SAFETY DATA SHEET
accordance with Annex II of Regulation (EC) No 1907/2006 and its amendment(s)

Product: **FORANE® 407C** Page: 1 / 11

SDS No.: 001965-001 (Version 3.1) Date 18.08.2017 (*Cancel and replace* : 10.04.2012)

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Identification of the product

Identification of the mixture: FORANE® 407C

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

Use of the Substance/Mixture :

Sector of use :	Product category :
SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites**, SU17:** General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment	**PC16:** Heat transfer fluids
SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	**PC16:** Heat transfer fluids

1.3. Details of the supplier of the safety data sheet

Supplier

ARKEMA
Fluorochemicals
420 rue d'Estienne d'Orves
92705 Colombes Cedex, FRANCE
Telephone: +33 (0)1 49 00 80 80
Telefax: +33 (0)1 49 00 83 96
E-mail address: pars-drp-fds@arkema.com
http://www.arkema.com

1.4. Emergency telephone number

+ 33 1 49 00 77 77
European emergency phone number: 112
UK: National Chemical Emergency Centre Tel: 01865 407 333

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008):
Gases under pressure, LG, H280

Additional information:
For the full text of the H, EUH-phrases mentioned in this Section, see Section 16.

2.2. Label elements

Label elements (REGULATION (EC) No 1272/2008):

Hazard pictograms:

Signal word: **Warning**

Hazard statements:
H280 : Contains gas under pressure; may explode if heated.

Precautionary statements:
Storage:
P410 + P403 : Protect from sunlight. Store in a well-ventilated place.

Special labelling:

Contains fluorinated greenhouse gases covered by the Kyoto Protocol. Contains: 1,1,1,2-Tetrafluoroethane; Difluoromethane; Pentafluoroethane.

2.3. Other hazards

Potential health effects:
Inhalation: As with other volatile aliphatic halogenated compounds, through vapour accumulation and/or inhalation of large quantities, the product can cause : Loss of consciousness and cardiac disorders aggravated by stress and lack of oxygen, risk of mortality
Skin contact: Ejection of liquefied gas : frostbite possible

Environmental Effects:
Not readily biodegradable. Practically not bioaccumulable

Physical and chemical hazards:
Thermal decomposition giving toxic and corrosive products
Decomposition products: See chapter 10

Other:
Results of PBT and vPvB assessment : According to REACH regulation, annex XIII, this mixture contains no substance meeting PBT and vPvB criteria.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

Chemical nature of the mixture[1]:
Fluorocarbons

Hazardous components (accordance with Annex II of Regulation (EC) No 1907/2006 and its amendment(s)) :

Chemical name[1] & REACH Registration Number[2]	EC-No.	CAS-No.	Concentration	Classification REGULATION (EC) No 1272/2008
1,1,1,2-Tetrafluoroethane (01-2119459374-33)	212-377-0	811-97-2	50 - 54 %	Press. Gas LG; H280
Difluoromethane (01-2119471312-47)	200-839-4	75-10-5	21 - 25 %	Flam. Gas 1; H220 Press. Gas LG; H280
Pentafluoroethane (01-2119485636-25)	206-557-8	354-33-6	23 - 27 %	Press. Gas LG; H280

[1]: See chapter 14 for Proper Shipping Name
[2] :See the text of the regulation for applicable exceptions or provisions : The transition time according to REACH Regulation, Article 23, is still not expired.

4. FIRST AID MEASURES

4.1. Description of necessary first-aid measures:

General advice:
No hazards which require special first aid measures.

Inhalation:
Move patient from contaminated area to fresh air. Oxygen or artificial respiration if needed. In case of persistent problems : Consult a physician.

Skin contact:
Frostbite : treat as thermal burns. Wash off with plenty of water.

Eye contact:
Wash immediately, abundantly and thoroughly with water. If irritation persists, consult an ophthalmologist.

Ingestion:
No hazards which require special first aid measures.

Protection of first-aiders:
In case of insufficient ventilation, wear suitable respiratory equipment.

4.2. Most important symptoms/effects, acute and delayed: No data available.

4.3. Indication of immediate medical attention and special treatment needed, if necessary

Treatment: Do not administer catecholamines (because of the cardiac effect caused by the product).

5. FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media: Use extinguishing measures to suit surroundings.

5.2. Special hazards arising from the substance or mixture:

At high temperature :, Thermal decomposition giving toxic and corrosive products :
Hydrogen fluoride, Carbon oxides
One of the components of this preparation gives flammable mixtures with air

5.3. Advice for firefighters:

Specific methods:
Cool containers/tanks with water spray. Ensure a system for the rapid emptying of containers. In case of fire nearby, remove exposed containers.

Special protective actions for fire-fighters:
Wear self-contained breathing apparatus and protective suit.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures:

Avoid contact with skin and eyes and inhalation of vapours. Avoid inhalation of vapours. In enclosed areas : ventilate or wear a self-contained breathing apparatus (risk of anoxia). Remove all sources of ignition. Do not smoke.

6.2. Environmental precautions:

Do not release into the environment.

6.3. Methods and materials for containment and cleaning up:

Recovery:
Allow to evaporate.

Elimination: See chapter 13

6.4. Reference to other sections: None.

7. HANDLING AND STORAGE

7.1. Precautions for safe handling:

Technical measures/Precautions:
Storage and handling precautions applicable to products: pressurised liquified gas
Provide appropriate exhaust ventilation at machinery. Provide self-contained breathing apparatus nearby (for emergency intervention).
Provide showers, eye-baths. Well ventilate empty vats and tanks before entering.

Safe handling advice:
Prohibit ignition sources near the point where containers are opened - Do not smoke.

Hygiene measures:
Avoid contact with skin and eyes and inhalation of vapours. When using do not eat, drink or smoke.
Wash hands after handling. Remove contaminated clothing and protective equipment before entering eating areas.

7.2. Conditions for safe storage, including any incompatibilities:

Keep in a cool, well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition. Keep away from heat and sources of ignition. Do not smoke. Protect full containers from sources of heat to avoid overpressurization. Protect from light. Keep away from direct sunlight.

Incompatible products:
Strong oxidizing agents Alkaline hydroxides Alkaline earth metals Finely divided metals

Packaging material:
Recommended: Ordinary steel
To be avoided: Alloys containing more than 2% of magnesium, Plastic materials

7.3. Specific end use(s): None.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters:

Exposure Limit Values

1,1,1,2-Tetrafluoroethane

Source	Date	Value type	Value (ppm)	Value (mg/m3)	Remarks
WEEL	2010	TWA	1.000	4.240	–
EH40 WEL	12 2011	TWA	1.000	4.240	–

Pentafluoroethane

Source	Date	Value type	Value (ppm)	Value (mg/m3)	Remarks
WEEL	2010	TWA	1.000	4.900	–

Difluoromethane

Source	Date	Value type	Value (ppm)	Value (mg/m3)	Remarks
ARKEMA		TWA	1.000	2.130	Value recommended by the "Exposure Limit Value Committee" of ARKEMA

Derived No Effect Level (DNEL): 1,1,1,2-TETRAFLUOROETHANE :

End Use	Inhalation	Ingestion	Skin contact
Workers	13936 mg/m3 (LT, SE)		
Consumers	2476 mg/m3 (LT, SE)		

LE : Local effects, **SE** : Systemic effects, **LT** : Long term, **ST** : Short term

Derived No Effect Level (DNEL): DIFLUOROMETHANE :

End Use	Inhalation	Ingestion	Skin contact
Workers	7035 mg/m3 (LT, SE)		
Consumers	750 mg/m3 (LT, SE)		

LE : Local effects, **SE** : Systemic effects, **LT** : Long term, **ST** : Short term

Derived No Effect Level (DNEL): PENTAFLUOROETHANE :

End Use	Inhalation	Ingestion	Skin contact
Workers	16444 mg/m3 (LT, SE)		
Consumers	1753 mg/m3 (LT, SE)		

LE : Local effects, **SE** : Systemic effects, **LT** : Long term, **ST** : Short term

Predicted No Effect Concentration: 1,1,1,2-TETRAFLUOROETHANE :

