

FramoChem

A VanDeMark Company

SAFETY DATA SHEET

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

1.1. Product identifier:

4-CHLOROBUTYRYL CHLORIDE

IUPAC name: 4-chlorobutyryl chloride

CAS number: 4635-59-0

EC number: 225-059-1

Registration number: 01-2119909302-49-0001; Transported isolated intermediate

1.2. Relevant identified uses of the substance 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 str. 5., POB. 504

Telephone: +36 (48) 311-991

Fax: +36 (48) 512-162

E-mail: info@framochem.hu

1.3.1. Responsible person: -

E-mail: info@framochem.hu

1.4. Emergency telephone number:

Public Toxicological Health Service (ETTSZ)

1096 Budapest, Nagyvárad tér 2.

Tel.: 06 1 476 6464, 06 80 201 199 (0-24 h)

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance:

Classification according to Regulation 1272/2008/EC (CLP):

Corrosive to metals, Hazard Category 1 – H290

Acute toxicity (oral), Hazard Category 4 – H302

Skin corrosion/irritation, Hazard Category 1A – H314

Serious eye damage/eye irritation, Hazard Category 1 – H318

Acute toxicity (inhalation), Hazard Category 2 – H330

Warning H statements:

H290 – May be corrosive to metals.

H302 – Harmful if swallowed.

H314 – Causes severe skin burns and eye damage.

H318 – Causes serious eye damage.

H330 – Fatal if inhaled.

2.2. Label elements:

IUPAC name: 4-chlorobutyryl chloride

CAS number: 4635-59-0

EU number: 225-059-1

GHS05



GHS06



DANGER

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Warning H statements:

- H290** – May be corrosive to metals.
- H302** – Harmful if swallowed.
- H314** – Causes severe skin burns and eye damage.
- H318** – Causes serious eye damage.
- H330** – Fatal if inhaled.

EUH 029 – Contact with water liberates toxic gas.

Precautionary P statements:

- P260** – Do not breathe dust/fume/gas/mist/vapours/spray.
- P284** – [In case of inadequate ventilation] wear respiratory protection.
- P301 + P312** – IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
- 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** – 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 doctor/physician.
- P403 + P233** – Store in a well-ventilated place. Keep container tightly closed.
- P405** – Store locked up.
- P501** – Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3. Other hazards:

The substance does not meet the PBT criteria according to Annex XIII of Regulation 1907/2006/EC.
Information concerning specific hazards for human and environment: see Section 11.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance:

IUPAC name: 4-chlorobutyryl chloride
Synonym: 4-chlorobutanoyl chloride
CAS number: 4635-59-0
EU number: 225-059-1
Formula: C₄H₆Cl₂O
Molar weight: 141 g/mol
Purity: > 99.5 %

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.

IN CASE OF INGESTION:

Measures:

- Rinse mouth immediately and then drink plenty of water.
- Seek medical attention.

IN CASE OF INHALATION:

Measures:

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

IN CASE OF SKIN CONTACT:

Measures:

- Immediately wash thoroughly with soap and water.
- Seek medical attention.

IN CASE OF EYE CONTACT:

Measures:

- Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open.
- Consult an eye specialist.

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

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See section 11 for information on health effects and symptoms.

- 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: FIRE-FIGHTING 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:
Hazardous decomposition products: hydrogen chloride, carbon oxides, nitrogen oxides.
5.3. Advice for fire fighters:
Wear appropriate 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:
Keep unprotected people away, allow only well trained experts wearing suitable protective clothing to abide in the field of accident.
6.1.2. For emergency responders:
Breathing protection required.
Avoid contact with the skin, eyes and clothing.
6.2. Environmental precautions:
Do not empty into drains.
6.3. Methods and material for containment and cleaning up:
For small amounts: Pick up with suitable absorbent material (e.g. sand, sawdust, general-purpose binder, kieselguhr).
For large amounts: Pump off product.
Cleaning operations should be carried out only while wearing breathing apparatus. Clean contaminated floors and objects thoroughly with water and detergents, observing environmental regulations. Collect waste in suitable containers, which can be labelled and sealed. Incinerate or take to a special waste disposal site in accordance with local authority regulations.
6.4. Reference to other sections:
For further and detailed information see section 8 and 13.

SECTION 7: HANDLING AND STORAGE

- 7.1. Precautions for safe handling:
Observe conventional hygiene precautions.
Protect against moisture.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Avoid contact with skin, eyes and clothing, avoid inhalation.
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:
Vapours may form ignitable mixture with air. 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:
Avoid extreme heat. Keep container tightly closed and dry. Store in a cool place.
Keep away from sources of ignition - No smoking.
Storage duration: 3 months.
Protect against moisture.
Keep away from direct sunshine and other heat- and explosion sources.
Incompatible materials: see section 10.5.

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Packaging material: Container lined with polyethylene, with inert material or polyethylene container. The use of packaging material made of metals is forbidden!

