SAFETY DATA SHEET

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

1.1. **Product identifier:**
N-BUTYL CHLOROFORMATE

Chemical name: n-Butyl chloroformate
CAS number: 592-34-7
EC number: 209-750-5
Index number: 607-138-00-6
Registration number: 01-2120087840-51-0001; 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

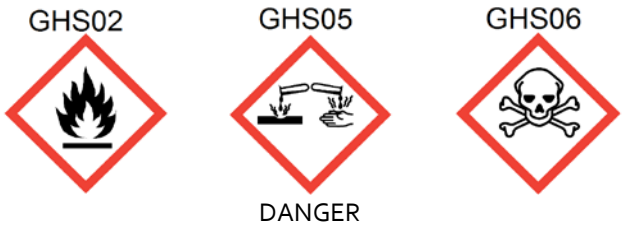
2.1. **Classification of the substance or mixture:**

Classification according to Regulation (EC) No 1272/2008 (CLP):
Flammable liquids, Hazard Category 3 – H226
Acute toxicity (oral), Hazard Category 4 – H302
Skin corrosion/irritation, Hazard Category 1B – H314
Serious eye damage/eye irritation, Hazard Category 1 – H318
Acute toxicity (inhalation), Hazard Category 3 – H331

Hazard statements:
H226 – Flammable liquid and vapour.
H302 – Harmful if swallowed.
H314 – Causes severe skin burns and eye damage.
H318 – Causes serious eye damage.
H331 – Toxic if inhaled.

2.2. **Label elements:**

Chemical name: n-Butyl chloroformate
CAS number: 592-34-7
EC number: 209-750-5



Hazard statements:
H226 – Flammable liquid and vapour.
H302 – Harmful if swallowed.
H314 – Causes severe skin burns and eye damage.
H331 – Toxic if inhaled.

Precautionary statements:
P210 – Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 – Wear protective gloves/protective clothing/eye protection/face protection.
P284 – Wear respiratory protection.
P304 + P340 – IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P303 + P361 + P353 – IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P310 – Immediately call a POISON CENTER or a doctor.
P403 – Store in a well-ventilated place.

2.3. **Other hazards:**
No other known specific hazards for human or environment.
Information concerning specific hazards for human and environment: see Section 11 and 12.
The substance does not meet the PBT or vPvB criteria 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:**

Chemical name: n-Butyl chloroformate
Synonym: Chlorformate-n-butyl ester; chloroformic acid butyl ester
CAS number: 592-34-7
EC number: 209-750-5
Index number: 607-138-00-6
Formula: $C_5H_9ClO_2$
Molar mass: 136.5 g/mol
Purity: ≥99 %

SECTION 4: FIRST AID MEASURES

4.1. **Description of first aid measures:**
General information: Immediately remove contaminated clothing. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). 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 administer a corticosteroid from a controlled/metered dose inhaler.

SKIN CONTACT:
Measures:
- Immediately wash thoroughly with plenty of water and 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:
Harmful if swallowed.
Causes severe skin burns and eye damage.
Toxic if inhaled.

4.3. Indication of any immediate medical attention and special treatment needed:
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, alcohol-resistant foam.

5.1.2. Unsuitable extinguishing media:
Water.

5.2. Special hazards arising from the substance or mixture:
Flammable liquid and vapour.
Can be released in case of fire: hydrogen chloride, phosgene, carbonyl chloride, carbon oxides, halogenated compounds.

5.3. Advice for firefighters:
Wear full protective clothing and self-contained breathing apparatus.
Suppress gases/vapours/mists with water spray jet.
Fire debris must be disposed of in accordance with official regulations.

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:**
Wear a self-contained breathing apparatus.
Avoid contact with the skin, eyes and clothing.
Keep people away and stay on the upwind side.

6.2. Environmental precautions:
Discharge into the environment must be avoided.
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 large amounts: Pump off product. Dispose of absorbed material in accordance with regulations.
For residues: Pick up with suitable absorbent material. 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.
In case of insufficient ventilation, wear suitable respiratory equipment.
Technical measures:
Ensure thorough ventilation of stores and work areas.
Use only in enclosed systems.