Compartment:	Value:
Fresh water	0,1 mg/l
Marine water	0,01 mg/l
Water (Intermittent release)	1 mg/l
Effects on waste water treatment plants	73 mg/l
Fresh water sediment	0,75 mg/kg dw

Predicted No Effect Concentration: DIFLUOROMETHANE :

Compartment:	Value:
Fresh water	0,142 mg/l
Water (Intermittent release)	1,42 mg/l
Fresh water sediment	0,534 mg/kg dw

Predicted No Effect Concentration: PENTAFLUOROETHANE :

Compartment:	Value:
Fresh water	0,1 mg/l
Water (Intermittent release)	1 mg/l
Fresh water sediment	0,6 mg/kg dw

8.2. Exposure controls:

General protective measures: Provide sufficient air exchange and/or exhaust in work rooms.

Personal protective equipment:

Respiratory protection: In case of insufficient ventilation, wear suitable respiratory equipment.
Hand protection: Leather gloves
Eye/face protection: Safety glasses with side-shields
Skin and body protection: Protective clothing (cotton)

Environmental exposure controls: See chapter 6

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance:

Physical state (20°C): gaseous
Form: Liquefied gas
Colour: colourless
Odour: slightly, ether-like
Olfactory threshold: No data available.
pH: Not applicable

1,1,1,2-TETRAFLUOROETHANE :
Melting point/range : -108 °C

DIFLUOROMETHANE :
Melting point/range : -136 °C (Pressure 1.013 hPa)

PENTAFLUOROETHANE :
Melting point/range : -103 °C
Boiling point/boiling range : -42,4 °C
Flash point: Not applicable
Evaporation rate: No data available.
Flammability (solid, gas):
Flammability: Non flammable product (ASTM E681-09)
Vapour pressure: 1,13 MPa , at 25 °C
2,11 MPa , at 50 °C
3,26 MPa , at 70 °C
Vapour density: 4,54 kg/m3 At the boiling point
Density: 1.133 kg/m3 , at 25 °C
1.004 kg/m3 , at 50 °C
861 kg/m3 , at 70 °C
Water solubility: 1,1,1,2-TETRAFLUOROETHANE :
1 g/l at 25 °C (measured)
DIFLUOROMETHANE :
1,68 g/l at 25 °C
PENTAFLUOROETHANE :
3,89 g/l at 24 °C (measured)
Partition coefficient: n-octanol/water: 1,1,1,2-TETRAFLUOROETHANE :
log Kow : 1,06 , at 25 °C, Slightly bioaccumulable. (OECD Test Guideline 107)
PENTAFLUOROETHANE :
log Kow : 1,48 , at 25 °C, Slightly bioaccumulable. (OECD Test Guideline 107)
DIFLUOROMETHANE :
log Kow : 0,21 , at 25 °C, Slightly bioaccumulable. (OECD Test Guideline 107)

Auto-ignition temperature :	1,1,1,2-TETRAFLUOROETHANE :
	> 743 °C at 1.013 hPa
	DIFLUOROMETHANE :
	530 °C at 1.018 hPa (Standard A15 (D. 92/69/EEC))
Decomposition temperature:	No data available.
Viscosity, dynamic:	Not applicable
Explosive properties:	
Explosivity:	Not relevant (due to the chemical structure)
Oxidizing properties:	Not relevant (due to the chemical structure)

9.2. Other data:

Critical point:	Critical pressure: 4,64 MPa, Critical temperature: 89 °C

10. STABILITY AND REACTIVITY

10.1. Reactivity: No data available.

10.2. Chemical stability:
The product is stable under normal handling and storage conditions.

10.3. Possibility of hazardous reactions: No data available.

10.4. Conditions to avoid:
Keep away from heat and sources of ignition. Avoid contact with flames and red hot metallic surfaces

10.5. Incompatible materials to avoid:
Alkaline hydroxides, Alkaline earth metals, Strong oxidizing agents, Finely divided metals

10.6. Hazardous decomposition products:
At high temperature :, Thermal decomposition giving toxic and corrosive products :
Gaseous hydrogen fluoride (HF)., Carbon oxides

11. TOXICOLOGICAL INFORMATION

All available data on this product and/or the components quoted in section 3 and/or the analogue substances/metabolites have been taken into account for the hazard assessment.