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

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters:

Exposure limit values (COMMISSION DIRECTIVE 2000/39/EC of 8 June 2000):
The substance is not regulated with exposure limit value.

PNEC values:

Freshwater: 0.051 mg/l

Freshwater - intermittent release: 0.506 mg/l

Marine water: 0.005 mg/l

STP: 20 mg/l

Freshwater sediment: 0.43 mg/kg sediment dry weight

Marine water sediment: 0.043 mg/kg sediment dry weight

Soil: 0.056 mg/kg soil dry weight

DNEL		Routes of exposure	Exposure frequency	Remarks
Worker	Consumer			
no data available	no data available	Dermal	Short term (acute) Long term (repeated)	no data available
no data available	no data available	Inhalative	Short term (acute) Long term (repeated)	no data available
no data available	no data available	Oral	Short term (acute) Long term (repeated)	no data available

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.

Ensure adequate ventilation, especially in closed areas.

Do not eat or smoke during the processing.

Do not inhale vapours.

Wash and hand wash thoroughly after work.

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:

Avoid contact with the skin, eyes and clothing.

Do not breathe vapour/spray.

1. Eye/face protection: use appropriate, tightly fitting protective glasses and face shield (EN 166).

2. Skin protection:

a. Hand protection: use appropriate, chemical-resistant protective gloves.

Suitable materials also for prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN 374):

- butyl rubber (butyl) - 0.7 mm coating thickness

- fluoroelastomer (FKM) - 0.7 mm coating thickness

Manufacturer's directions for use should be observed because of great diversity of types.

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.

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: self-contained breathing apparatus.

4. Thermal hazard: none known.

8.2.3. Environmental exposure controls:

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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 should be sought out before deciding upon further protective measures.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties:

Parameter		Test method:	Remarks:
1. Appearance:	slightly pink liquid		
2. Odour:	pungent		
3. Odour threshold:	no data available*		
4. pH:	not applicable		
5. Melting point/freezing point:	-49 °C	1013 hPa	
6. Initial boiling point and boiling range:	173.5 °C	1013 hPa	
7. Flash point:	85 °C	1013 hPa	
8. Evaporation rate:	no data available*		
9. Flammability (solid, gas):	no data available*		
10. Upper/lower flammability or explosive limits:	lower: 5.5 vol. % upper: 11.7 vol. %	Exposure limit values:	
11. Vapour pressure:	1.31 hPa 8.88 hPa	20 °C 50 °C	
12. Vapour density:	4.9	air = 1	
13. Relative density:	no data available*		
14. Solubility(ies):	decomposes in water		
15. Partition coefficient: n-octanol/water:	not applicable		
16. Auto-ignition temperature:	440 °C	1013 hPa	
17. Decomposition temperature:	120 °C		
18. Viscosity:	1.45 mm ² /s 1.06 mm ² /s 1.82 mPa.s 1.31 mPa.s	20 °C 40 °C 20 °C 40 °C	
19. Explosive properties:	no data available*		
20. Oxidizing properties:	no oxidising properties		

9.2. Other information:

Density: 1.258 g/cm³ at 20 °C, 1.234 g/cm³ at 40 °C

*: 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:

Corrosive effect on metals.

Contact with water liberates toxic gas.

10.2. Chemical stability:

Stable at room temperature and general conditions of work.

10.3. Possibility of hazardous reactions:

Evolution of corrosive gases/vapours. Reacts with water and basic components to generate heat. On contact with water, gaseous decomposition products are formed, which cause build-up of pressure in tightly closed containers. Reacts with alkalis and metals. Reacts with alcohols, amines, aqueous acids and alkalis. 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. Addition of water leads to increase in temperature. In damp air hydrochloric acid formation is possible. Violent reactions with water and/or alcohols, with formation of hydrochloric acid. Substance/product is highly reactive. Violent and explosive reaction with water. Vapours may form ignitable mixture with air.

10.4. Conditions to avoid:

Avoid direct sunlight. Avoid electro-static charge. Avoid humidity, water. Avoid heat. Avoid prolonged storage.

Disregard of the conditions mentioned may result in undesirable decomposition reactions.

10.5. Incompatible materials:

Acids, bases, water, amines and alcohol.

10.6. Hazardous decomposition products:

Contact with water liberates toxic gas: Hydrogen chloride.

