

## SAFETY DATA SHEET

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

- 1.1. Product identifier:  
**Isopropyl chloroformate**
- IUPAC name: Isopropyl chloroformate  
CAS number: 108-23-6  
EC number: 203-563-2  
Registration number: 01-2119943484-33-0002; 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
- 1.3.1. Responsible person: -  
E-mail: [info@framochem.hu](mailto: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):  
Flammable Liquids 2 – H225  
Acute toxicity 1 – H330  
Acute toxicity 4 – H302  
Skin corrosion 1 – H314
- Warning H statements:**  
**H225** – Highly flammable liquid and vapour.  
**H302** – Harmful if swallowed.  
**H314** – Causes severe skin burns and eye damage.  
**H330** – Fatal if inhaled.
- 2.2. Label elements:
- IUPAC name: Isopropyl chloroformate  
CAS number: 108-23-6  
EC number: 203-563-2

GHS02



GHS05



GHS06



DANGER

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**Warning H statements:**

- H225** – Highly flammable liquid and vapour.  
**H302** – Harmful if swallowed.  
**H314** – Causes severe skin burns and eye damage.  
**H330** – Fatal if inhaled.

**Precautionary P statements:**

- P202** – Do not handle until all safety precautions have been read and understood.  
**P220** – Keep/Store away from clothing/combustible materials.  
**P308 + P313** – IF exposed or concerned: Get medical advice/attention.  
**P280** – Wear protective gloves/protective clothing/eye protection/face protection.  
**P305 + P351 + P338** – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
**P337 + P313** – If eye irritation persists: Get medical advice/attention.

2.3. Other hazards:

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

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance:

IUPAC name: Isopropyl chloroformate  
Synonym: Chlorformate isopropyl ester  
CAS number: 108-23-6  
EC number: 203-563-2  
Formula: C<sub>4</sub>H<sub>7</sub>ClO<sub>2</sub>  
Molar mass: 122,5 g/mol  
Purity: > 99,7 %

Other hazardous contaminant / Concentration: phosgene and hydrochloric acid in traces.  
Other hazardous additives / Concentration: the presence of hazardous additive is not known.

### SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures:

General information: Obtain immediate medical attention and show him the label.

IN CASE OF INGESTION:

Measures:

- Obtain immediate medical help and/or take the victim to the hospital.
- Do not induce vomiting!
- Show the label or the safety data sheet to the physician.

IN CASE OF INHALATION:

Measures:

- In case of inhalation exposure, immediately take the victim into fresh air.
- Obtain immediate medical help and/or take the victim to the hospital.

IN CASE OF SKIN CONTACT:

Measures:

- Immediately remove the contaminated clothing and shoes.
- The affected skin surface should be immediately flushed/cleaned with plenty of water and soap for at least 15 minutes.
- If symptoms occur, obtain immediate medical attention and show him the label.

IN CASE OF EYE CONTACT:

Measures:

- In case of contact with eyes immediately flush with plenty of flowing water holding eyelids apart and moving the eyeballs (for at least 10-15 minutes).
- Obtain immediate ophthalmologist help.

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

See section 11 for information on health effects and symptoms.

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

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General information to the physician: Life threatening poisoning can happen; pulmonary oedema may occur.  
Treatment: General, symptomatic treatment required.

## SECTION 5: FIRE-FIGHTING MEASURES

- 5.1. Extinguishing media:  
5.1.1. Suitable extinguishing media:  
Carbon dioxide, dry powder, foam, in case of smaller fires sand and earth can be used.  
5.1.2. Unsuitable extinguishing media:  
Do not use water jet.
- 5.2. Special hazards arising from the substance or mixture:  
In case of fire, smoke and other combustion products (carbon dioxide and hydrogen chloride) may be formed, the inhalation of such combustion products can have serious adverse effects on health.
- 5.3. Advise for fire fighters:  
Wear appropriate full protective clothing and self-contained breathing apparatus (self-rescue breathing apparatus). These means can protect from the skin and eye contact and from the inhalation of the hazardous gases and smoke.

