SAFETY DATA SHEET

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

1.1. **Product identifier:**
VALERYL CHLORIDE

IUPAC name: Valeryl chloride
CAS number: 638-29-9
EC number: 211-330-1
Registration number: 01-2119931031-56-0002; Transported isolated intermediate

1.2. **Relevant identified uses of the substance or mixture and uses advised against:**
Organic synthesis intermediate 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
Tel: +36 (48) 311-991
Fax: +36 (48) 512-162

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

1.4. **Emergency telephone number:** **Public Toxicological Health Service (ETTSZ)**
1097 Budapest, Albert Flórián út 2-6.
Tel.: +36 80 201 199 (0-24, free of charge – only from Hungary)
Tel.: +36 1 476 6464 (0-24, normal charge – also from foreign countries)

SECTION 2: HAZARDS IDENTIFICATION

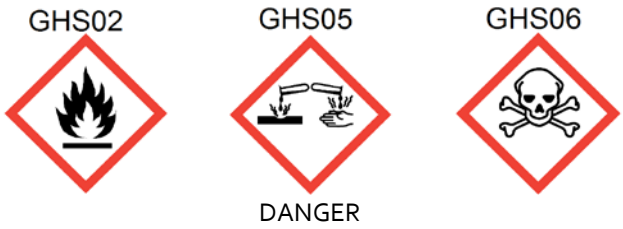
2.1. **Classification of the substance or mixture:**

Classification according to Regulation (EC) No 1272/2008 (CLP):
Flammable liquids, Hazard Category 3 – H226
Corrosive to metals, Hazard Category 1 – H290
Skin corrosion/irritation, Hazard Category 1A – H314
Serious eye damage/eye irritation, Hazard Category 1 – H318
Acute toxicity (inhalation), Hazard Category 3 – H331
Hazardous to the aquatic environment – Chronic Hazard, Category 3 – H412

Hazard statements:
H226 – Flammable liquid and vapour.
H290 – May be corrosive to metals.
H314 – Causes severe skin burns and eye damage.
H318 – Causes serious eye damage.
H331 – Toxic if inhaled.
H412 – Harmful to aquatic life with long lasting effects.

2.2. **Label elements:**

IUPAC name: Valeryl chloride
CAS number: 638-29-9
EC number: 211-330-1



Hazard statements:
H226 – Flammable liquid and vapour.
H290 – May be corrosive to metals.
H314 – Causes severe skin burns and eye damage.
H331 – Toxic if inhaled.
H412 – Harmful to aquatic life with long lasting effects.

Precautionary statements:
P261 – Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 – Use only outdoors or in a well-ventilated area.
P280 – Wear protective gloves/protective clothing/eye protection/face protection.
P303 + P361 + P353 – IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P305 + P351 + P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 – Immediately call a POISON CENTER or a doctor.
P501 – Dispose of contents/container to a hazardous waste collection point.

2.3. **Other hazards:**
No other known specific hazards for human or environment.
Information concerning specific hazards for human and environment: see Sections 11 and 12.
The substance does not meet the criteria for PBT or vPvB substances according to Annex XIII of Regulation 1907/2006/EC.
Endocrine disrupting property: Not an endocrine disruptor.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. **Substance:**

IUPAC name: Valeryl chloride
Synonym: Pentanoyl chloride; Valeroyl Chloride
CAS number: 638-29-9
EC number: 211-330-1
Formula: C_5H_9ClO
Molar weight: 120.5 g/mol
Purity: >99.5 %

Other hazardous additives / Concentration: phosgene and hydrochloric acid in traces.

SECTION 4: FIRST AID MEASURES

4.1. **Description of first aid measures:**
General information: Immediately remove contaminated clothing. If danger of loss of consciousness, place patient in recovery position and transport accordingly. Apply artificial respiration if necessary. First aid personnel should pay attention to their own safety.
INGESTION:
Measures:
- Immediately rinse mouth and then drink 200-300 ml of water.
- Seek medical attention.

INHALATION:
Measures:
- Keep patient calm, remove to fresh air, seek medical attention.
- Immediately inhale corticosteroid dose aerosol.

SKIN CONTACT:
Measures:
- Immediately wash thoroughly with plenty of water, apply sterile dressings.
- Consult a skin specialist.

EYE CONTACT:
Measures:
- Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open.
- Immediately consult an eye specialist.

4.2. Most important symptoms and effects, both acute and delayed:
Causes severe skin burns and eye damage.
Toxic if inhaled.

4.3. Indication of any immediate medical attention and special treatment needed:
Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.
Pulmonary oedema prophylaxis. Medical monitoring for at least 24 hours.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media:

5.1.1. Suitable extinguishing media:
Dry powder, carbon dioxide, foam.

5.1.2. Unsuitable extinguishing media:
Water.

5.2. Special hazards arising from the substance or mixture:
Flammable liquid and vapour.
Hazardous decomposition products: hydrogen chloride (HCl).

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:**
Breathing protection required.
Avoid contact with the skin, eyes and clothing.
Evacuate the unauthorized persons for the place of the accident.
Remove all ignition sources from the affected area.
Close the designated area.
Ensure adequate ventilation.

