

SAFETY DATA SHEET

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

1.1. Product identifier:

ISOBUTYRYL CHLORIDE

Chemical name: Isobutyryl chloride

CAS number: 79-30-1

EC number: 201-194-1

Registration number: 01-2119931040-57-0003; transported, isolated intermediate.

1.2. Relevant identified uses of the substance or mixture and uses advised against:

Transported, isolated 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:

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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 2 – H225

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

Hazard statements:

H225 – Highly flammable liquid and vapour.

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:

Chemical name: Isobutyryl chloride
CAS number: 79-30-1
EC number: 201-194-1



Hazard statements:

H225 – Highly flammable liquid and vapour.
H290 – May be corrosive to metals.
H302 – Harmful if swallowed.
H314 – Causes severe skin burns and eye damage.
H330 – Fatal if inhaled.

Precautionary statements:

P210 – Keep away from sparks, open flame, heat and other ignition sources. No smoking.
P260 – Do not breathe vapours/spray.
P280 – Wear protective gloves/protective clothing/eye protection/face protection.
P284 – [In case of inadequate ventilation] wear respiratory 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 victim to fresh air and keep at rest in a position 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 or doctor.
P405 – Store locked up.
P501 – Dispose of contents/container in accordance with local regulations.

2.3. Other hazards:

No other known specific hazards for human or environment.
The substance does not meet the criteria for PBT or vPvB substances.
Endocrine disrupting property: Not an endocrine disruptor.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance:

IUPAC name: 2-methylpropanoyl chloride
Chemical name: Isobutyryl chloride
CAS number: 79-30-1
EC number: 201-194-1
Index number: 607-140-00-7
Molecular formula: $(\text{CH}_3)_2\text{CHCOCl}$
Molecular weight: 106.55 g/mol
Purity: 100 %

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures:

General information: First aid personnel should pay attention to their own safety. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). Immediately remove contaminated clothing.

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, consult an eye specialist.

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

Harmful if swallowed.

Fatal if inhaled.

Causes severe skin burns and eye damage.

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

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media:

5.1.1. Suitable extinguishing media:

Dry powder, foam extinguisher, CO₂.

5.1.2. Unsuitable extinguishing media:

Water.

5.2. Special hazards arising from the substance or mixture:

Highly flammable liquid and vapour.

In case of fire hydrogen chloride may be formed. The inhalation of the combustion products can have serious adverse effects on health.

5.3. Advice for firefighters:

Wear full protective clothing and self-contained breathing apparatus.

Dispose of fire debris and contaminated extinguishing water 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:

Breathing protection required.

Avoid contact with skin, eyes and clothing.

Avoid breathing vapours/spray.

Wear appropriate personal protective equipment.

Remove the ignition sources.

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.

Do not empty into drains.

6.3. Methods and material for containment and cleaning up:

For large 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 with skin, eyes and clothing.
Avoid breathing vapours/spray.
Wear appropriate personal protective equipment.
Observe the pertinent regulations on industrial safety and basic hygiene rules.
Wash hands and face thoroughly after handling.
Wash contaminated clothing before reuse.
Technical measures:
Ensure thorough ventilation of stores and work areas.
Precautions against fire and explosion:
Keep away from sparks, open flame, heat and other ignition sources. No smoking.
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 container tightly closed in a cool, well-ventilated place. Protect against heat.
Storage duration: 6 months.
Keep in original, closed and appropriately labelled container.
The place of storage has to be properly ventilated and cleanable.
Store in cool and dry place.
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:

Freshwater: 0.051 mg/l
Freshwater – intermittent release: 0.512 mg/l
Marine water: 0.005 mg/l
STP: 39 mg/l
Freshwater sediment: 0.415 mg/kg sediment dry weight
Marine water sediment: 0.042 mg/kg sediment dry weight
Soil: 0.053 mg/kg soil dry weight

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.

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

Avoid contact with the skin, eyes and clothing.

Avoid inhalation of vapour.

1. **Eye/face protection:** Use adequate, tightly fitting protective glasses and face shield (EN 166).

2. **Skin protection:**

a. **Hand protection:** Use appropriate protective gloves (EN 374).

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.

