SAFETY DATA SHEET

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

1.1. **Product identifier:**
BUTYRIL CHLORIDE

IUPAC name: Butyryl chloride
CAS number: 141-75-3
EC number: 205-498-5
REACH registration number: 01-2119931030-58-0003; transported isolated intermediate

1.2. **Relevant identified uses of the substance and uses advised against:**
Organic synthesis intermediate for industrial use.

Sectors of end-use:
SU8 - Manufacture of bulk, large scale chemicals (including petroleum products)
SU9 - Manufacture of fine chemicals

Chemical Product Category:
PC19 – Intermediate

Process categories:
PROC1 - Use in closed process, no likelihood of exposure

Environmental release categories:
ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

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: (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:**

Classification according to Regulation (EC) No 1272/2008 (CLP):
Flammable liquids, Hazard Category 2 – H225
Acute toxicity (oral), Hazard Category 4 – H302
Skin corrosion/irritation, Hazard Category 1B – H314
Acute toxicity (inhalation), Hazard Category 3 – H331

Hazard statements:
H225 – Highly flammable liquid and vapour.
H302 – Harmful if swallowed.
H314 – Causes severe skin burns and eye damage.
H331 – Toxic if inhaled.

2.2. **Label elements:**

IUPAC name: Butyryl chloride
CAS number: 141-75-3
EC number: 205-498-5

Hazard statements:
H225 – Highly 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.
P260 – Do not breathe mist/vapours/spray.
P280 – Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
P301 + **P330** + **P331** – IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + **P361** + **P353** – IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P304 + **P340** – IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338 + P310 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P405 – Store locked up.
P501 – Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3. **Other hazards:**
No other known specific hazards for human or environment.
The substance does not meet the PBT/vPvB criteria.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. **Substance:**

IUPAC name: Butyryl chloride
Synonym: Butanoyl chloride, Butyric chloride, Butanoic acid chloride
CAS number: 141-75-3
EC number: 205-498-5
Index number: 607-136-00-5
Molecular formula: C_4H_7ClO
Molecular weight: 106.55 g/mol
Purity: > 98 %

SECTION 4: FIRST AID MEASURES

4.1. **Description of first aid measures:**
General information: Instantly remove any clothing soiled by the product.
INGESTION:
Measures:

- Immediately transport the injured into the hospital.
- Do not induce vomiting.
- Rinse mouth with water.
- Show the safety data sheet or the label.

INHALATION:
Measures:
- Remove to fresh air, keep warm and at rest.
- If the victim is unconscious and breathing, place him into recovery position.
- Obtain immediate medical help or transport to a hospital.
- If necessary, administer artificial respiration. First-aiders must ensure their own safety.

SKIN CONTACT:
Measures:
- Instantly wash with water and soap and rinse thoroughly.
- Seek immediate medical advice.

EYE CONTACT:
Measures:
- Flush immediately with plenty of flowing water for at least 10-15 minutes holding eyelids apart.
- Obtain immediate medical help.

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:
No special treatment needed; treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media:

5.1.1. Suitable extinguishing media:
In case of fire, use sand, carbon dioxide, extinguishing powder or water jet.
Fight larger fires with water jet or alcohol-resistant foam.

5.1.2. Unsuitable extinguishing media:
No data available.

5.2. Special hazards arising from the substance or mixture:
Highly flammable liquid and vapour.
If this product is involved in a fire, the following can be released: Carbon monoxide and carbon dioxide, hydrogen chloride (HCl).
The inhalation of combustion products can have serious adverse effects on health.

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:**
Wear protective equipment.
Keep unprotected persons away.
Ensure adequate ventilation.
Keep away from ignition sources.

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:
Keep away from ignition sources.
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose of contaminated material as waste.
Ensure adequate ventilation.

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.
Handle under dry protective gas.
Keep containers tightly sealed.
Technical measures:
Ensure good ventilation/exhaustion at the workplace.
Precautions against fire and explosion:
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Protect against electrostatic charges.
Fumes can combine with air to form an explosive mixture.