Adequate extraction of the vapours is necessary when working with open containers.
Precautions against fire and explosion:
Protect against electrostatic charges.
Keep ignition sources away.
Fire extinguishers should be kept handy.

7.2. **Conditions for safe storage, including any incompatibilities:**
Technical measures and storage condition:
Segregate from alkalies and alkalizing substances.
Protect from direct sunlight, moisture and heat.
Keep only in the original, tightly closed container in a cool, dry, well-ventilated place away from ignition sources, heat or flames.
Frequently check condition of drums (increase in pressure, bulging, rust).
Product has to be immediately consumed or disposed of, if signs of pressure increase or bulging are being detected at a drum.
Storage at a proportionate temperature is required, to avoid 'breathing' of containers.
Storage stability:
If the stated storage temperature is exceeded the shelf life can be reduced.
From the data on storage duration in this safety data sheet no agreed statement regarding the warrantee of application properties can be deduced.
Improper storage may result in pressure build up in the drums.
Storage stability is based upon ambient temperatures and conditions described.
Storage temperature: < 20 °C
Storage duration: 6 months
Incompatible materials: See Section 10.5
Packaging material: no special prescriptions / original container.

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.

Phosgene may be released from the substance:
Phosgene (CAS: 75-44-5): Eight hours: 0,08 mg/m³, 0,02 ppm; Short-term: 0,4 mg/m³, 0,1 ppm

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	82 µg/L	no notes
Marine water	8.2 µg/L	no notes
Freshwater sediment	377 µg/kg sediment dry weight	no notes
Marine water sediment	37.7 µg/kg sediment dry weight	no notes
Sewage Treatment Plant (STP)	2.476 g/L	no notes
Intermittent release	2.25 mg/L	no notes
Secondary poisoning	no bioaccumulation potential	no notes
Soil	27.3 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.

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

Do not breathe vapour/spray.
Avoid contact with the skin, eyes and clothing.
The substance was registered as a transported isolated intermediate. The manufacturer/importer has received the confirmation by the user that the substance is used under strictly controlled conditions in accordance with art. 18 of the REACH regulation (EC) No 1907/2006.
When using, do not eat, drink or smoke.
Wash hands and/or face before breaks and at the end of work.
Gloves must be inspected regularly and prior to each use. Replace if necessary (e.g. pinhole leaks).
Take off immediately all contaminated clothing. Wash contaminated clothing before reuse. Store work clothing separately.

1. **Eye/face protection:** Use appropriate, tightly fitting protective glasses and face shields (EN ISO 16321-1:2022; EN 166).
2. **Skin protection:**
    a. **Hand protection:** Use appropriate chemical-resistant protective gloves (EN 374).
    Suitable materials for short-term contact (recommended: at least protective index 2, corresponding > 30 minutes of permeation time according to EN 374):
    - fluoroelastomer (FKM) - 0.7 mm coating thickness
    - butyl rubber (butyl) - 0.7 mm coating thickness
    - nitrile rubber (NBR) - 0.4 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:** If gases/vapours are formed, use appropriate respiratory protection (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 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 (20 °C, 1013 hPa)
2.	Colour	colourless
3.	Odour, odour threshold	no data*
4.	Melting point/freezing point	not applicable (below -20 °C)
5.	Boiling point or initial boiling point and boiling range	142 °C (101.325 kPa)
6.	Flammability	flammable liquid and vapour
7.	Lower and upper explosion limit	no data*
8.	Flash point	30 °C (closed cup)
9.	Auto-ignition temperature	285 °C
10.	Decomposition temperature	no data*
11.	pH	no data*
12.	Kinematic viscosity	no data*
13.	Solubility in water in other solvents	not applicable (the substance is hydrolytically unstable at pH 4, 7 and 9 (half-life less than 12 hours)
14.	Partition coefficient n-octanol/water (log value)	not applicable (the substance decomposes)
15.	Vapour pressure	7.2 hPa (20 °C)
16.	Density and/or relative density	density: 1.06 g/cm³ (20 °C) relative density: 1.06 (20 °C)
17.	Relative vapour density	no data*
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: No oxidizing properties.

