

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

1.1. Product identifier

Product form : Mixture
 Name : R-422D
 Product code : 100002900

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 SA
 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 sucursală 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

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	

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

R-422D

Safety Data Sheet

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

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=2729).

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Pentafluoroethane substance with a Community workplace exposure limit substance with national workplace exposure limit(s) (CZ, SE)	(CAS-No.) 354-33-6 (EC-No.) 206-557-8 (REACH-no) 01-2119485636-25	65.1	Press. Gas (Liq.), H280
1,1,1,2-Tetrafluoroethane substance with national workplace exposure limit(s) (AT, DE, GB, LT, SE)	(CAS-No.) 811-97-2 (EC-No.) 212-377-0 (REACH-no) 01-2119459374-33	31.5	Press. Gas (Liq.), H280
isobutane (containing < 0,1 % 1,3-butadiene (203-450-8)) substance with national workplace exposure limit(s) (AT, BE, DE, FI, PT, SK)	(CAS-No.) 75-28-5 (EC-No.) 200-857-2 (EC Index-No.) 601-004-00-0 (REACH-no) 01-2119485395-27	3.4	Flam. Gas 1, H220 Press. Gas (Liq.), H280

Full text of H-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.

R-422D

Safety Data Sheet

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

Hazardous decomposition products in case of fire : Toxic and corrosive fumes are released. fluorinated compounds. Hydrogen fluoride. Carbon oxides (CO, CO₂). Carbonyl fluoride.

5.3. Advice for firefighters

Precautionary measures fire : Fight fire remotely due to the risk of explosion.
Firefighting instructions : Use water spray or fog for cooling exposed containers. Get the package away from the fire if this can be done without risk.
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. 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

No additional information available

6.1.2. For emergency responders

No additional information available

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".

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. Ensure good ventilation of the work station. Caution! Container under pressure. Handle and open container with care. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Avoid the build-up of electrostatic charge. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
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 : Recommended 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

R-422D		
Croatia	Local name	1,1,1,2-Tetrafluoroetan (Norfluran)
Croatia	GVI (granična vrijednost izloženosti) (mg/m ³)	4240 mg/m ³
Croatia	GVI (granična vrijednost izloženosti) (ppm)	1000 ppm
Slovenia	KTV factor SL	4
Sweden	Anmärkning (SE)	V (Vägledande korttidsgränsvärde ska användas som ett rekommenderat högsta värde som inte bör överskridas)
Russian Federation	Local name	1,1,1,2-Тетрафторэтан
Russian Federation	Remark (RU)	4 класс опасности - умеренно опасное; п (пары и/или газы)
Australia	Local name	1,1,1,2-Tetrafluoroethane
Australia	TWA (mg/m ³)	4240 mg/m ³
Australia	TWA (ppm)	1000 ppm