Suitable materials for short-term contact and/or splashes:

> 30 min. permeation time,

Nitrile rubber (NBR) – 0.4 mm thickness

Butyl rubber (BR) – 0.7 mm thickness

Fluoroelastomer (FKM) – 0.7 mm thickness

b. **Other:** Use appropriate protective clothing. Body protection should be selected depending on the activity and the possible exposure, e.g. apron, protective boots, chemical protective clothes (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

3. **Respiratory protection:** In case of inadequate ventilation, use appropriate respiratory protective device. Wear 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 to yellowish / 20 °C, 1013 hPa
3. Odour, odour threshold	pungent
4. Melting point/freezing point	-90 °C
5. Boiling point or initial boiling point and boiling range	93.09 °C / 1013.25 hPa
6. Flammability	no data*
7. Lower and upper explosion limit	no data*
8. Flash point	1 °C / 1013.25 hPa
9. Auto-ignition temperature	325 °C / 1013 hPa
10. Decomposition temperature	no data*
11. pH	no data*
12. Kinematic viscosity	no data*
13. Solubility in water in other solvents	no data* no data*
14. Partition coefficient n-octanol/water (log value)	log Pow = 0.44
15. Vapour pressure	50 hPa / 17.42 °C, measured 70 hPa / 23.85 °C, measured 200 hPa / 47.12 °C, measured 56.7 hPa / 20 °C, intrapolated
16. Density and/or relative density	1.009 g/cm ³ at 20 °C; 0.984 g/cm ³ at 40 °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:**

Oxidizing properties: No oxidizing properties.

9.2.2. **Other safety characteristics:**

Dissociation constant:

No.: #1

pKa: 4.72

Temperature: 25 °C

Note: macroscopic pKa

*: 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:**

Strong exothermic reactions with the following materials: water, alkalis, amines, amine-compounds.
May be corrosive to metals.

10.2. **Chemical stability:**

Stable within normal temperature and general work conditions.

10.3. **Possibility of hazardous reactions:**

Strong exothermic reactions with the following materials: water, alkalis, amines, amine-compounds.

10.4. **Conditions to avoid:**

Keep away from sparks, open flame, heat and other ignition sources. No smoking.

10.5. **Incompatible materials:**

Water, alkalis, amines, amine-compounds.

10.6. **Hazardous decomposition products:**

Hydrogen chloride.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. **Information on hazard classes as defined in Regulation (EC) No 1272/2008:**

Acute toxicity: Harmful if swallowed. Fatal if inhaled.

Skin corrosion/irritation: Causes severe skin burns 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, male/female): ca. 1000 mg/kg bw

LD50 (dermal, rat, male/female): > 2000 mg/kg

LD50 (intraperitoneal, mouse, male/female): 0.8 – 1 mg/kg bw

LC50 (inhalation, rat, male/female): 0.47 – 1.95 mg/l air/4h

Skin irritation/corrosion:

Highly corrosive.

Eye irritation:

Highly corrosive.

Genetic toxicity:

In vitro gene mutation study in bacteria:

Species: S. typhimurium TA 1535, TA 1537, TA 98, TA 100 and E. coli WP2

Metabolic activation: with and without

Genotoxicity: negative

Cytotoxicity: yes

- 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.
Fatal if inhaled.
Causes severe skin burns and eye damage.
- 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.
Short-term toxicity to fish:
LC₅₀ (Leuciscus idus): 146.6 mg/l/96h (geometrical mean, not neutralised samples)
Short-term toxicity to aquatic invertebrates:
EC₅₀ (Daphnia magna): 51.25 mg/l/48h
Toxicity to aquatic algae and cyanobacteria:
EC₅₀ (Desmodesmus subspicatus): 45.1 mg/l/72h
Toxicity to microorganisms:
EC₅₀: 57 mg/l/17h (not neutralised)
- 12.2. Persistence and degradability:**
Biodegradation: ca. 80 % / 28 days
- 12.3. Bioaccumulative potential:**
Bioconcentration factor (BCF):
3.16 l/kg (log BCF: 0.50)
1.69 l/kg (log BAF: 0.23)
- 12.4. Mobility in soil:**
Adsorption coefficient:
K_{oc}: 45 (25 °C, pH 4, 5, 7, 9)
log K_{oc}: 1.65 (pH 4, 5, 7, 9)
Henry's Law constant:
H: 0.09 Pa m³/mol (25 °C)
H: 0 atm m³/mol (25 °C)
H: 1.130 mol/atm kg (25 °C)
Distribution:
Air (%): 4.21
Water (%): 95.7
Soil (%): 0.066
Sediment (%): 0.067
Susp. sediment (%): 0
Biota (%): 0
Aerosol (%): 0
- 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.

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 2395

14.2. **UN proper shipping name:**

ISOBUTYRYL CHLORIDE

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

Class: 3

Classification code: FC

Labels: 3+8

Transport category: 2

Tunnel restriction code: (D/E)

14.4. **Packing group:**

II

14.5. **Environmental hazards:**

No relevant information available.

14.6. **Special precautions for user:**

Transport within user's premises: always transport in closed containers that are upright and secure.

Ensure that the personnel performing the transportation of the product is aware with the measures necessary in case of an accident or a spillage.

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 (11. 09. 2018. version: CLP_B).

Relevant hazard statements (code and full text) of Sections 2 and 3:

H225 – Highly flammable liquid and vapour.
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.

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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