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SECTION 11: TOXICOLOGICAL INFORMATION

- 11.1. Information on toxicological effects:
Acute toxicity: Harmful if swallowed. Fatal if inhaled.
Skin corrosion/irritation: Causes severe skin burns.
Serious eye damage/eye irritation: Causes serious eye damage.
Respiratory or skin sensitization: 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. For substances subject to registration, brief summaries of the information derived from the test conducted:
No data available.
- 11.1.2. Relevant toxicological properties of the hazardous substances:
Acute toxicity:
LD50 (oral, rat, male/female): 1350 mg/kg bw
LD50 (intraperitoneal, mouse, male/female): 176 mg/kg bw
LC50 (inhalation, vapour, rat, male/female): 0.65 – 0.87 mg/l air/4h
Skin corrosion/irritation:
Rabbit: highly corrosive.
Serious eye damage/eye irritation:
Rabbit: irreversible effects on the eye.
Repeated dose toxicity:
LOAEC (inhalation, vapour, rat, male/female): 0.002 mg/l air (analytical)
Slight effects on transitional and respiratory epithelium at the lowest concentration.
Genetic toxicity:
In vitro gene mutation study in bacteria (*S. typhimurium*): negative.
Cytotoxicity: > 750 µg/plate
- 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:
No data available.
- 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.
Fatal 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:
Aquatic toxicity:
Short-term toxicity to fish:
LC50 (*Leuciscus idus*): 68.12 mg/l/96h
Short-term toxicity to aquatic invertebrates:
EC50 (*Daphnia magna*): 0.492 mg/l/48h
Toxicity to aquatic algae and cyanobacteria:
EC50 (*Pseudokirchneriella subcapitata*): 5.3 mg/l/72h
Toxicity to microorganisms:
EC20 (activated sludge): > 1000 mg/l/30 min
- 12.2. Persistence and degradability:
In case of contact with water, decomposes. In case of hydrolysis, hydrochloric acid is formed.
Biodegradation in water (aerob, activated sludge): 14 days
- 12.3. Bioaccumulation potential:
BCF: 3.16 l/kg (log BCF: 0.50)

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- BAF: 2.28 l/kg (log BAF: 0.46)
- 12.4. Mobility in soil:
Adsorption coefficient:
Koc: 65 (25 °C, pH 4, 5)
Koc: 49 (25 °C, pH 7)
Koc: 48 (35 °C, pH 9)
log Koc: 1.81 (25 °C, pH 4, 5)
log Koc: 1.69 (25 °C, pH 7, 9)
Henry's Law constant:
H1: ca. 0.024 (25 °C, pH 4)
H2: ca. 0.006 (25 °C, pH 5)
H3: 0 (25 °C, pH 7)
H4: 0 (25 °C, pH 9)
Percent distribution:
Air (%): 1.17
Water (%): 98.5
Soil (%): 0.163
Sediment (%): 0.165
Susp. sediment (%): 0.001
Biota (%): 0
Aerosol (%): 0
- 12.5. Results of PBT and vPvB assessment:
This substance does not meet the criteria of PBT or vPvB.
- 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:
Incinerate in suitable incineration plant, observing local authority regulations.
European Waste Code:
No appropriate EWC code can be given for the substance, since the identification of the proper code can be done with the method of use defined by the user of the substance. The European waste code number has to be determined after a discussion with a specialist dealing with waste disposal.
- 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:
None known.
- 13.1.4. Sewage disposal:
None known.
- 13.1.5. Special precautions for any recommended waste treatment:
No data available.

SECTION 14: TRANSPORT INFORMATION

- 14.1. UN Number:
UN 2922
- 14.2. UN proper shipping name:
ADR/RID: CORROSIVE, TOXIC LIQUID N.O.S. (4-chlorobutyryl chloride)
IMDG; IATA: CORROSIVE, TOXIC LIQUID N.O.S. (4-chlorobutyryl chloride)
- 14.3. Transport hazard class(es):
ADR/RID: 8 Classification code: CT1
Labels: 8 + 6.1
IMDG: 8
IATA: 8
- 14.4. Packaging group:
ADR/RID: I
IMDG: I
IATA: I
- 14.5. Environmental hazard:

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ADR/RID: no

IMDG: no

IATA: 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 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC

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 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

Commission Regulation (EU) 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: no information available.

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 (Section 1-16).

The classification of the substance has been amended compared to the previous version.

Full text of the abbreviations in the safety data sheet:

DNEL: Derived no effect level. PNEC: Predicted no effect concentration. CMR effects: carcinogenicity, mutagenicity and toxicity for reproduction. PBT: Persistent, bioaccumulative and toxic. vPvB: very persistent and very bioaccumulative. n.d.: not defined. n.a.: not applicable. ADR: European agreement concerning the carriage of dangerous goods by road. RID: Regulation concerning the international transport of dangerous goods by train. IMDG: International maritime code for dangerous goods. IATA DGR: International air transport association dangerous goods regulation.

Data sources:

Previous version of the safety data sheet (16. 11. 2016, version CLP _ D),
REACH Registration dossier.

Relevant H-Phrases (number and full text) of Section 2 and 3:

H290 – May be corrosive to metals.

H302 – Harmful if swallowed.

H314 – Causes severe skin burns and eye damage.

H318 – Causes serious eye damage.

H330 – Fatal if inhaled.

EUH 029 – Contact with water liberates toxic gas.

Training instructions: no data available.

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.

Date of issue: 19. 11. 2002
Date of revision: 26. 10. 2018
Version: CLP_E

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TO X INFO
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Safety data sheet was prepared by: ToxInfo Kft.

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