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

1.1. Identification of the product

Substance name:
REACH Registration Name: Chloromethane
REACH Registration Number: 01-2119493708-22-0008
EC Nr: 200-817-4
CAS-No.: 74-87-3

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

Use of the Substance/Mixture :

Sector of use :	Product category :
Formulation and (re)packing of substances and mixtures **SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites**, SU 10:** Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)	
Use as industrial intermediate **SU 8,9:** Manufacture of bulk, large scale substances (including petroleum products); manufacture of fine chemicals**, SU 10:** Formulation**, SU11:** Manufacture of rubber products	**PC19:** Intermediate
Use as an industrial solvent **SU11:** Manufacture of rubber products	
Professional use as laboratory reagent **SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)**, SU24:** Scientific research and development	**PC21:** Laboratory chemicals

1.3. Details of the supplier of the safety data sheet

Supplier	Arkema OXYGENES 420 rue d'Estienne d'Orves 92705 Colombes Cedex, France Téléphone : +33 (0)1 49 00 80 80 Télécopie : +33 (0)1 49 00 83 96 http://www.arkema.com
E-mail address	pars-drp-fds@arkema.com
E-mail address : Exposure scenario	arkema-hydroperox-reach-uses@arkema.com

1.4. Emergency telephone number

+33 1 49 00 77 77
European emergency phone number : 112

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification (Regulation (EC) No 1272/2008):

Flammable gases, 1, H220
Gases under pressure, LG, H280
Inhalation: Reproductive toxicity, 2, H361fd
Inhalation: Carcinogenicity, 2, H351
Inhalation: Specific target organ toxicity - repeated exposure, 2, Central nervous system, Urinary tract, Liver, H373

Classification (Directive 67/548/EEC):

F+; R12
Carc.Cat.3; R40
Xn; R48/20
Repr.Cat.3; R62 R63

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

2.2. Label elements

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

Hazardous components which must be listed on the label:
No. in ANNEXE : 602-001-00-7 chloromethane; methyl chloride

Hazard pictograms:

Signal word: **Danger**

Hazard statements:
H220 : Extremely flammable gas.
H280 : Contains gas under pressure; may explode if heated.
H351 : Suspected of causing cancer if inhaled.
H361fd : Suspected of damaging fertility. Suspected of damaging the unborn child.
H373 : May cause damage to organs (Central nervous system, Urinary tract, Liver) through prolonged or repeated exposure if inhaled.

Precautionary statements:
Prevention:
P202 : Do not handle until all safety precautions have been read and understood.
P210 : Keep away from open flames/hot surfaces. - No smoking.
P260 : Do not breathe gas/mist/vapours/spray.
P281 : Use personal protective equipment as required.
Response:
P308 + P313 : IF exposed or concerned: Get medical advice/ attention.
Storage:
P403 + P235 : Store in a well-ventilated place. Keep cool.
P410 : Protect from sunlight.

2.3. Other hazards

Potential health effects:

Ejection of liquefied gas : frostbite possible
Inhalation: At high vapour/fog concentrations : Stomach/intestinal disorders Neurological disorders Dizziness headache Loss of consciousness Drowsiness
Chronic exposure: Limited evidence of a carcinogenic effect. Possible risk of impaired fertility. Possible risk of harm to the unborn child.

Environmental Effects:
Readily biodegradable. Not bioaccumulable.

Physical and chemical hazards:
Extremely flammable liquefied gas. Thermal decomposition giving toxic and corrosive products.
Decomposition products: See chapter 10

Other:
Results of PBT and vPvB assessment : This substance is not considered to be persistent, bioaccumulating, toxic (PBT), nor very persistent, very bioaccumulating (vPvB).

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1.Substances

Chemical Name[1]	EC-No.	CAS-No.	Concentration	Classification Directive 67/548/EEC	Classification Regulation (EC) No 1272/2008
Chloromethane	200-817-4	74-87-3	>= 99,9 %	F+; R12 Carc.Cat.3; R40 Repr.Cat.3; R62-R63 Xn; R48/20	Flam. Gas 1; H220 Press. Gas Carc. 2; H351 Repr. 2; H361fd STOT RE 2; H373

[1]: See chapter 14 for Proper Shipping Name

4. FIRST AID MEASURES

4.1. & 4.2. Description of necessary first-aid measures & Most important symptoms/effects, acute and delayed:

General advice:
Take off immediately all contaminated clothing (including shoes).

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

Skin contact:
Frostbite : treat as thermal burns.

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

Ingestion:
Do NOT induce vomiting. Hospitalise.

Protection of first-aiders:
If entering a saturated atmosphere, wear a self contained breathing apparatus.

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: Carbon dioxide (CO_2), Dry powder

5.2. Special hazards arising from the substance or mixture:

Extremely flammable liquefied gas.
Vapours may form explosive mixture with air.
Forms flammable and explosive hydrogen through corrosion of metals.
Thermal decomposition giving toxic and corrosive products :, Hydrogen chloride gas, Phosgene, Carbon monoxide

5.3. Advice for firefighters:

Specific methods:
Use water spray to cool unopened containers. Hazards of overpressurization in containers exposed to heat : explosion risk.