## 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:  
Evacuate the unauthorized persons for the place of the accident.  
Remove all ignition sources from the affected area.  
Close the designated area.  
Ensure adequate ventilation.  
Wear appropriate protective equipment.
- 6.2. Environmental precautions:  
Dispose of spillage and waste (product/packaging) in accordance with all applicable environmental laws. Do not allow the substance 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:  
Collect the spilled material with inert, non-combustible, mineral absorbent (sand, earth, perlite), then place into a suitable, closed, properly labelled chemical waste container for disposal.  
During the collection, placement, disposal of the waste, wear appropriate individual protective equipment.
- 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.  
Avoid contact with skin, eyes and clothing.  
Do not eat, drink and smoke in the workplace.  
Use adequate personal protective equipment (see section 8).  
The contaminated clothes should be removed immediately and should be cleaned before re-use.  
After the handling of the product and before breaks or before eating wash your hands, after the work hours thorough washing (showering) is required.  
Technical measures:  
Ensure adequate ventilation (general ventilation and local suction).  
Precautions against fire and explosion:  
The use/handling of the product must be far from heat and ignition sources, avoid the sparking and use of open flame.  
Use spark and explosion proof equipment/tools during the handling.
- 7.2. Conditions for safe storage, including any incompatibilities:  
Technical measures and storage condition:  
Keep in original, closed and appropriately labelled container.  
The place of storage has to be properly ventilated and cleanable.  
Store in dry place.  
Follow all instructions on the label.  
Protect from moisture and heat.  
Storage temperature:  $\leq 0$  °C.  
Incompatible materials: none known.

Packaging material: the product must be stored in properly coated (lined with polyethylene) and tightly sealed metal drum.

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

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters:

Occupational exposure limit values:  
The substance is not regulated with exposure limit value.

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

PNEC			Exposure frequency:	Remarks:
Water	Soil	Air		
no data available	no data available	no data available	Short term (single use) Long term (continuous)	no data available
no data available	no data available	no data available	Short term (single use) Long term (continuous)	no data available
no data available	no data available	no data available	Short term (single use) Long term (continuous)	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 efficient ventilation (general ventilation and local exhaust) in the workplace to avoid harmful exposure and to keep the concentration of the airborne contaminants under the permissible limit value.  
The electric equipment have to be spark and explosion proof.  
Keep away all heat and ignition sources.  
In the place of regular use/in the workplace, hand washing facility should be available. The installation of safety shower is recommended.  
The pressure in the containers may be increased that is why it is recommended to eliminate the pressure from the containers regularly. Open the container with care.  
Avoid inhalation of vapours.  
Sensitive for humidity.
- 8.2.2. Individual protection measures, such as personal protective equipment:
1. Eye/face protection: use appropriate protective glasses/protective mask (EN 166).
  2. Skin protection:
    - a. Hand protection: use appropriate protective gloves (EN 374).
    - b. Other: use appropriate, acid resistant protective clothes (EN ISO 6529).
  3. Respiratory protection: use appropriate respiratory (for organic vapours) protective device (EN 136, EN 141).
  4. Thermal hazard: None known.
- 8.2.3. Environmental exposure controls:  
No special measures required.  
**The requirements detailed in Section 8 assume skilled work under normal conditions and usage of the product for appropriate aims. If conditions differ from normal or work is carried out under extreme conditions an expert's advice should be sought out before deciding upon further protective measures.**

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## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on basic physical and chemical properties:

Parameter	Test method:	Remarks:
1. <b>Appearance:</b>		
2. <b>Odour:</b>		
3. Odour threshold:		
4. pH value:	aqueous solution	
5. Melting point/ freezing point:		
6. Initial boiling point/boiling range:		
7. Flash point:		
8. Evaporation rate:		
9. Flammability (solid, gas):		
10. Upper/lower flammability or explosive limits:		explosion limit values in air
11. Vapour pressure:	20 °C 57 °C	
12 Vapour density:	air = 1	
13. Relative density:		
14. Solubility(ies):		
15. Partition coefficient: n-octanol/water:		
16. Self-ignition temperature:		
17. Degradation temperature:		
18. Viscosity:		
19. Explosive properties:		
20. Oxidizing properties:		

### 9.2. Other information:

Density (20 °C): 1,074 g/cm<sup>3</sup>

\*: 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:

Not stable under normal conditions. Do not store above 0°C.