R-422D

Safety Data Sheet

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

Pentafluoroethane (354-33-6)		
EU	IOELV TWA (mg/m ³)	4900 mg/m ³ (recommended)
EU	IOELV TWA (ppm)	1000 ppm (recommended)
Czech Republic	Local name	Pentafluoromethan
Czech Republic	Expoziční limity (PEL) (mg/m ³)	5000 mg/m ³
Czech Republic	Expoziční limity (PEL) (ppm)	1020 ppm
Czech Republic	Regulatory reference	Nařízení vlády č. 361/2007 Sb. (zpracovány změny č. 93/2012 Sb., 9/2013 Sb.)
Sweden	Local name	1,1,1,2,2-Pentafluoretan
Sweden	nivågränsvärde (NVG) (mg/m ³)	2500 mg/m ³
Sweden	nivågränsvärde (NVG) (ppm)	500 ppm
Sweden	kortidsvärde (KTV) (mg/m ³)	3750 mg/m ³
Sweden	kortidsvärde (KTV) (ppm)	750 ppm
Sweden	Anmärkning (SE)	V (Vägledande kortidsgränsvärde ska användas som ett rekommenderat högsta värde som inte bör överskridas)
Sweden	Regulatory reference	Hygieniska gränsvärden (AFS 2015:7)
Russian Federation	Local name	Пентафторэтан
Russian Federation	OEL Ceiling (mg/m ³)	3000 mg/m ³
Russian Federation	Remark (RU)	4 класс опасности - умеренно опасное; п (пары и/или газы)
Russian Federation	Regulatory reference	ГН 2.2.5.1313-03
1,1,1,2-Tetrafluoroethane (811-97-2)		
Austria	Local name	1,1,1,2-Tetrafluorethan
Austria	MAK (mg/m ³)	4200 mg/m ³
Austria	MAK (ppm)	1000 ppm
Austria	MAK Short time value (mg/m ³)	16800 mg/m ³
Austria	MAK Short time value (ppm)	4000 ppm
Austria	Regulatory reference	BGBl. II Nr. 186/2015
Croatia	Local name	1,1,1,2-Tetrafluoroetan (Norfluran)
Croatia	GVI (granična vrijednost izloženosti) (mg/m ³)	4240 mg/m ³
Croatia	GVI (granična vrijednost izloženosti) (ppm)	1000 ppm
Croatia	Regulatory reference	Pravilnik o izmjenama i dopunama Pravilnika o graničnim vrijednostima izloženosti opasnim tvarima pri radu i o biološkim graničnim vrijednostima (NN, br. 75/13)
Germany	Local name	Norfluran
Germany	TRGS 900 Occupational exposure limit value (mg/m ³)	4200 mg/m ³
Germany	TRGS 900 Occupational exposure limit value (ppm)	1000 ppm
Germany	TRGS 900 Limitation of exposure peaks (mg/m ³)	33600 mg/m ³
Germany	TRGS 900 Limitation of exposure peaks (ppm)	8000 ppm
Germany	TRGS 900 Limitation of exposure peaks	8(II)
Germany	Remark (TRGS 900)	DFG;Y
Germany	Regulatory reference (TRGS900)	TRGS900
Lithuania	Local name	1,1,1,2-tetrafluoretanas (HFC-134a, norfluranas)
Lithuania	IPRV (mg/m ³)	2000 mg/m ³
Lithuania	IPRV (ppm)	500 ppm
Lithuania	TPRV (mg/m ³)	3000 mg/m ³
Lithuania	TPRV (ppm)	750 ppm
Lithuania	Regulatory reference	LIETUVOS HIGIENOS NORMA HN 23:2011
Slovenia	Local name	norfluran
Slovenia	OEL TWA (mg/m ³)	4200 mg/m ³
Slovenia	OEL TWA (ppm)	1000 ppm
Slovenia	OEL STEL (mg/m ³)	16800 mg/m ³
Slovenia	OEL STEL (ppm)	4000 ppm

R-422D

Safety Data Sheet

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

1,1,1,2-Tetrafluoroethane (811-97-2)		
Slovenia	KTV factor SL	4
Slovenia	Regulatory reference	Uradni list RS, št. 102/2010 z dne 17.12.2010
Sweden	Local name	HFC 134 a (1,1,1,2-Tetrafluoretan)
Sweden	nivågränsvärde (NVG) (mg/m ³)	2000 mg/m ³
Sweden	nivågränsvärde (NVG) (ppm)	500 ppm
Sweden	kortidsvärde (KTV) (mg/m ³)	3000 mg/m ³
Sweden	kortidsvärde (KTV) (ppm)	750 ppm
Sweden	Anmärkning (SE)	V (Vägledande korttidsgränsvärde ska användas som ett rekommenderat högsta värde som inte bör överskridas)
Sweden	Regulatory reference	Hygieniska gränsvärden (AFS 2015:7)
United Kingdom	Local name	1,1,1,2-Tetrafluoroethane (HFC 134a)
United Kingdom	WEL TWA (mg/m ³)	4240 mg/m ³
United Kingdom	WEL TWA (ppm)	1000 ppm
United Kingdom	Regulatory reference	EH40. HSE
Russian Federation	Local name	1,1,1,2-Тетрафторэтан
Russian Federation	OEL Ceiling (mg/m ³)	3000 mg/m ³
Russian Federation	Remark (RU)	4 класс опасности - умеренно опасное; п (пары и/или газы)
Russian Federation	Regulatory reference	ГН 2.2.5.1313-03
Switzerland	MAK (mg/m ³)	4200 mg/m ³
Switzerland	MAK (ppm)	1000 ppm
Australia	Local name	1,1,1,2-Tetrafluoroethane
Australia	TWA (mg/m ³)	4240 mg/m ³
Australia	TWA (ppm)	1000 ppm
isobutane (containing < 0,1 % 1,3-butadiene (203-450-8)) (75-28-5)		
Austria	Local name	Butan (beide Isomeren): Isobutan (R 600a)
Austria	MAK (mg/m ³)	1900 mg/m ³
Austria	MAK (ppm)	800 ppm
Austria	MAK Short time value (mg/m ³)	3800 mg/m ³
Austria	MAK Short time value (ppm)	1600 ppm
Austria	Regulatory reference	BGBI. II Nr. 186/2015
Belgium	Local name	Hydrocarbures aliphatiques sous forme gazeuse : (Alcanes C1-C4)
Belgium	Limit value (ppm)	1000 ppm
Belgium	Regulatory reference	Koninklijk besluit/Arrêté royal 11/03/2002
Estonia	Local name	Isobutaan (2-metüülpropaan)
Estonia	OEL TWA (mg/m ³)	1900 mg/m ³
Estonia	OEL TWA (ppm)	800 ppm
Estonia	Regulatory reference	Vabariigi Valitsuse 18. septembri 2001. a määruse nr 293
Finland	Local name	i-Butaani (2-Metyylipropaani)
Finland	HTP-arvo (8h) (mg/m ³)	1900 mg/m ³
Finland	HTP-arvo (8h) (ppm)	800 ppm
Finland	HTP-arvo (15 min)	2400 mg/m ³
Finland	HTP-arvo (15 min) (ppm)	1000 ppm
Finland	Huomautus (FI)	liite 4 (HAPPEA SYRJÄYTTÄMÄLLÄ TUKEHDUTTAVAT KAASUT)
Finland	Regulatory reference	HTP-ARVOT 2016 (Sosiaali- ja terveysministeriö)
Germany	Local name	Isobutan
Germany	TRGS 900 Occupational exposure limit value (mg/m ³)	2400 mg/m ³
Germany	TRGS 900 Occupational exposure limit value (ppm)	1000 ppm
Germany	TRGS 900 Limitation of exposure peaks	4(II)
Germany	Remark (TRGS 900)	DFG
Germany	Regulatory reference (TRGS900)	TRGS900

