controls**

Ensure adequate ventilation, especially in confined areas. Showers. Eyewash stations. Remove all sources of ignition.

Personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles).
Hand Protection	Wear protective gloves.
Skin and body protection	Suitable protective clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.

Environmental exposure controls

Avoid release to the environment.

SECTION 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties**

Appearance	Gas
Color	Colorless
Odor	Slightly sweet taste as ethers
Odor Threshold	Not determined
pH	Neutral (25 °C)
Melting point/freezing point	Not determined
Boiling point / boiling range	-43.9 °C
Flash point	Not determined
Evaporation rate	Not determined
Flammability (gas)	Not flammable
Flammability Limit in Air	Not determined
Vapor Pressure	1174.0 kPa (25 °C), 2186.0 kPa (25 °C)
Vapor density	3.0 (25 °C)
Density	1.14 g/cm ³
Relative density	1.14
Bulk density	Not determined
Specific gravity	Not determined
Water solubility	Not determined
Partition coefficient (LogPow)	Not determined
Autoignition temperature	685 °C
Decomposition temperature	Not determined
Kinematic viscosity	Not determined
Dynamic viscosity	Not determined
Explosive properties	Not an explosive
Oxidizing properties	Not determined

9.2. Other information

No information available

SECTION 10: Stability and reactivity**10.1. Reactivity**

Stable under recommended storage conditions.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Hazardous polymerization does not occur.

10.4. Conditions to avoid

Heat, flames and sparks. Strong heating. Incompatible materials. Compressed air, oxygen, chlorine.

10.5. Incompatible materials

Active metals, alkali metals, alkaline earth metals and aluminum, zinc and other metal powders, strong oxidizers, flammable or combustible materials.

10.6. Hazardous decomposition products

Carbon monoxide, carbon dioxide, hydrogen fluoride, fluorocarbon.

SECTION 11: Toxicological information**11.1. Information on toxicological effects****Acute toxicity**

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
1,1,1,2-Tetrafluoroethane (CAS #: 811-97-2)	-	-	1500000 mg/m ³ /4h (Rat)
Pentafluoroethane (CAS #: 354-33-6)	-	-	2910 g/m ³ 4h (Rat) > 800000 ppm 4h (Rat)
Methylene fluoride (CAS #: 75-10-5)	-	-	= 1890 g/m ³ (Rat) 4 h

Skin corrosion/irritation

Non-irritating to the skin.

Serious eye damage/eye irritation

No eye irritation.

Sensitization

No sensitization responses were observed.

Germ cell mutagenicity

No information available.

Carcinogenicity

Negative.

Reproductive toxicity

Negative.

STOT - single exposure

No information available.

STOT - repeated exposure

No information available.

Aspiration hazard

No information available.

SECTION 12: Ecological information**12.1. Toxicity**

Chemical Name	Algae/aquatic plants EC50	Fish LC50	Crustacea EC50
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1,1,1,2-Tetrafluoroethane (CAS #: 811-97-2)	142 mg/L/96h (green algae)(weight of evidence)	450 mg/L/96h (Oncorhynchus mykiss)	980 mg/L/48h (Daphnia magna)
Pentafluoroethane (CAS #: 354-33-6)	142 mg/L 96h other: green algae	560 mg/L 24h Oncorhynchus mykiss 450 mg/L 48 72 96h Oncorhynchus mykiss	> 200 mg/L 48h Daphnia magna

12.2. Persistence and degradability

No information available.

12.3. Bioaccumulative potential

No information available.

12.4. Mobility in soil

No information available.

12.5. Results of PBT and vPvB assessment

PBT/vPvB assessment information is not available as chemical safety assessment not conducted.

12.6. Other adverse effects

Stable in the lower atmosphere. May break down under UV in the upper atmosphere.

SECTION 13: Disposal considerations**13.1. Waste treatment methods**

Waste from residues/unused products Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14: Transport information

14.1 UN Number	3340
14.2 Proper shipping name	REFRIGERANT GAS R 407C
14.3 Hazard Class	2.2
14.4 Packing Group	Not regulated
14.5 Environmental hazards	Non-marine pollutant
14.6 Special precautions	No information available
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****European Union**

Component	EINECS/ELINCS	SVHC candidates	RESTRICTIONS - REACH TITLE VII
1,1,1,2-Tetrafluoroethane 811-97-2 (52%)	X	-	-
Pentafluoroethane 354-33-6 (25%)	X	-	-

Methylene fluoride 75-10-5 (23%)	X	-	-
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Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

Take note of Directive 94/33/EC on the protection of young people at work

Take note of Directive 92/85/EC on the protection of pregnant and breastfeeding women at work

International Inventories

Component	TSCA	DSL/NDL	ENCS	IECSC	KECL	PICCS	AICS
1,1,1,2-Tetrafluoroethane 811-97-2 (52%)	X	X	X	X	X	X	X
Pentafluoroethane 354-33-6 (25%)	X	X	X	X	X	X	X
Methylene fluoride 75-10-5 (23%)	X	-	X	X	X	X	X

"-" Not Listed

"X" Listed

15.2. Chemical safety assessment

No information available

SECTION 16: Other information

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

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Revision Note Not applicable

Key or legend to abbreviations and acronyms used in the safety data sheet

TWA - TWA (time-weighted average)

STEL - STEL (Short Term Exposure Limit)

Ceiling - Maximum limit value

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

Full text of H-Statements referred to under section 3

H280 - Contains gas under pressure; may explode if heated

Disclaimer

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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