9.2.2. **Other safety characteristics:**

Dynamic viscosity: 0.68 mPa.s (-10.0 °C)
Surface tension: not applicable.
The substance has no pyrophoric properties and does not liberate flammable gases in contact with water.
The substance is not self-heating.
The substance is not an organic peroxide.
There are no chemical groups associated with explosive properties present in the molecule.
The substance is incapable of reacting exothermically with combustible materials on the basis of the chemical structure.

*: 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:**

No reactivity known.

10.2. **Chemical stability:**

The stability of the substance is not considered as critical.
The substance decomposes when heated.
The substance is not corrosive to metals.
Corrodes metals in the presence of water.
Even when products are stored appropriately a slowly decomposition reaction takes place. If the storage conditions and duration are taken into account, no hazard is caused by the product.

10.3. **Possibility of hazardous reactions:**
At elevated temperatures gas forming exothermic decomposition reaction may occur. The formation of gaseous decomposition products builds up pressure in tightly closed containers if the product is greatly overheated. Evolution of corrosive gases/vapours. Reacts with water and basic components to generate heat. Reacts with activated carbon. Reacts with alkalies and metals. Reacts with alcohols, amines, aqueous acids and alkalies. Reacts with water and moisture, with formation of hydrogen chloride. Partly very violent reactions with bases and numerous organic classes of substances such as alcohols and amines. Impurities promote decomposition. Energy is released when reacting with e.g. acids, alkaline reacting substances, amines or catalysts. ppm traces of heavy metals reduce the onset temperature and lead to instability and exothermic product release with gas formation. Vapours may form ignitable mixture with air.

10.4. **Conditions to avoid:**
Temperature: > 40 °C.
Ignition sources (heat, sparks, open flame), direct sunlight, electrostatic charge, humidity, excessive temperatures, contamination.
Disregard of the conditions mentioned may result in undesirable decomposition reactions.

10.5. **Incompatible materials:**
Alkaline reactive substances, alcohols, bases, amines, iron compounds, heavy metal salts, water.

10.6. **Hazardous decomposition products:**
Hydrogen chloride, carbon dioxide, 1-chlorobutane, butyl chloride.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. **Information on hazard classes as defined in Regulation (EC) No 1272/2008:**
Acute toxicity: Harmful if swallowed. 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:
LD50 (oral, rat): 1325-2120 mg/kg bw
Moderately toxic.
LC50 (inhalative, rat): 200 ppm/60 min
Irritation/corrosion:
Skin: Observed adverse effect (corrosive).
Eye: Observed adverse effect (irritant).
Repeated dose toxicity:
Inhalative - systemic effects:
NOAEC (subacute, rat): 28.2 mg/m^3
Inhalative - local effects:
NOAEC (subacute, rat): 10 mg/m^3

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:
Corrosive, may cause burning.
Ingestion: harmful substance.
Inhalation: may cause fatal poisoning. Major symptoms of the poisoning: burning feeling, coughing, wheezing, inflammation of the larynx, labored breathing, headache, nausea and vomiting.
Skin contact: corrosive substance, causes skin irritation.
Eye contact: Lachrymatory agent. May cause strong eye irritation, and in some cases may cause burning.

