SAFETY DATA SHEET

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier:
Cyclopentyl chloroformate

Chemical name: Cyclopentyl chloroformate
CAS number: 50715-28-1
EC number: 411-460-0
Index number: 607-332-00-0
Registration number is not available for this substance since this substance or its use is exempted from registration based on Article 2 of REACH regulation, or registration is not necessary due to the annual tonnage band.

1.2. Relevant identified uses of the substance or mixture and uses advised against:
Intermedier for industrial use.

1.3. Details of the supplier of the safety data sheet:

FramoChem French-Hungarian Fine Chemicals Ltd.
3700 Kazincbarcika, Szerviz út 5, Pf. 504
Telephone: +36 (48) 311-991
Fax: +36 (48) 512-162

1.3.1. Responsible person: -
E-mail: info@framochem.hu

1.4. Emergency telephone number: *Please fill in*

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture:

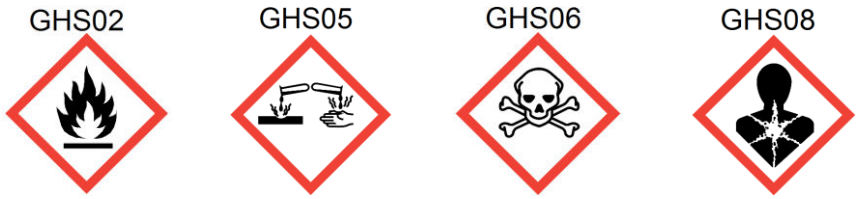
Classification according to Regulation (EC) No 1272/2008 (CLP):
Flammable liquids, Hazard Category 3 – H226
Acute toxicity (oral), Hazard Category 4 – H302
Skin corrosion/irritation, Hazard Category 1 – H314
Sensitisation - Skin, hazard category 1 – H317
Acute toxicity (inhalation), Hazard Category 2 – H330
Specific target organ toxicity – Repeated exposure, Hazard Category 2 – H373

Hazard statements:
H226 – Flammable liquid and vapour.
H302 – Harmful if swallowed.
H314 – Causes severe skin burns and eye damage.
H317 – May cause an allergic skin reaction.
H330 – Fatal if inhaled.
H373 – May cause damage to organs through prolonged or repeated exposure.

Classification specified by the manufacturer that includes other classification in addition to the classification specified by Regulation (EC) No 1272/2008.

2.2. Label elements:

Chemical name: Cyclopentyl chloroformate
CAS number: 50715-28-1
EC number: 411-460-0



DANGER

Hazard statements:
H226 – Flammable liquid and vapour.
H302 – Harmful if swallowed.
H314 – Causes severe skin burns and eye damage.
H317 – May cause an allergic skin reaction.
H330 – Fatal if inhaled.
H373 – May cause damage to organs through prolonged or repeated exposure.

Precautionary statements:
P210 – Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 – Keep container tightly closed.
P240 – Ground and bond container and receiving equipment.
P241 – Use explosion-proof electrical/ventilating/lighting equipment.
P242 – Use non-sparking tools.
P243 – Take action to prevent static discharges.
P260 – Do not breathe dust/fume/gas/mist/vapours/spray.
P270 – Do not eat, drink or smoke when using this product.
P271 – Use only outdoors or in a well-ventilated area.
P280 – Wear protective gloves/protective clothing/eye protection/face protection.
P284 – Wear respiratory protection.
P303 + **P361** + **P353** – IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P308 + **P311** – IF exposed or concerned: Call a POISON CENTER/doctor.
P370 + **P378** – In case of fire: Use CO_2 or extinguishing powder to extinguish.
P403 – Store in a well-ventilated place.
P405 – Store locked up.