Special protective actions for fire-fighters:
In the event of fire, wear self-contained breathing apparatus. Complete suit protecting against chemicals.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures:
Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. Avoid inhalation of vapours. Avoid contact with the skin and the eyes. Prohibit all sources of sparks and ignition - Do not smoke.

6.2. Environmental precautions:
Do not release into the environment. Stop the machinery or isolate the defective equipment
Suppress gases, fumes and/or dust with water spray jet.

6.3. Methods and materials for containment and cleaning up:

Recovery:
Ensure adequate ventilation.

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: Liquefied gas Gases under pressure Extremely flammable With vapours explosive in air. Harmful. Provide appropriate exhaust ventilation at machinery. Provide showers, eye-baths. Provide self-contained breathing apparatus nearby (for emergency intervention). Provide water supplies near the point of use. Provide fire-blanket nearby.

Safe handling advice:
Take precautionary measures against static discharges. Keep away from heat. Open drum carefully as content may be under pressure. Use product only in closed system. Non-sparking tools should be used. Use explosion-proof electrical/ ventilating/ lighting/ equipment.

Hygiene measures:
Avoid inhalation of vapours. Avoid contact with the skin and the eyes. 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. Store protected from moisture and heat. Provide electrical earthing of equipment and electrical equipment usable in explosive atmospheres. Provide facilities to capture any vapours. Ensure containers can be rapidly moved.

Do not store above: 50 °C

Incompatible products:
Acids, Bases, Oxygen, Oxidizing agents

Packaging material:
Recommended: Ordinary steel
To be avoided: Plastic materials, Colourless glass, Light metals and alloys in the presence of humidity, including parts of the installation in contact with the product

7.3. Specific end use(s): None.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters:

Exposure Limit Values

Chloromethane

Source	Date	Value type	Value (ppm)	Value (mg/m3)	Remarks
ACGIH (US)	02 2012	TWA	50	–	–
ACGIH (US)	02 2012	SKIN	–	–	Can be absorbed through the skin.
ACGIH (US)	02 2012	STEL	100	–	–

Derived No Effect Level (DNEL):

End Use	Inhalation	Ingestion	Skin contact
Workers	100 mg/m3 (LT, SE)		

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

Predicted No Effect Concentration:

Compartment:	Value:
Fresh water	0,2 mg/l
Marine water	0,02 mg/l
Water (Intermittent release)	2 mg/l
Fresh water sediment	0,556 mg/kg dw
Soil	0,079 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: Low concentrations or short activity: Full mask. Recommended Filter type: AXB2
High concentrations or prolonged activity: Self contained Breathing Apparatus

Hand protection: Splash contact, intermittent and prolonged PVC gloves
According to permeation index EN 374: 1 (time elapsed > 10 mins)

Eye/face protection: Safety glasses with side-shields

Skin and body protection: At the workplace : Combination with delayed penetration, Safety shoes
Intervention at incident: Complete chemical protection suit, Complete suit

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: ether-like

Olfactory threshold: No data available.

pH: No data available.

Melting point/range : -98 °C

Boiling point/boiling range : -24 °C

Flash point: not applicable

Evaporation rate: No data available.

Flammability (solid, gas):

Lower flammable limit : 8,1 %(V)

Upper flammable limit : 17,2 %(V)

Vapour pressure: 5.719 hPa , at 25 °C

Relative vapour density: 2,47 Reference substance: Air=1

Density: liquid
920 kg/m3 , at 20 °C

Water solubility: 5,32 g/l at 25 °C

Partition coefficient: n-octanol/water: log Kow : 0,91 (calculated)

Auto-ignition temperature: 632 °C

Decomposition temperature: No data available.

Viscosity: No data available.

Explosive properties:

Explosivity: Not relevant (due to the chemical structure)

Oxidizing properties: Not relevant (due to the chemical structure)

9.2. Other data:

Solubility in other solvents: Soluble in most organic solvents

Surface tension: 16,2 mN/m at 20 °C

Critical point: Critical pressure: 65900 hPa, Critical temperature: 143 °C

10. STABILITY AND REACTIVITY

10.1. & 10.2. Reactivity & Chemical stability:
Stable at normal storage temperature.

10.3. Possibility of hazardous reactions: No data available.

10.4. Conditions to avoid:
Temperatures above 50 °C
Protect from heat. (risk of overpressurization in containers)
Vapour/air-mixtures are explosive at intense warming.

10.5. Incompatible materials to avoid:
Acids, Bases, Oxygen, Oxidizing agents, Finely divided metals, Aluminium, Magnesium, Zinc, Titanium (risk of explosion)

10.6. Hazardous decomposition products:
Thermal decomposition giving toxic and corrosive products :, hydrochloric acid, Phosgene, Carbon monoxide
Forms flammable and explosive hydrogen through corrosion of metals.