6.2. Environmental precautions:
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:
For small amounts: Pump off product.
For residues: Pick up with suitable absorbent material (e.g. sand, sawdust, general-purpose binder, kieselguhr). Dispose of absorbed material in accordance with regulations.

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.
Protect against moisture.
Avoid contact of the product with skin, eyes and clothing.
Do not eat, drink and smoke in the workplace.
Use adequate personal protective equipment (see section 8).
The contaminated clothes should be removed immediately and should be cleaned before re-use.
After the handling of the product and before breaks or before eating wash your hands, after the work hours thorough washing (warm water hand washing and showering with soap) is required.

Technical measures:

Ensure thorough ventilation of stores and work areas.

Precautions against fire and explosion:

Prevent electrostatic charge - sources of ignition should be kept well clear - fire extinguishers should be kept handy.

7.2. **Conditions for safe storage, including any incompatibilities:**

Technical measures and storage condition:

Keep in original, closed and appropriately labelled container.
Keep container tightly closed in a cool, dry, well-ventilated place.
Protect against moisture. Protect against heat.
Storage at a proportionate temperature is required, to avoid 'breathing' of containers.
Storage duration: 6 months.

Incompatible materials: See Section 10.5

Packaging material: container lined with polyethylene, polyethylene drum or container lined with inert material.

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	31.3 µg/L	no notes
Marine water	3.13 µg/L	no notes
Freshwater sediment	269 µg/kg sediment dry weight	no notes
Marine water sediment	26.9 µg/kg sediment dry weight	no notes
Sewage Treatment Plant (STP)	18.9 mg/L	no notes
Intermittent release	313 µg/L	no notes
Secondary poisoning	no bioaccumulation potential	no notes
Soil	35.4 µg/kg soil dry weight	no notes
Air	no identified hazard	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.
In the vicinity of the workplace safety shower and eye wash fountain has to be installed.

8.2.2. **Individual protection measures, such as personal protective equipment:**

Do not breathe vapour/spray.
Ensure adequate ventilation, especially in closed areas.
Do not eat or smoke during the processing.
Wash and hand wash thoroughly after work.

1. **Eye/face protection:** Use appropriate, tightly fitting protective glasses and face shield (EN ISO 16321-1:2022; EN 166).
2. **Skin protection:**
    a. **Hand protection:** Use appropriate, chemical resistant protective gloves (EN 374).
    Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN 374):
    - fluoroelastomer (FKM) - 0.7 mm coating thickness
    Suitable materials short-term contact and/or splashes (recommended: At least protective index 2, corresponding > 30 minutes of permeation time according to EN 374):
    - nitrile rubber (NBR) - 0.4 mm coating thickness
    - butyl rubber (butyl) - 0.7 mm coating thickness
    Supplementary note: The specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing.
    Manufacturer's directions for use should be observed because of great diversity of types.
    b. **Other:** Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).
3. **Respiratory protection:** Breathing protection if gases/vapours are formed. Gas filter for gases/vapours of organic compounds (boiling point > 65 °C, e.g. EN 14387 Type A).
    Suitable respiratory protection for higher concentrations or long-term effect: Self-contained breathing apparatus.
4. **Thermal hazards:** No thermal hazards known.

8.2.3. **Environmental exposure controls:**

No special measures required.

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 to yellowish
3.	Odour, odour threshold	pungent
4.	Melting point/freezing point	-110 - -50 °C
5.	Boiling point or initial boiling point and boiling range	128.11 °C (101.325 kPa)
6.	Flammability	flammable
7.	Lower and upper explosion limit	no data*
8.	Flash point	32 °C (closed cup)
9.	Auto-ignition temperature	269 °C (101.325 kPa)
10.	Decomposition temperature	no data*
11.	pH	not applicable
12.	Kinematic viscosity	0.57 – 0.73 mm^2/s
13.	Solubility in water in other solvents	reacts with water and decomposes; well soluble in common solvents
14.	Partition coefficient n-octanol/water (log value)	log Pow = 1 (25 °C)
15.	Vapour pressure	11.7 – 58.3 hPa (20 - 50 °C)
16.	Density and/or relative density	density: 0.971 – 0.993 g/cm^3 (20 - 40 °C) relative density: 0.993 (20 °C)
17.	Relative vapour density	4.1
18.	Particle characteristics	no data*

9.2. Other information:

9.2.1. Information with regard to physical hazard classes:

Explosive properties: Not explosive.
Oxidizing properties: Not oxidizing.

9.2.2. Other safety characteristics:

Dynamic viscosity: 0.59 – 0.73 mPa.s

*: 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:

Stable at room temperature and general conditions of work.
Reacts with alkalis, water, amines and alcohols.

10.2. Chemical stability:

Stable at room temperature and general conditions of work.

10.3. Possibility of hazardous reactions:

Reacts violently with water.

10.4. Conditions to avoid:

Contact with water.

10.5. Incompatible materials:

Acids, water, alkalis, amines, alcohols.