2.3. Other hazards:

Acute effects:
Ingestion: May cause burns of the upper digestive and respiratory tract. Aspiration may cause pulmonary oedema and pneumonitis. May cause additional effects as listed under "inhalation".
Inhalation: May cause pulmonary oedema, which can be fatal. Contact with the moist mucous membranes of the respiratory system can cause caustic condition resulting in burns. The inhalation of vapours in high concentration may cause shortness of breath. Vapours may be irritating to eyes, nose, throat and lungs.
Skin contact: May be harmful in contact with skin. May cause skin irritation and/or dermatitis.
Eye contact: Severely irritating to eyes.
Chronic effects:
Prolonged exposure may cause chronic effects. May produce an allergic reaction. Repeated inhalation of vapours may cause irritation of the respiratory tract and bronchitis.
Aggravated medical conditions:
Allergies, skin disorders, respiratory disorders.
Environmental hazards:
Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. See Section 12 for ecological information.
Results of PBT and vPvB assessment: No data available.
Endocrine disrupting property: Based on available data, not an endocrine disruptor.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. **Substance:**

Chemical name: Cyclopentyl chloroformate
CAS number: 50715-28-1
EC number: 411-460-0
Molecular formula: $C_6H_9ClO_2$
Molecular weight: 148.59 g/mol
Purity: ≥ 97,5 %

SECTION 4: FIRST AID MEASURES

4.1. **Description of first aid measures**:

General information: Immediate medical attention is required. Show this safety data sheet to the doctor in attendance. If symptoms persist, call a physician.

Self-protection of the first aider: Use personal protective equipment. Avoid contact with skin, eyes and clothing. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Remove all sources of ignition.

INGESTION:

Measures:

- Call a physician or Poison Centre immediately.
- Remove victim from exposure, lie down.
- Clean mouth with water and afterwards give plenty of water to drink.
- Never give anything by mouth to an unconscious person.
- Do NOT induce vomiting.

INHALATION:

Measures:

- Call a physician or Poison Centre immediately.
  Move victim to fresh air.
- If breathing is difficult, give oxygen.
- If not breathing, apply artificial respiration.
- Avoid direct contact with skin.
- Use barrier to give mouth-to-mouth resuscitation.

SKIN CONTACT:

Measures:

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

EYE CONTACT:

Measures:

- Immediately flush with plenty of water.
- After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes.
- Keep eye wide open while rinsing.
- Do not rub the affected area.
- Call a physician immediately.

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

Acute effects:

Ingestion: Harmful if swallowed. May cause burns of the upper digestive and respiratory tract. Aspiration may cause pulmonary oedema and pneumonitis. May cause additional effects as listed under "inhalation".

Inhalation: Fatal if inhaled. May cause pulmonary oedema, which can be fatal. Pulmonary oedema may occur with tightness of the chest, shortness of breath, bluish skin, decreased blood pressure and increased heart rate. Contact with the moist mucous membranes of the respiratory system can cause caustic condition resulting in burns. The inhalation of vapours in high concentration may cause shortness of breath. Vapours may be irritating to eyes, nose, throat and lungs. Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness and weakness for several hours.

Skin contact: May cause an allergic skin reaction. Causes severe skin burns. May be harmful in contact with skin. May cause skin irritation and/or dermatitis.

Eye contact: Causes serious eye damage. Severely irritating to eyes.

Chronic effects:

May cause damage to organs through prolonged or repeated exposure. Prolonged exposure may cause chronic effects. May produce an allergic reaction. Repeated inhalation of vapours may cause irritation of the respiratory tract and bronchitis.

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

In case of sensitization, the use of epinephrine may be indicated. Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1. **Extinguishing media:**

5.1.1. **Suitable extinguishing media:**

Carbon dioxide, dry powder, dry chemical.
Use extinguishing measures that are appropriate to the local circumstances and the surrounding environment.

5.1.2. **Unsuitable extinguishing media:**

Water.

5.2. **Special hazards arising from the substance or mixture:**

Flammable liquid and vapour. May be ignited by heat, sparks and flames.
Thermal decomposition can lead to the release of toxic and corrosive gases and vapours. In case of fire, smoke and other combustion products (hydrogen chloride, carbon monoxide and dioxide) may be formed; the inhalation of such combustion products can have serious adverse effects on health.
In the event of fire do not breathe fumes. May cause sensitization by inhalation and skin contact.
Emits toxic gases/vapours under fire conditions and in contact with water.
Sensitivity to mechanical impact: No.
Sensitivity to static discharge: Yes.

5.3. **Advice for firefighters:**

Wear full protective clothing and self-contained breathing apparatus.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. **Personal precautions, protective equipment and emergency procedures:**

6.1.1. **For non-emergency personnel:**

Allow only well-trained experts wearing suitable protective clothing to abide in the field of the accident.