11.1. Information on toxicological effects:

Acute toxicity:

Inhalation:	**According to its composition, can be considered as : Slightly or not harmful by inhalation**
1,1,1,2-TETRAFLUOROETHANE :	
	As with other volatile aliphatic halogenated compounds, through vapour accumulation and/or inhalation of large quantities, the product can cause :, Loss of consciousness and cardiac disorders aggravated by stress and lack of oxygen, risk of mortality
• In animals :	No mortality/4 h/Rat: 567000 ppm (Method: OECD Test Guideline 403) Central nervous system depression, narcosis
DIFLUOROMETHANE :	
	At high vapour/fog concentrations :, headache, Dizziness, Drowsiness
	As with other volatile aliphatic halogenated compounds, through vapour accumulation and/or inhalation of large quantities, the product can cause :, Loss of consciousness and cardiac disorders aggravated by stress and lack of oxygen, risk of mortality
• In animals :	No mortality/4 h/Rat: 520000 ppm (Method: OECD Test Guideline 403)
PENTAFLUOROETHANE :	
	Effects of breathing high concentrations of vapour may include:, headache, Dizziness, Drowsiness
	As with other volatile aliphatic halogenated compounds, through vapour accumulation and/or inhalation of large quantities, the product can cause :, Loss of consciousness and cardiac disorders aggravated by stress and lack of oxygen, risk of mortality
• In animals :	No mortality/4 h/Rat: 800000 ppm (Method: OECD Test Guideline 403)

Local effects (Corrosion / Irritation / Serious eye damage):

Skin contact:

Ejection of liquefied gas : frostbite possible

Eye contact:

Ejection of liquefied gas : frostbite possible

Respiratory or skin sensitisation:

Inhalation: No data available.

Skin contact:

Not relevant (gas)

CMR effects :

Mutagenicity: **According to its composition, can be considered as : Not genotoxic**

In vitro

1,1,1,2-TETRAFLUOROETHANE :

Ames test in vitro: Inactive (Method: OECD Test Guideline 471)
In vitro chromosomal abnormality test on human lymphocytes: Inactive (Method: OECD Test Guideline 473)
In vitro gene mutations test on mammalian cells: Inactive

DIFLUOROMETHANE :

Ames test in vitro: Inactive (Method: OECD Test Guideline 471)
In vitro chromosomal abnormality test on human lymphocytes: Inactive (Method: OECD Test Guideline 473)
In vitro gene mutations test on mammalian cells: Inactive (Method: OECD Test Guideline 476)

PENTAFLUOROETHANE :

Ames test: negative (Method: OECD Test Guideline 471)
In vitro test for chromosomal abnormalities on CHO cells: negative (Method: OECD Test Guideline 473)
In vitro chromosomal abnormality test on human lymphocytes: negative (Method: OECD Test Guideline 476)

In vivo

1,1,1,2-TETRAFLUOROETHANE :

Micronucleus test in vivo mouse: Inactive (Method: OECD Test Guideline 474)
DNA repair test on rats hepatocytes: Inactive

DIFLUOROMETHANE :

Micronucleus test in vivo mouse: Inactive (Method: OECD Test Guideline 474)

PENTAFLUOROETHANE :

Micronucleus test in vivo mouse: negative (Method: OECD Test Guideline 474)

Carcinogenicity: **Based on the available information, it is not possible to conclude on the hasard potential of this mixture.**

1,1,1,2-TETRAFLUOROETHANE :
• In animals :

Absence of carcinogenic effects (Rat, 2 years, By inhalation)
No Observed Adverse Effect Level (NOAEL): 10.000 ppm

Absence of carcinogenic effects (Rat, 1 year, By oral route)
No Observed Adverse Effect Level (NOAEL): 300 mg/kg bw/day

Reproductive toxicity:

Fertility: **Based on the available data, the substance is not suspected of having reprotoxic potential.**

1,1,1,2-TETRAFLUOROETHANE :
• In animals :