10.6. Hazardous decomposition products:

Hazardous decomposition products: hydrogen chloride.
In case of contact with water, decomposes. Decomposed by hydrolysis with formation of hydrochloric acid and valeric acid.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. **Information on hazard classes as defined in Regulation (EC) No 1272/2008:**
Acute toxicity: Toxic if inhaled.
Skin corrosion/irritation: Causes severe skin burns and eye damage.
Serious eye damage/irritation: Causes serious eye damage.
Respiratory or skin sensitisation: Based on available data, the classification criteria are not met.
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: Based on available data, the classification criteria are not met.
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:**
Acute toxicity:
LC50 (inhalative, rat): 2.07 mg/l air/4h
Irritation/corrosion:
Skin: Observed adverse effect (corrosive).
Genetic toxicity:
In vitro:
No observed adverse effects (negative).

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: No data available.
Inhalation: Toxic if inhaled. May cause pulmonary oedema.
Skin contact: No data available.
Eye contact: No data available.
Irritation: corrosive product, irritates the eyes, the skin and the respiratory tract.
Sensitization: no data available.

11.1.5. **Delayed and immediate effects as well as chronic effects from short and long-term exposure:**
Causes severe skin burns and eye damage.
Toxic if inhaled.

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: Not an endocrine disruptor.
Other information:
No data available.

SECTION 12: ECOLOGICAL INFORMATION

12.1. **Toxicity:**
Harmful to aquatic life with long lasting effects.
LC50 (fish): 46.4 - 100 mg/l/4 days
LC0 (fish): 46.4 mg/l/4 days
LC10 (fish): 100 mg/l/4 days
NOEC (fish): 46.4 mg/l/4 days
EC50 (aquatic invertebrates): 492 µg/l/48h
EC50 (aquatic invertebrates): 492 µg/l/24h
LC50 (aquatic invertebrates): 48 mg/l/48h
EC50 (algae and cyanobacteria): 492 - 31 300 µg/l/72h
NOEC (algae and cyanobacteria): 97 µg/l/72h
EC50 (freshwater algae): 31.3 mg/l

IC50 (microorganisms): 189 mg/l/4oh
EC50 (microorganisms): 189 mg/l

12.2. **Persistence and degradability:**
Dissipation half life (DT50): 65.568 h
Degradation rate constant (OH radicals): 0 cm^3 molecule-1 d-1
Degradation:
50 % / 2 days
68 % / 5 days
82 % / 10 days
72 % / 30 days
Readily biodegradable.

12.3. **Bioaccumulative potential:**
BCF: 3.16 l/kg (log BCF: 0.50)
BAF: 2.21 l/kg (log BAF: 0.51)

12.4. **Mobility in soil:**
Adsorption/desorption:
Koc: 49 - 66 L/kg (25 °C)
log Koc: 1.69 – 1.82 (25 °C)
Henrys law constant: 0.048 – 0.13 Pa m^3/mol (25 °C)
Distribution modelling:
Air (%): 3.7
Water (%): 95.9
Soil (%): 0.2
Sediment (%): 0.2

12.5. **Results of PBT and vPvB assessment:**
The substance does not meet the criteria for PBT or vPvB substances.

12.6. **Endocrine disrupting properties:**
Endocrine disrupting property: Not an endocrine disruptor.

12.7. **Other adverse effects:**
Valeryl chloride (CAS: 638-29-9) hydrolyses rapidly in aqueous solutions and forms valeric acid (CAS: 109-52-4) and HCl (CAS: 7647-01-0). Therefore, the classification/labelling of the acid chloride is based on data on the hydrolysis product valeric acid. Data from HCl have not been considered as observed effects were caused by a pH-shift in aquatic test systems. According to Regulation (EC) No 1272/2008 Annex VI Table 3.1 valeric acid is classified with Aquatic Chronic 3.

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:**
Incinerate in suitable incineration plant, observing local authority 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:**
Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

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:**
UN 2502

14.2. **UN proper shipping name:**
ADR/RID: VALERYL CHLORIDE

IMDG; IATA: VALERYL CHLORIDE

14.3. **Transport hazard class(es):**
ADR/RID: 8 Classification code: CF1
IMDG: 8
IATA: 8
Labels: 8 + 3

14.4. **Packing group:**
ADR/RID: II
IMDG: II
IATA: II

14.5. **Environmental hazards:**
ADR/RID: no
IMDG: no
IATA: no

14.6. **Special precautions for user:**
No relevant information available.

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)

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

SECTION 16: OTHER INFORMATION

Information regarding the revision of the safety data sheet:
The safety data sheet has been revised according to Regulation (EU) 2020/878 (Section 1-16).
The hazard classification of the substance did not change compared to the previous version.

This safety data sheet supersedes all previous versions according to Annex II of Regulation (EC) No 1907/2006.

Literature references / data sources:
Previous version of the safety data sheet (26. 10. 2018, version CLP_D).

Relevant hazard statements (code and full text) of Sections 2 and 3:
H226 – Flammable liquid and vapour.
H290 – May be corrosive to metals.
H314 – Causes severe skin burns and eye damage.
H318 – Causes serious eye damage.
H331 – Toxic if inhaled.
H412 – Harmful to aquatic life with long lasting effects.

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