### 10.2. Chemical stability:

Thermally unstable. Unstable at room temperature.

### 10.3. Possibility of hazardous reactions:

Reacts violently with water.

### 10.4. Conditions to avoid:

Contact with water.

### 10.5. Incompatible materials:

Metals, bases, water, amines and alcohol.

### 10.6. Hazardous decomposition products:

In case of thermal decomposition: carbon monoxide, carbon dioxide and hydrochloric acid.

## 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 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.

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- 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:  
LD50 (oral, rat) value: 1070 mg/kg.  
LC50 (inhalative, rat) value: 299 ppm.
- 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.  
In case of inhalation, ingestion or absorption through skin may cause fatal poisoning.  
The substance is extremely destructive for the mucous membranes, respiratory tract, eyes and skin.  
Ingestion: harmful  
Inhalation: May cause fatal poisoning. Burns and serious damage in tissues may occur in the respiratory tract.  
Major symptoms of the poisoning: burning feeling, coughing, wheezing, inflammation of the larynx, laboured breathing, headache, nausea and vomiting.  
After the respiratory tract irritation (after some hours)  
Skin contact: can cause irritation and burns.  
Eye contact: lacrymatory agent. May cause strong eye irritation, and in some cases may cause burning.  
Irritation: may cause strong eye irritation. May cause skin irritation.
- 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:  
Other hazardous or adverse (toxic) effects - apart from the below mentioned effects - are possible.

## SECTION 12: ECOLOGICAL INFORMATION

- 12.1. Toxicity:  
During the hydrolysis, the product decomposes into hydrochloric acid, carbon dioxide and isopropanol.  
Isopropyl alcohol (Isopropanol): miscible with water in all ratio.
- 12.2. Persistence and degradability:  
No data available.
- 12.3. Bioaccumulation potential:  
No data available.
- 12.4. Mobility in soil:  
In case of hydrolysis hydrochloric acid, carbon dioxide and isopropanol is formed, which is completely soluble in water.
- 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:  
The product can be incinerated in a chemical incinerator equipped with an afterburner and scrubber.  
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:  
Dispose according to the relevant regulations. The contaminated packaging should be cleaned with alkaline solution.
- 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:  
ADR/RID: UN2407  
IMDG: UN2407  
IATA: -
- 14.2. UN proper shipping name:  
ADR/RID/IMDG: ISOPROPYL CHLOROFORMATE  
IATA: Air transport: FORBIDDEN.
- 14.3. Transport hazard class(es):  
ADR/RID: 6.1. TFC  
IMDG: 6.1  
IATA: -
- 14.4. Packaging group:  
ADR/RID: I  
IMDG: I  
IATA: -
- 14.5. Environmental hazard:  
ADR/RID: no  
IMDG: no  
IATA: -
- 14.6. Special precautions for user:  
Refrigerated transport.
- 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).

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, Very Bioaccumulative. n.d.: not defined. n.a.: not applicable. ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road. RID: Regulations Concerning the International Carriage of Dangerous Goods by Rail. IATA: International Air Transport Association. IMDG: International Maritime Dangerous Goods.

Key literature references and sources for data:  
previous version of the safety data sheet (dated 05. 03. 2015, version: CLP\_D).

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

**H225** – Highly flammable liquid and vapour.

**H302** – Harmful if swallowed.

**H314** – Causes severe skin burns and eye damage.

**H330** – Fatal if inhaled.

Training advice: 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.

Safety data sheet was prepared by: ToxInfo Kft. [msds-europe.com](http://msds-europe.com)

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