Two-generation study
NOAEL (Parental toxicity): 50.000 ppm
NOAEL (Fertility): 50.000 ppm
NOAEL (Developmental Toxicity): 50000 ppm
(rat, By inhalation)

DIFLUOROMETHANE :
• In animals :

NOAEL (Parental toxicity): > 50.000 ppm
NOAEL (Fertility): > 50.000 ppm
NOAEL (Developmental Toxicity): > 50000 ppm
(rat, mouse, Inhalation)

Foetal development:

1,1,1,2-TETRAFLUOROETHANE :

• In animals : Absence of toxic effects for foetal development.
NOAEL (Developmental Toxicity): 40.000 ppm
NOAEL (Maternal Toxicity): 2.500 ppm
(Method: OECD Test Guideline 414, Rabbit, By inhalation)
Absence of toxic effects for foetal development.
NOAEL (Developmental Toxicity): 50.000 ppm
NOAEL (Maternal Toxicity): 50.000 ppm
(Method: OECD Test Guideline 414, Rat, By inhalation)

DIFLUOROMETHANE :
• In animals : Absence of toxic effects for foetal development.
NOAEL (Developmental Toxicity): 50.000 ppm
NOAEL (Maternal Toxicity): 50.000 ppm
(Method: OECD Test Guideline 414, rat, rabbit, By inhalation)

PENTAFLUOROETHANE :
• In animals : Absence of toxic effects for foetal development.
NOAEL (Developmental Toxicity): 245 mg/l
NOAEL (Maternal Toxicity): 245 mg/l
(Method: OECD Test Guideline 414, rat, rabbit, By inhalation)

Specific target organ toxicity :

Single exposure : **The substance or mixture is not classified as specific target organ toxicant, single exposure.**

Inhalation:
Non irritating to respiratory system

Repeated exposure: **The substance or mixture is not classified as specific target organ toxicant, repeated exposure.**

1,1,1,2-TETRAFLUOROETHANE :
• In animals : Inhalation: No adverse effects reported.
NOAEL= 50000ppm (Rat, Several years)

DIFLUOROMETHANE :

• In animals : Inhalation: No specific toxic effects
NOAEL= 50000ppm (Method: OECD Test Guideline 413, Rat, 3 Months)

PENTAFLUOROETHANE :
• In animals : Studies of prolonged inhalation in animals have not shown sub-chronic toxic effects

Inhalation: NOAEL= 50000ppm (Method: OECD Test Guideline 413, Rat, 3 Months)

Aspiration hazard:
Not relevant

12. ECOLOGICAL INFORMATION

Ecotoxicology Assessment: All available and relevant data on this product and/or the components quoted in section 3 and/or the analogue substances/metabolites have been taken into account for the hazard assessment.

12.1. Acute toxicity :

Fish: **From its composition, it must be considered as: Slightly harmful to fish**

1,1,1,2-TETRAFLUOROETHANE :
LC50, 96 h (Salmo gairdneri) : 450 mg/l (Method: OECD Test Guideline 203)

PENTAFLUOROETHANE :
May be considered as comparable to a similar product for which experimental results are:

PROPANE, 1,1,1,3,3-PENTAFLUORO- :
LC50, 96 h (Danio rerio (zebra fish)) : > 200 mg/l (Method: OECD Test Guideline 203)

DIFLUOROMETHANE :
LC50, 96 h (Freshwater fish) : 1.507 mg/l (Method: calculated)

Aquatic invertebrates: **From its composition, it must be considered as: Slightly harmful to daphnia**

1,1,1,2-TETRAFLUOROETHANE :
EC50, 48 h (Daphnia magna (Water flea)) : 980 mg/l (Method: OECD Test Guideline 202)

PENTAFLUOROETHANE :
May be considered as comparable to a similar product for which experimental results are:

1,1,1,3,3-PENTAFLUOROBUTANE :
EC50, 48 h (Daphnia magna (Water flea)) : > 200 mg/l (Method: OECD Test Guideline 202)

DIFLUOROMETHANE :
EC50, 48 h (Daphnia (water flea)) : 652 mg/l (Method: calculated)