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.
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:

The substance is not classified as hazardous for the environment.
Dissipation half-life (DT50):
84.31 h
Decomposition rate constant (OH radicals):
0 cm^3 molecule-1 d-1
Aquatic toxicity data for butyl chloroformate (parent substance):
LC50 (fish): 4.64 - 100 mg/L/4 days
NOEC (fish): 100 mg/L/4 days
EC50 (aquatic invertebrates): 492 - 1 000 000 µg/L/48h
EC50 (aquatic invertebrates): 492 µg/L/24h
EC50 (algae and cyanobacteria): 492 - 1 000 000 µg/L/72h
NOEC (algae and cyanobacteria): 97 - 180 000 µg/L/72h
EC50 (microorganisms): 4.39 g/L/17h
EC10 (microorganisms): 2.476 g/L/17h
Aquatic toxicity data for butanol (hydrolysis product):
Acute toxicity to fish:
LC50 (Pimephales promelas): 1376 mg/l/96h
Acute toxicity to aquatic invertebrates:
EC50 (Daphnia magna): 1328 mg/l/48h
Acute toxicity to algae:
EC50 (Selenastrum capricornutum): 225 mg/l/96h
Chronic toxicity to algae:
EC10 (Selenastrum capricornutum): 134 mg/l/96h
Toxicity to microorganisms:
EC10 (Pseudomonas putida): 2476 mg/l/17h
Aquatic toxicity data for hydrogen chloride (hydrolysis product):
Acute toxicity to fish:
LC50 (Cyprinus carpio): 4.92 mg/l/96h (pH 4.3)
Acute toxicity to aquatic invertebrates:
LC50 (Daphnia magna): 0.492 mg/l/48h (pH 5.3)
Acute toxicity to algae:
ErC50 (Pseudokirchneriella subcapitata): 0.492 mg/l/72h (pH 5.3)
Chronic toxicity to algae:
NOErC (Pseudokirchneriella subcapitata): 0.097 mg/l/72h (pH 6.0)

12.2. Persistence and degradability:

Phototransformation:
After evaporation or exposure to the air, the parent substance will be slowly degraded by photochemical processes. This assessment refers to dry air. In mist, rain, droplets and aerosols, hydrolysis will be the major fate process due to the short half-life in aqueous environments. Therefore, this estimate may be of low relevance.
Hydrolysis:
Butyl chloroformate rapidly hydrolyses in contact with water to form butanol (CAS: 71-36-3), hydrogen chloride (CAS: 7647-01-0) and carbon dioxide (CAS: 124-38-9). Therefore, for all environmental compartments except air, available data on the environmental fate and pathways of the hydrolysis products is provided.
Biodegradation:
The substance is readily biodegradable (by OECD criteria).

12.3. Bioaccumulative potential:

Accumulation in organisms is not expected.

12.4. **Mobility in soil:**
During hydrolysis it decomposes into hydrochloric acid and acryloyl which are dispersed in the water.
Adsorption/desorption:
Koc: 10.01 L/kg (25 °C)
Log Koc: 1 (25 °C)
Adsorption of the substance to the solid soil phase is not expected.
Henry's Law constant:
0.893 – 1.01 Pa m³/mol (25 °C)
The hydrolysis product butanol will slowly evaporate into the atmosphere from the water surface.
Distribution modelling:
Air: 26.6 %
Water: 73.3 %
Soil: 0.044 %
Sediment: 0.045 %
Over time, the uncharged hydrolysis product butanol will preferentially distribute into the compartment water (73.3 %) and air (26.6 %).

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:**
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:**
Incinerate in suitable incineration plant, observing local authority regulations.
Hydrolysis with alkali/ammonia solution in water.
Esterification with methanol and afterwards incineration in a suitable incineration facility.
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:
Be careful when handling empty packing which is not decontaminated and rinsed.
Decontamination of product residues with sodium hydroxide solution/ammonia solution in water.
Thermal recycling of the cleaned drums.

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; IMDG: UN 2743
IATA: -

14.2. **UN proper shipping name:**
ADR/RID: n-BUTYL CHLOROFORMATE
IMDG: n-BUTYL CHLOROFORMATE
IATA: Air transport of the substance is PROHIBITED!

14.3. **Transport hazard class(es):**
ADR/RID: 6.1. Classification code: TFC
Labels: 6.1 + 3 + 8

IMDG: 6.1
IATA: -

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

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

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 was modified 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 (15. 11. 2018, version CLP_C).

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.
H318 – Causes serious eye damage.
H331 – Toxic if inhaled.

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:
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