R-422D

Safety Data Sheet

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

isobutane (containing < 0,1 % 1,3-butadiene (203-450-8)) (75-28-5)		
Portugal	Local name	Butano, todos os isómeros
Portugal	OEL STEL (ppm)	1000 ppm
Portugal	Regulatory reference	Norma Portuguesa NP 1796:2014
Slovakia	Local name	bután s obsahom $\geq 0,1\%$ butadiénu (n-bután) (izo-bután)
Slovakia	NPHV (priemerná) (mg/m ³)	2400 mg/m ³
Slovakia	NPHV (priemerná) (ppm)	1000 ppm
Slovakia	Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (Zmena: 83/2015 Z. z.)
Slovenia	Local name	izobutan
Slovenia	OEL TWA (mg/m ³)	2400 mg/m ³
Slovenia	OEL TWA (ppm)	1000 ppm
Slovenia	OEL STEL (mg/m ³)	9600 mg/m ³
Slovenia	OEL STEL (ppm)	4000 ppm
Slovenia	KTV factor SL	4
Slovenia	Regulatory reference	Uradni list RS, št. 102/2010 z dne 17.12.2010
Switzerland	Local name	iso-Butan
Switzerland	MAK (mg/m ³)	1900 mg/m ³
Switzerland	MAK (ppm)	800 ppm
Switzerland	KZGW (mg/m ³)	7600 mg/m ³
Switzerland	KZGW (ppm)	3200 ppm
Switzerland	Remark (CH)	ZNS ^{KT}
Switzerland	Regulatory reference	SUVA - Grenzwerte am Arbeitsplatz 2016
USA - ACGIH	Local name	Butane, all isomers
USA - ACGIH	ACGIH STEL (ppm)	1000 ppm
USA - ACGIH	Remark (ACGIH)	CNS impair
USA - ACGIH	Regulatory reference	ACGIH 2017

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

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

DNEL/DMEL (Workers)

Long-term - systemic effects, inhalation 13936 mg/m³

DNEL/DMEL (General population)

Long-term - systemic effects, inhalation 2476 mg/m³

PNEC (Water)

PNEC aqua (freshwater) 0,1 mg/l

PNEC aqua (marine water) 0,01 mg/l

PNEC (Sediment)

PNEC sediment (freshwater) 0,75 mg/kg dwt

PNEC (STP)

PNEC sewage treatment plant 73 mg/l

8.2. Exposure controls

Hand protection:

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

Eye protection:

R-422D

Safety Data Sheet

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

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	: slightly ethereal.
Odour threshold	: No data available
pH	: Not applicable
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: -43,2 °C
Flash point	: None
Critical temperature	: 79,6 °C
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: Non flammable.
Vapour pressure	: 11,3 bar (25°C)
Vapour pressure at 50 °C	: 20,8 bar (50°C)
Critical pressure	: 39,1 bar
Relative vapour density at 20 °C	: 3,9
Relative density	: No data available
Density	: 1,15 g/cm ³ (25°C)
Solubility	: Insoluble in water.
Log Pow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: Not explosive material according to EC criteria.
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

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.

10.5. Incompatible materials

Strong oxidizing agents.