6.1.2. **For emergency responders:**

Evacuate personnel to safe areas.
Remove all sources of ignition.
Use personal protective equipment.
Avoid contact with skin, eyes and clothing.
Ensure adequate ventilation.

6.2. **Environmental precautions:**

Prevent further leakage or spillage if safe to do so. Dispose of the spillage and the resulting waste according to the applicable environmental regulations. Do not allow the product and the resulting waste to enter sewers/soil/surface or ground water. Notify the respective authorities in accordance with local law in the case of environmental pollution immediately.

6.3. **Methods and material for containment and cleaning up:**

Methods for containment:
Dike for later disposal.
Do not apply water unless directed to do so.
Prevent further leakage or spillage if safe to do so.
Methods for cleaning up:
Use personal protective equipment.
Dam up the spilled product.
Neutralize with example: soda ash (sodium carbonate)
Cover liquid spill with sand, earth or other non-combustible absorbent material.
Sweep up or shovel into suitable containers for disposal.
After cleaning, flush away traces with water.
Do not apply water directly at the spill or the source of leak.
Use only non-sparking tools and equipment.

6.4. **Reference to other sections:**

For further and detailed information see Sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1. **Precautions for safe handling:**

Observe conventional hygiene precautions.
Observe the pertinent regulations on industrial safety and basic hygiene rules.
Avoid contact with skin, eyes and clothing.

Prevent breathing of mist or vapours.
Technical measures:
Ensure adequate ventilation.
Wear personal protective equipment.
Use only in areas with appropriate exhaust ventilation.

Precautions against fire and explosion:
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Take precautionary measures against static discharges.
Use only in an area containing flame-proof equipment.
To avoid ignition of vapours by static discharges, all metal parts of the equipment must be grounded.

7.2. Conditions for safe storage, including any incompatibilities:
Technical measures and storage condition:
Keep at temperatures below 8 °C. Recommended: 2 - 8 °C
Keep container tightly closed in a dry and well-ventilated place.
Keep in properly labelled containers.
Incompatible materials: See Section 10.5
Packaging material: No special prescriptions.

7.3. Specific end use(s):
No specific instructions available.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters:

Occupational exposure limit values (Commission Directive (EC) No 2000/39 of 8 June 2000):
The substance is not regulated with exposure limit value.

DNEL values		Oral exposure		Dermal exposure		Inhalative exposure	
		Short term (acute)	Long term (chronic)	Short term (acute)	Long term (chronic)	Short term (acute)	Long term (chronic)
Consumer	Local	no data	no data	no data	no data	no data	no data
	Systemic	no data	no data	no data	no data	no data	no data
Worker	Local	no data	no data	no data	no data	no data	no data
	Systemic	no data	no data	no data	no data	no data	no data

PNEC values		
Compartment	Value	Note(s)
Freshwater	no data	no notes
Marine water	no data	no notes
Freshwater sediment	no data	no notes
Marine water sediment	no data	no notes
Sewage Treatment Plant (STP)	no data	no notes
Intermittent release	no data	no notes
Secondary poisoning	no data	no notes
Soil	no data	no notes

8.2. Exposure controls:
In case of a hazardous material with no controlled concentration limit it is the employer's duty to keep concentration levels down to a minimum achievable by existing scientific and technological means, where the hazardous substance poses no harm to workers.

8.2.1. **Appropriate engineering controls:**
In pursuance of work is proper foresight needed to avoid spilling onto clothes and floors and to avoid contact with eyes and skin.
Provide safety showers, eyewash stations and appropriate ventilation systems.

8.2.2. **Individual protection measures, such as personal protective equipment:**
Prevent contact with skin, eyes and clothing.
Remove and wash contaminated clothing before re-use.
Contaminated work clothing should not be allowed out of the workplace.
Provide regular cleaning of equipment, work area and clothing.

Keep away from food, drink and animal feed.
Do not eat, drink and smoke during use.
The information regarding personal protective equipment is only for informative purposes. A complete risk assessment is required before the use of the product for the determination of the appropriate personal protective equipment, taking local circumstances into account.

1. **Eye/face protection:** Use appropriate, tightly fitting protective glasses or face shields (EN 166).
2. **Skin protection:**
   a. **Hand protection:** Use appropriate, impervious butyl rubber protective gloves (EN 374).
   b. **Other:** Use appropriate, impervious protective clothing including boots, lab coat, apron or coveralls as appropriate to prevent skin contact.
3. **Respiratory protection:** Use appropriate, positive-pressure, supplied-air respirator with full face piece.
4. **Thermal hazards:** No thermal hazards known.