Aquatic plants: **From its composition, it must be considered as: Slightly harmful to algae**

1,1,1,2-TETRAFLUOROETHANE :
May be considered as comparable to a similar product for which experimental results are:

PENTAFLUOROETHANE :
May be considered as comparable to a similar product for which experimental results are:

PROPANE, 1,1,1,3,3-PENTAFLUORO- :
EC r50, 72 h (Pseudokirchneriella subcapitata) : > 118 mg/l (Method: OECD Test Guideline 201)

DIFLUOROMETHANE :
EC r50, 96 h (algae) : 142 mg/l (Method: calculated)

Microorganisms:

1,1,1,2-TETRAFLUOROETHANE :
EC10, 6 h (Pseudomonas putida) : > 730 mg/l

12.2. Persistence and degradability :

Biodegradation (In water): **From its composition, it must be considered as: Not readily biodegradable.**

1,1,1,2-TETRAFLUOROETHANE :
Not readily biodegradable.: 3 % after 28 d (Method: OECD Test Guideline 301D)

PENTAFLUOROETHANE :
Not readily biodegradable.: 5 % after 28 d (Method: OECD Test Guideline 301 D)

DIFLUOROMETHANE :
Not readily biodegradable.: 5 % after 28 d (Method: OECD Test Guideline 301 D)

Photodegradation (In air):

1,1,1,2-TETRAFLUOROETHANE :
Degradation by radicals OH: Direct photolysis (Half-life) : 9,7 y

PENTAFLUOROETHANE :
Degradation by radicals OH: Direct photolysis (Half-life) : 29 y

DIFLUOROMETHANE :
Degradation by radicals OH: Direct photolysis (Half-life) : 3,39 y

12.3. Bioaccumulative potential :

Bioaccumulation: **None of the product and /or main component quoted in section 3 and/or analogue substance/metabolite is expected to bioaccumulate.**

1,1,1,2-TETRAFLUOROETHANE :
Partition coefficient: n-octanol/water: log Kow : 1,06 , at 25 °C, Slightly bioaccumulable. (Method: OECD Test Guideline 107)

PENTAFLUOROETHANE :
Partition coefficient: n-octanol/water: log Kow : 1,48 , at 25 °C, Slightly bioaccumulable. (Method: OECD Test Guideline 107)

DIFLUOROMETHANE :
Partition coefficient: n-octanol/water: log Kow : 0,21 , at 25 °C, Slightly bioaccumulable. (Method: OECD Test Guideline 107)

12.4. Mobility in soil - Distribution among environmental compartments:

Substance :

1,1,1,2-TETRAFLUOROETHANE :
Predicted distribution to environmental compartments
Water: 0,07 %
Air: 99,93 %
(Method: Calculation according Mackay, Level I)

PENTAFLUOROETHANE :
Predicted distribution to environmental compartments
Air: 100 %

DIFLUOROMETHANE :
Predicted distribution to environmental compartments
Water: 0,01 %
Air: 99,99 %
(Method: Calculation according Mackay, Level I)

Vapor pressure:
1,13 MPa, 25 °C
2,11 MPa, 50 °C

3,26 MPa, 70 °C

Absorption / desorption:
1,1,1,2-TETRAFLUOROETHANE :
log Koc: 1,57 (Method: calculated)
PENTAFLUOROETHANE :
log Koc: 1,3 - 1,7 (Method: calculated)
DIFLUOROMETHANE :
log Koc: 0,17 - 1,34 (Method: calculated)

12.5. Results of PBT and vPvB assessment :
According to REACH regulation, annex XIII, this mixture contains no substance meeting PBT and vPvB criteria.

12.6. Other adverse effects:

Global warming potential (GWP): PENTAFLUOROETHANE , Global warming potential with respect to CO2 (time horizon 100 years) , Value: 3.400

1,1,1,2-TETRAFLUOROETHANE , Global warming potential with respect to CO2 (time horizon 100 years) , Value: 1.300

DIFLUOROMETHANE , Global warming potential with respect to CO2 (time horizon 100 years) , Value: 650

Ozone depletion potential: 1,1,1,2-TETRAFLUOROETHANE , Ozone depletion potential; ODP; (R-11 = 1) , Value: 0

DIFLUOROMETHANE , Ozone depletion potential; ODP; (R-11 = 1) , Value: 0

PENTAFLUOROETHANE , Ozone depletion potential; ODP; (R-11 = 1) , Value: 0

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment:

Disposal of product: Recycle or incinerate at an approved waste disposal site. In accordance with local and national regulations.