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

Technical measures and storage condition:
Refrigerate.
Store away from water, strong bases and oxidising agents.
Store under dry inert gas.
This product is moisture sensitive. Protect from humidity and keep away from water.
Store in locked cabinet or with access restricted to technical experts or their assistants.
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. Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

8.2.2. **Individual protection measures, such as personal protective equipment:**
The usual precautionary measures should be adhered to in handling the chemicals.
Keep away from foodstuffs, beverages and feed.
Instantly remove any soiled and impregnated garments.
Wash hands during breaks and at the end of the work.
Avoid contact with skin, eyes and clothing, avoid inhalation of vapours.
Sensitive for humidity.
Maintain an ergonomically appropriate working environment.
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 protective glasses or face protection (EN 166).
2. **Skin protection:**
    a. **Hand protection:** Use appropriate, impervious protective gloves (EN 374).
    Check protective gloves prior to each use for their proper condition.
    The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
    b. **Other:** Use appropriate protective clothing.
3. **Respiratory protection:** Use breathing protection with high concentration.
    Recommended filter device for short term use. Use a respirator with organic vapour/acid gas cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purity respirators are appropriate. Only use equipment tested and approved under appropriate government standards.
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.	**Appearance:**	**colourless liquid**
2.	**Odour:**	**characteristic**
3.	Odour threshold:	no data*
4.	pH:	no data*
5.	Melting point/freezing point:	-89 °C
6.	Initial boiling point and boiling range:	102 °C
7.	Flash point:	21 °C
8.	Evaporation rate:	no data*
9.	Flammability (solid, gas):	no data*
10.	Upper/lower flammability or explosive limits:	2.5-7.3 vol. %
11.	Vapour pressure:	$33x10^2$ Pa (20 °C)
12.	Vapour density:	3.68 (air = 1)
13.	Relative density:	no data*
14.	Solubility(ies):	well soluble in common solvents
15.	Partition coefficient: n-octanol/water:	not applicable
16.	Auto-ignition temperature:	280 °C
17.	Decomposition temperature:	no data*
18.	Viscosity:	no data*
19.	Explosive properties:	no data*
20.	Oxidizing properties:	no data*

9.2. **Other information:**
Density: 1.028 g/cm³
*: 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.

SECTION 10: STABILITY AND REACTIVITY

10.1. **Reactivity:**
No reactivity known.
10.2. **Chemical stability:**
Stable under recommended storage conditions.
No decomposition if used and stored according to specifications.
10.3. **Possibility of hazardous reactions:**
Reacts with strong oxidising agents.
10.4. **Conditions to avoid:**
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
10.5. **Incompatible materials:**
Water, moisture, oxidising agents, bases.
10.6. **Hazardous decomposition products:**
Carbon monoxide, carbon dioxide, hydrogen chloride.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. **Information on toxicological effects:**
Acute toxicity: Harmful if swallowed. Toxic if inhaled.
Skin corrosion/irritation: Causes severe skin burns.
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:**
LD50 (oral, rat): 640 mg/kg
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:**
Inhalation, ingestion or absorption through skin may cause fatal poisoning.
Inhalation: May cause pulmonary oedema (with a few hours' delay).
Skin contact: Can cause irritation and burns.
Eye contact: May cause eye irritation, and in some cases may cause burning.
Irritation: May irritate the mucous membranes, the skin and the eyes.
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.
11.1.8. **Other information:**
No data available.

SECTION 12: ECOLOGICAL INFORMATION

12.1. **Toxicity:**
The substance is not classified as hazardous for the environment.
LC50 (Danio rerio): 215-464 mg/l/96 h
During hydrolysis, the product decomposes into hydrochloric acid and butyric acid.
Butyric acid: Slightly soluble in water, toxic to aquatic animals and mammals.

12.2. **Persistence and degradability:**
No data available.

12.3. **Bioaccumulative potential:**
No data available.

12.4. **Mobility in soil:**
No data available.

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

12.6. **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:**
Recommendation:
Hand over to disposers of hazardous waste.
Must be specially treated under adherence to official regulations.
Consult national, regional or local regulations for proper disposal.
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:**
Recommendation:
Disposal must be made according to official 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:**
UN 2353

14.2. **UN proper shipping name:**
BUTYRYL CHLORIDE

14.3. **Transport hazard class(es):**
3
Classification code: FC

Labels: 3 + 8

14.4. **Packing group:**
II

14.5. **Environmental hazards:**
No.

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

14.7. **Transport in bulk according to Annex II of MARPOL and the IBC Code:**
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) No 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

15.2. **Chemical safety assessment:** Chemical safety assessment has not been carried out.

SECTION 16: OTHER INFORMATION

Information regarding the revision of the safety data sheet:
The safety data sheet has been revised according to Regulation (EU) 2015/830 (general revision).
The hazards classification of the substance has been modified compared to the last 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 (31. 05. 2018, version CLP _ B).
REACH Registration dossier.

Relevant hazard statements (code and full text) of Sections 2 and 3:
H225 – Highly flammable liquid and vapour.
H302 – Harmful if swallowed.
H314 – Causes severe skin burns and eye damage.
H331 – Toxic if inhaled.

Training advice: No data available.

Full text of the abbreviations in the safety data sheet:
ADN: The European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
ADR: The European 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.
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