8.2.3. **Environmental exposure controls:**
No specific prescription.
The requirements detailed in Section 8 assume skilled work under normal conditions and usage of the product for appropriate aims. If conditions differ from normal or work is carried out under extreme conditions, an expert's advice is necessary before deciding upon further protective measures.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. **Information on basic physical and chemical properties:**

	Parameter	Value / Test method / Remarks
1.	Physical state	liquid
2.	Colour	colourless
3.	Odour, odour threshold	acrid odour
4.	Melting point/freezing point	< -60 °C
5.	Boiling point or initial boiling point and boiling range	102.5 °C
6.	Flammability	no data*
7.	Lower and upper explosion limit	no data*
8.	Flash point	56,9 °C
9.	Auto-ignition temperature	398 °C
10.	Decomposition temperature	no data*
11.	pH	NA
12.	Kinematic viscosity	no data*
13.	Solubility in water in other solvents	hydrolysng no data*
14.	Partition coefficient n-octanol/water (log value)	NA
15.	Vapour pressure	204 hPa at 20 °C 85100 Pa at 100 °C
16.	Density and/or relative density	1.1507 g/cm^3 at 20 °C
17.	Relative vapour density	5,12
18.	Particle characteristics	no data*

9.2. **Other information:**
9.2.1. **Information with regard to physical hazard classes:**
No further data available or not applicable for the product.
9.2.2. **Other safety characteristics:**
No other characteristics available.

*: The manufacturer did not carry out any tests on this parameter for the product or the results of the tests are not available at the time of publication of the data sheet, or the property is not applicable for the product.

SECTION 10: STABILITY AND REACTIVITY

10.1. **Reactivity:**
Reacts with water.

10.2. **Chemical stability:**
Stable up to 8 °C, decomposed by heat.

10.3. **Possibility of hazardous reactions:**
Hazardous polymerization does not occur.

10.4. **Conditions to avoid:**
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Avoid exposure to water.
Avoid exposure to air or moisture over prolonged time.
Avoid extremes of temperature and direct sunlight.
Avoid temperatures above 8 °C,

10.5. **Incompatible materials:**
Water, alkaline earth metals, amines, alcohols, acids, bases, iron.

10.6. **Hazardous decomposition products:**
Keep refrigerated. Emits toxic gases/vapours under fire conditions and in contact with water.
Thermal decomposition can lead to the release of toxic/corrosive gases and vapours.
Hydrogen chloride, carbon monoxide and dioxide.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. **Information on hazard classes as defined in Regulation (EC) No 1272/2008:**
Acute toxicity: Harmful if swallowed. Fatal if inhaled.
Skin corrosion/irritation: Causes severe skin burns.
Serious eye damage/irritation: Causes serious eye damage.
Respiratory or skin sensitisation: May cause an allergic skin reaction.
Germ cell mutagenicity: Based on available data, the classification criteria are not met.
Carcinogenicity: Based on available data, the classification criteria are not met.
Reproductive toxicity: Based on available data, the classification criteria are not met.
STOT-single exposure: Based on available data, the classification criteria are not met.
STOT-repeated exposure: May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard: Based on available data, the classification criteria are not met.

11.1.1. **Summaries of the information derived from the test conducted:**
No data available.

11.1.2. **Relevant toxicological properties:**
Carcinogenicity:
The substance is not carcinogenic.
Target organs:
Lungs, eyes.

11.1.3. **Information on likely routes of exposure:**
Ingestion, inhalation, skin contact, eye contact.