14. TRANSPORT INFORMATION

Regulation	14.1. UN number	14.2.UN proper shipping name	14.3.Class*	Label	14.4. PG*	14.5. Environmental hazards	14.6. Special precautions for user
ADR	3340	REFRIGERANT GAS R 407C	2	2.2		no	
ADN	3340	REFRIGERANT GAS R 407C	2	2.2		no	
RID	3340	REFRIGERANT GAS R 407C	2	2.2		no	
IATA Cargo	3340	Refrigerant gas R 407C	2.2	2.2		no	
IATA Passenger	3340	Refrigerant gas R 407C	2.2	2.2		no	
IMDG	3340	REFRIGERANT GAS R 407C	2.2	2.2		no	EmS Number: F-C, S-V

*Description: 14.3. Transport hazard class(es)
14.4. Packing group

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

15. REGULATORY INFORMATION

Safety data sheets: accordance with Annex II of Regulation (EC) No 1907/2006 and its amendment(s)

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture:

Listed in:

EU. Regulation No. 842/2006 on certain fluorinated greenhouse gases, Annex 1. OJ (L 161) 1: Norflurane: Pentafluoroethane: Difluoromethane
Regulation (EC) No 1005/2009 on substances that deplete the ozone layer: Norflurane
Kyoto Protocol to the United Nations Framework Convention on Climate Change, Annex A, Greenhouse Gases: Norflurane: Pentafluoroethane: Difluoromethane
UK REGULATION Chip3: Chemical (Hazard Information and Packaging for Supply) Regulations 2002

Major Accident Hazard Legislation Not applicable

15.2. Chemical safety assessment:
As the substance doesn't meet the criteria for health and environment classification and is neither PBT nor vPvB, according to REACH regulation, article 14(3), development of specific exposure scenarios are not required.

INVENTORIES:

EINECS:	Conforms to
TSCA:	Conforms to
DSL:	All components of this product are on the Canadian DSL
IECSC (CN):	Conforms to
ENCS (JP):	Conforms to
ISHL (JP):	Conforms to
KECI (KR):	Conforms to
PICCS (PH):	Conforms to
AICS:	Conforms to
NZIOC:	Conforms to

16. OTHER INFORMATION

Full text of H, EUH-phrases referred to under sections 2 and 3

H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.

Update:

Safety datasheet sections which have been updated:		Type:
15	15. REGULATORY INFORMATION	Revisions
1-16	General update of Safety Data Sheet.	Revisions

Thesaurus:
NOAEL : No Observed Adverse Effect Level (NOAEL)
LOAEL : Lowest Observed Adverse Effect Level (LOAEL)
bw : Body weight
food : oral feed
dw : Dry weight
vPvB : very Persistent and very Bioaccumulative
PBT : Persistent, Bioaccumulative and Toxic

This information applies to the PRODUCT AS SUCH and conforming to specifications of ARKEMA. In case of formulations or mixtures, it is necessary to ascertain that a new danger will not appear. The information contained is based on our knowledge of the product, at the date of publishing and it is given quite sincerely. Users are advised of possible additional hazards when the product is used in applications for which it was not intended. This sheet shall only be used and reproduced for prevention and security purposes. The references to legislative, regulatory and codes of practice documents cannot be considered as exhaustive. It is the responsibility of the person receiving the product to refer to the totality of the official documents concerning the use, the possession and the handling of the product. It is also the responsibility of the handlers of the product to pass on to any subsequent persons who will come into contact with the product (usage, storage, cleaning of containers, other processes) the totality of the information contained within this safety data sheet and necessary for safety at work, the protection of health and the protection of environment.

NB: In this document the numerical separator of the thousands is the "." (point), the decimal separator is "," (comma).