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects:

Acute toxicity:

Inhalation: **Slightly harmful by inhalation**
Effects of breathing high concentrations of vapour may include:
headache, Drowsiness, Dizziness, Stomach/intestinal disorders, Neurological disorders, Possible loss of consciousness, Coma, Lethal cases reported in man
• Reported in animals : LC50/4 h/rat: > 21,8 mg/l

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

Skin contact:
Ejection of liquefied gas : frostbite possible

Eye contact:
Direct contact with liquid Transitory irritation

Respiratory or skin sensitisation:

Inhalation: No data available.

Skin contact:
not applicable

CMR effects :

Mutagenicity: **Overall not genotoxic**

In vitro
Ames test: positive
In vitro gene mutations test on mammalian cells: positive
Sister chromatid exchange assay: positive

In vivo
DNA repair test on rats hepatocytes: negative
Tests for chromosome aberrations in vivo in germ cells: negative

Carcinogenicity: **According to limited epidemiological data available in man Absence of carcinogenic effects**
• In animals : According to limited available data in animals :
Renal tumour effect (male mouse, By inhalation)
No Observed Adverse Effect Level (NOAEL) (405 mg/l)

Reproductive toxicity:

Fertility: **At high doses, toxic effects to the male reproductive system in rodents**

• In animals : NOAEL (Parent): 0,31 mg/l (rat, inhalation)

Foetal development: **Possible risk of harm to the unborn child.**
• In animals : NOAEL: 0,21 mg/l (mouse, By inhalation)

Maternal concentration without effect: 1,03 mg/l

Specific target organ toxicity :

Single exposure : No data available.

• In man : Target organs: Target organs at high concentrations:, Nervous system, Eye

• In animals : Inhalation effect: Target organs: Target organs at high concentrations:, Kidney, Liver, Nervous system, Eye, Testicles, NOAEL= 465 mg/m3 (rat, 2 y)

Aspiration hazard: No data available.

12. ECOLOGICAL INFORMATION

12.1. Toxicity :

Fish: **Slightly harmful to fish**
LC50, 96 h (Lepomis macrochirus) : 550 mg/l

Aquatic invertebrates: **Slightly harmful to daphnia**
EC50, 48 h (Daphnia magna (Water flea)) : 200 mg/l (Method: OECD Test Guideline 202, Immobilization)

Microorganisms:
EC 3, 16 h (Pseudomonas putida) : = 500 mg/l (Growth inhibition)

12.2. Persistence and degradability :

Stability in water:
Hydrolyses slowly.
Half-life: 1,1 y (at 25 °C and pH 7)

Biodegradation (In water):
Readily biodegradable
in the aquatic environment

Photodegradation (In air):
Degradation by radicals: Direct photolysis (Half-life) : 310 d

12.3. Bioaccumulative potential :

Partition coefficient: n-octanol/water: log Kow : 0,91 (Method: calculated)
Bioconcentration factor (BCF): 3 (Method: calculated)

12.4. Mobility in soil - Distribution among environmental compartments:

Surface tension: 16,2 mN/m 20 °C

Absorption / desorption:
In soils and sediments: Mobile in soils , log Koc: 1,14 (Method: calculated)

12.5. Results of PBT and vPvB assessment :

This substance is not considered to be persistent, bioaccumulating, toxic (PBT), nor very persistent, very bioaccumulating (vPvB).

12.6. Other adverse effects: None known.

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment:

Disposal of product: Recycle if possible. Dispose of in accordance with local regulations.

14. TRANSPORT INFORMATION

Regulation	UN number	Proper shipping name	Class	Label	PG	Environmentally hazardous	Other information
ADR	1063	METHYL CHLORIDE (REFRIGERANT GAS R 40)	2	2.1		no	
RID	1063	METHYL CHLORIDE (REFRIGERANT GAS R 40)	2	2.1		no	
IATA Cargo	1063	Refrigerant gas R 40	2.1	2.1		no	
IATA Passenger							**Not permitted for transport**
IMDG	1063	METHYL CHLORIDE (REFRIGERANT GAS R 40)	2.1	2.1		no	EmS Number: F-D, S-U

15. REGULATORY INFORMATION

Safety data sheets: according to Regulation (EC) No. 1907/2006

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

15.2. Chemical Safety Assessment:
A Chemical Safety Assessment has been carried out for this substance.

INVENTORIES:

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

16. OTHER INFORMATION

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

R12	Extremely flammable.
R40	Limited evidence of a carcinogenic effect.
R48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation.
R62, R63	Possible risk of impaired fertility., Possible risk of harm to the unborn child.
H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.
H351	Suspected of causing cancer.
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.

Bibliography Fiche toxicologique INRS : N°64 (CHLOROMETHANE)

Update:

Safety datasheet sections which have been updated:		Type:
3	3. COMPOSITION/INFORMATION ON INGREDIENTS	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).