11.1.4. **Symptoms related to the physical, chemical and toxicological characteristics:**
Acute effects:
Ingestion: Harmful if swallowed. May cause burns of the upper digestive and respiratory tract. Aspiration may cause pulmonary oedema and pneumonitis. May cause additional effects as listed under "inhalation".
Inhalation: Fatal if inhaled. May cause pulmonary oedema, which can be fatal. Pulmonary oedema may occur with tightness of the chest, shortness of breath, bluish skin, decreased blood pressure and increased heart rate. Contact with the moist mucous membranes of the respiratory system can cause caustic condition resulting in burns. The inhalation of vapours in high concentration may cause shortness of breath. Vapours may be irritating to eyes, nose, throat and lungs. Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness and weakness for several hours.
Skin contact: May cause an allergic skin reaction. Causes severe skin burns. May be harmful in contact with skin. May cause skin irritation and/or dermatitis.
Eye contact: Causes serious eye damage. Severely irritating to eyes.
Chronic effects:
May cause damage to organs through prolonged or repeated exposure. Prolonged exposure may cause chronic effects. May produce an allergic reaction. Repeated inhalation of vapours may cause irritation of the respiratory tract and bronchitis.

11.1.5. **Delayed and immediate effects as well as chronic effects from short and long-term exposure:**
Harmful if swallowed.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
Fatal if inhaled.

May cause damage to organs through prolonged or repeated exposure.

11.1.6. Interactive effects:
No data available.

11.1.7. Absence of specific data:
No information.

11.2. Information on other hazards:
Endocrine disrupting properties:
Endocrine disrupting property: Based on available data, not an endocrine disruptor.
Other information:
No data available.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity:
The environmental impact of this product has not been fully investigated.
Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Aquatic toxicity:
Toxicity to fish:
LC50 (Brachydanio rerio): 26.3 mg/l/24h
LC50 (Drachydanio rerio): 26.3 mg/l/48h
LC50 (Drachydanio rerio): 26.3 mg/l/72h
LC50 (Drachydanio rerio): 26.3 mg/l/96h
Toxicity to water flea:
EC50 (Daphnia magna): 16.2 mg/l/24h
EC50 (Daphnia magna): 12.6 mg/l/48h

12.2. Persistence and degradability:
Decomposes by hydrolyse to form hydrochloric acid, carbon dioxide and cyclopentyl alcohol.

12.3. Bioaccumulative potential:
No data available.

12.4. Mobility in soil:
No data available.

12.5. Results of PBT and vPvB assessment:
No data available.

12.6. Endocrine disrupting properties:
Endocrine disrupting property: Based on available data, not an endocrine disruptor.

12.7. Other adverse effects:
No data available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods:
Disposal according to the local regulations.

13.1.1. Information regarding the disposal of the product:
Do not release to the environment.
Dispose of in accordance with local regulations.
List of Waste Code:
No waste disposal key according to the List of Waste Code (LoW code) can be determined for this product, as only the purpose of application defined by the user enables an allocation. The LoW code number has to be determined after a discussion with a waste disposal specialist.

13.1.2. Information regarding the disposal of the packaging:
Dispose of in accordance with applicable regulations.

13.1.3. Physical/chemical properties that may affect waste treatment options shall be specified:
No data available.

13.1.4. Sewage disposal:
No data available.

13.1.5. Special precautions for any recommended waste treatment:

No data available.

SECTION 14: TRANSPORT INFORMATION

14.1. **UN number or ID number:**
ADR/RID; ADN; IMDG; IATA: UN 2742

14.2. **UN proper shipping name:**
National transport: CHLOROFORMATES, TOXIC, FLAMMABLE, CORROSIVE, N.O.S.
International transport: CHLOROFORMATES, TOXIC, FLAMMABLE, CORROSIVE, N.O.S.

14.3. **Transport hazard class(es):**
Class: 6.1

14.4. **Packing group:**
II

14.5. **Environmental hazards:**
No relevant information available.

14.6. **Special precautions for user:**
ADR:
Labels: 6.1+.3+.8
RID:
Classification code: TFC
Labels: 6.1 + 3 + 8
ADN:
Classification code: TFC
Special provisions: 274, 561, 802
Limited quantity: LQ17
Ventilation: VE01, VE02
Labels: 6.1 + 3 + 8
IMDG:
EmS: F-E; S-C
Subsidiary class: 3, 8, +
IATA:
ERG: 6CF
Subsidiary class: 3, 8

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:**

REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive (EC) No 1999/45 and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive (EEC) No 76/769 and Commission Directives (EEC) No 91/155, (EEC) No 93/67, (EC) No 93/105 and (EC) No 2000/21

REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives (EEC) No 67/548 and (EC) No 1999/45, and amending Regulation (EC) No 1907/2006

COMMISSION REGULATION (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Product is for research and development purposes only.