10.6. Hazardous decomposition products

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

R-422D

Safety Data Sheet

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

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

Pentafluoroethane (354-33-6)

LC50 inhalation rat (ppm) 800000 ppm/4h

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

LC50 inhalation rat (ppm) > 500000 ppm/4h

isobutane (containing < 0,1 % 1,3-butadiene (203-450-8)) (75-28-5)

LC50 inhalation rat (mg/l) 658 mg/l/4h

Skin corrosion/irritation : Not classified
pH: Not applicable
Additional information : Contact with the liquid causes 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

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
Aspiration hazard : Not classified

SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic toxicity : Not classified
Chronic aquatic toxicity : Not classified

Pentafluoroethane (354-33-6)

LC50 fish 1 > 100 mg/l 96 Hours (Oncorhynchus mykiss)
EC50 Daphnia 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 Daphnia 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.

isobutane (containing < 0,1 % 1,3-butadiene (203-450-8)) (75-28-5)

Persistence and degradability < 60 % biodegradation after 28 days.

12.3. Bioaccumulative potential

Pentafluoroethane (354-33-6)

Log Pow 1,48

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

Log Pow 1,06

R-422D

Safety Data Sheet

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

12.4. Mobility in soil

Pentafluoroethane (354-33-6)	
Log Koc	1,3 - 1,7

1,1,1,2-Tetrafluoroethane (811-97-2)	
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
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
isobutane (containing < 0,1 % 1,3-butadiene (203-450-8)) (75-28-5)	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) : 2729.




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 : 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		
3163	3163	3163
14.2. UN proper shipping name		
LIQUEFIED GAS, N.O.S. (Pentafluoroethane ; 1,1,1,2-Tetrafluoroethane ; isobutane (containing < 0,1 % 1,3-butadiene (203-450-8)) isobutane)	LIQUEFIED GAS, N.O.S. (Pentafluoroethane ; 1,1,1,2-Tetrafluoroethane ; isobutane (containing < 0,1 % 1,3-butadiene (203-450-8)) isobutane)	Liquefied gas, n.o.s. (Pentafluoroethane ; 1,1,1,2-Tetrafluoroethane ; isobutane (containing < 0,1 % 1,3-butadiene (203-450-8)) isobutane)
Transport document description		
UN 3163 LIQUEFIED GAS, N.O.S. (Pentafluoroethane ; 1,1,1,2-Tetrafluoroethane ; isobutane (containing < 0,1 % 1,3-butadiene (203-450-8)) isobutane), 2.2, (C/E)	UN 3163 LIQUEFIED GAS, N.O.S. (Pentafluoroethane ; 1,1,1,2-Tetrafluoroethane ; isobutane (containing < 0,1 % 1,3-butadiene (203-450-8)) isobutane), 2.2	UN 3163 Liquefied gas, n.o.s. (Pentafluoroethane ; 1,1,1,2-Tetrafluoroethane ; isobutane (containing < 0,1 % 1,3-butadiene (203-450-8)) isobutane), 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

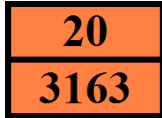
Classification code (ADR) : 2A
Special provisions (ADR) : 274, 662
Limited quantities (ADR) : 120ml
Excepted quantities (ADR) : E1
Packing instructions (ADR) : P200

R-422D

Safety Data Sheet

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

Mixed packing provisions (ADR)	: MP9
Portable tank and bulk container instructions (ADR)	: (M), T50
Tank code (ADR)	: PxBN(M)
Tank special provisions (ADR)	: TA4, TT9
Vehicle for tank carriage	: AT
Transport category (ADR)	: 3
Special provisions for carriage - Loading, unloading and handling (ADR)	: CV9, CV10, CV36
Hazard identification number (Kemler No.)	: 20
Orange plates	:



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

- Transport by sea

Special provisions (IMDG)	: 274
Packing instructions (IMDG)	: P200
Tank instructions (IMDG)	: T50
EmS-No. (Fire)	: F-C
EmS-No. (Spillage)	: S-V
Stowage category (IMDG)	: A

- Air transport

PCA Excepted quantities (IATA)	: E1
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
ERG code (IATA)	: 2L

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

Contains no REACH substances with Annex XVII restrictions
Contains no substance on the REACH candidate list
Contains no REACH Annex XIV substances

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, low hazard to waters (Classification according to AwSV, Annex 1)
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 : None of the components are listed
SZW-lijst van mutagene stoffen : None of the components are listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : None of the components are listed

R-422D

Safety Data Sheet

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

NIET-limitatieve lijst van voor de voortplanting : None of the components are listed

giftige stoffen – Vruchtbaarheid

NIET-limitatieve lijst van voor de voortplanting : None of the components are listed

giftige stoffen – Ontwikkeling

Switzerland

Swiss National Regulations : ORRChim RS 814.81.

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 1	Flammable gases, Category 1
Press. Gas (Liq.)	Gases under pressure : Liquefied gas
H220	Extremely flammable 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