15.2. **Chemical safety assessment:** No information.

SECTION 16: OTHER INFORMATION

Information regarding the revision of the safety data sheet: No information.

Literature references / data sources:
Safety data sheet issued by the manufacturer (05. 02. 2009, revision number: 0/EN).

Relevant hazard statements (code and full text) of Sections 2 and 3:
H226 – Flammable liquid and vapour.
H302 – Harmful if swallowed.
H314 – Causes severe skin burns and eye damage.
H317 – May cause an allergic skin reaction.
H330 – Fatal if inhaled.
H373 – May cause damage to organs through prolonged or repeated exposure.

Training advice: No data available.

Full text of the abbreviations in the safety data sheet:
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
ADR: Agreement concerning the International Carriage of Dangerous Goods by Road.
ATE: Acute Toxicity Estimate.
AOX: Adsorbable organic halides.
BCF: Bioconcentration factor.
BOD: Biological Oxygen Demand.
CAS number: Chemical Abstract Service number.
CLP: Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures.
CMR effects: Carcinogenic, mutagenic, reprotoxic effects.
COD: Chemical Oxygen Demand.
CSA: Chemical Safety Assessment.
CSR: Chemical Safety Report.
DNEL: Derived-No-Effect-Level.
ECHA: European Chemical Agency.
EC: European Community.
EC number: EINECS and ELINCS numbers (see also EINECS and ELINCS).
EEC: European Economic Community.
EEA: European Economic Area (EU + Iceland, Liechtenstein and Norway).
EINECS: European Inventory of Existing Commercial Chemical Substances.
ELINCS: European List of Notified Chemical Substances.
EN: European Norm.
EU: European Union.
EWC: European Waste Catalogue (replaced by LoW – see below).
GHS: Globally Harmonized System of Classification and Labelling of Chemicals.
IATA: International Air Transport Association.
ICAO-TI: Technical Instructions for the Safe Transport of Dangerous Goods by Air.
IMDG: International Maritime Dangerous Goods.
IMO: International Maritime Organization.
IMSBC: International Maritime Solid Bulk Cargoes.
IUCLID: International Uniform Chemical Information Database.
IUPAC: International Union of Pure and Applied Chemistry.
Kow: n-Octanol - Water Partition Coefficient.
LC50: Lethal concentration resulting in 50 % mortality.
LD50: Lethal dose resulting in 50 % mortality (median lethal dose).
LoW: List of Waste.
LOEC: Lowest Observed Effect Concentration.
LOEL: Lowest Observed Effect Level.
NOEC: No Observed Effect Concentration.
NOEL: No Observed Effect Level.
NOAEC: No Observed Adverse Effect Concentration.
NOAEL: No Observed Adverse Effect Level.
OECD: Organization for Economic Cooperation and Development.
OSHA: Occupational Safety and Health Administration.
PBT: Persistent, Bioaccumulative and Toxic.
PNEC: Predicted No Effect Concentration.
QSAR: Quantitative Structure Activity Relationship.

REACH: Regulation 1907/2006/EC concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals.
RID: Regulations Concerning the International Transport of Dangerous Goods by Rail.
SCBA: Self Contained Breathing Apparatus.
SDS: Safety Data Sheet.
STOT: Specific Target Organ Toxicity.
SVHC: Substances of Very High Concern.
UN: United Nations.
UVCB: Chemical Substances of Unknown or Variable Composition, Complex Reaction Products and Biological Materials.
VOC: Volatile Organic Compound.
vPvB: very Persistent and very Bioaccumulative.

This safety data sheet had been prepared on the basis of information provided by the manufacturer/supplier and conform to the relevant regulations.
The information, data and recommendations contained herein are provided in good faith, obtained from reliable sources and believed to be true and accurate as of the date issued; however, no representation is made as to the comprehensiveness of the information.
The SDS shall be used only as a guide for handling the product; in the course of handling and using the product other considerations may arise or be required.
Users are cautioned to determine the appropriateness and applicability of the above information to their particular circumstances and purposes and assume all risk associated with the use of this product.
It is the responsibility of the user to fully comply with local, national and international regulations concerning the use of this product.

Safety data sheet was prepared by:
MSDS-Europe
International branch of ToxInfo Kft.

Professional help regarding the explanation of the safety data sheet:
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www.msds-europe.com