SAFETY DATA SHEET

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

1.1. Product identifier:

HEXYL CHLOROFORMATE

Synonym: Chloroformic Acid Hexyl Ester
CAS number: 6092-54-2
EU number: 228-036-4
Index number: 607-064-00-4
Registration number:

Registration number is not available for this substance since this substance or its use is exempted from registration based on Article 2 of REACH regulation, or registration is not necessary due to the annual tonnage band, or the registration is scheduled to a later registration date.

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

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):
Acute Tox (oral) 3 – H301
Acute Tox. 3 (dermal) – H311
Skin Corr. 1B – H314
Acute Tox. (inhalative) – H331

Warning H statements:
H301 – Toxic if swallowed.
H311 – Toxic in contact with skin.
H314 – Causes severe skin burns and eye damage.
H331 – Toxic if inhaled.

Classification according to Directive 67/548/EEC:
T; Toxic – R23/24/25
C; Corrosive – R34

R phrases referring to the hazards/risks:
2.2. Label elements

IUPAC name: Chloroformic Acid Hexyl Ester
CAS number: 6092-54-2
EU number: 228-036-4

Warning H statements:
H301 – Toxic if swallowed.
H311 – Toxic in contact with skin.
H314 – Causes severe skin burns and eye damage.
H331 – Toxic if inhaled.

Precautionary P statements:
P202 – Do not handle until all safety precautions have been read and understood.
P273 – Avoid release to the environment.
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.
P405 – Store locked up.
P501 – Dispose of contents/container to hazardous waste collection point.

2.3. Other hazards:

The substance meets the PBT criteria according to Annex XIII of Regulation 1907/2006/EC: No.
Information concerning specific hazards for human and environment: See Section 11.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance
IUPAC name: Chloroformic Acid Hexyl Ester
CAS number: 6092-54-2
EU number: 228-036-4
Formula: C₇H₁₃ClO₂
Molar weight: 164, 63
Purity: > 99, 6

Other hazardous contaminant / Concentration: The product contains phosgene and hydrochloric acid in traces.
Other hazardous additives / Concentration: The presence of hazardous additive is not known.
4.1. **Description of first aid measures:**

**GENERAL INFORMATION:** Transport the injured into the hospital.

**IN CASE OF INGESTION:**

Measures:
- Obtain immediate medical attention and show him the label or this safety data sheet.

**IN CASE OF INHALATION:**

Measures:
- Take the victim into fresh air, loosen his clothes and let him rest.
- If the victim is unconscious and breathing, place him into recovery position.
- Obtain immediate medical attention and show him the label or this safety data sheet.

**IN CASE OF SKIN CONTACT:**

Measures:
- Immediately remove the contaminated clothes.
- Immediately wash the contaminated area with plenty of water and soap (for 15 minutes)!
- If symptoms occur, obtain immediate medical attention and show him the label.

**IN CASE OF EYE CONTACT:**

Measures:
- Flush with plenty of flowing water holding eyelids apart (for at least 15 minutes).
- Obtain immediate medical attention and show him the label or this safety data sheet.

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:**

See section 11 for information on health effects and symptoms.

**SECTION 5: FIRE-FIGHTING MEASURES**

5.1. **Extinguishing media:**

5.1.1. Suitable extinguishing media:
- Water spray, dry powder or foam.

5.1.2. Unsuitable extinguishing media:
- Water.

5.2. **Special hazards arising from the substance or mixture:**

- Corrosive substance, reacts violently with water.
- During the thermal decomposition of the product, toxic gases/vapours may be formed.

5.3. **Advice 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.

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 disposal wear suitable personal 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 of the product with skin, eyes and clothing.
Technical measures:
Local vapour suction is needed while handling the product.
Precautions against fire and explosion:
No specific prescription.

7.2. Conditions for safe storage, including any incompatibilities:
Technical measures and storage condition:
Keep in original, closed and labelled container.
The place of storage has to be properly ventilated and cleanable.
Store in dry place.
Follow all instructions on the label.
Store away from heat.
Incompatible materials: water, alcohols, amines, bases, acids.
Packaging material: container lined with adequate polyethylene.

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

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters:

Exposure limit values:

The substance is not regulated with exposure limit value.

<table>
<thead>
<tr>
<th>DNEL</th>
<th>Routes of exposure</th>
<th>Exposure frequency:</th>
<th>Remarks:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker</td>
<td>Consumer</td>
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<td></td>
</tr>
<tr>
<td>no data available</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no data available</td>
<td></td>
<td>Short term (acute)</td>
<td>no data available</td>
</tr>
<tr>
<td>no data available</td>
<td></td>
<td>Long term (repeated)</td>
<td>no data available</td>
</tr>
<tr>
<td>no data available</td>
<td></td>
<td>Short term (acute)</td>
<td>no data available</td>
</tr>
<tr>
<td>no data available</td>
<td></td>
<td>Long term (repeated)</td>
<td>no data available</td>
</tr>
<tr>
<td>no data available</td>
<td></td>
<td>Short term (acute)</td>
<td>no data available</td>
</tr>
<tr>
<td>no data available</td>
<td></td>
<td>Long term (repeated)</td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>PNEC</th>
<th>Exposure frequency:</th>
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<tbody>
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</tr>
<tr>
<td>no data available</td>
<td>Long term (continuous)</td>
<td>no data available</td>
</tr>
<tr>
<td>no data available</td>
<td>Short term (single use)</td>
<td>no data available</td>
</tr>
<tr>
<td>no data available</td>
<td>Long term (continuous)</td>
<td>no data available</td>
</tr>
<tr>
<td>no data available</td>
<td>Short term (single use)</td>
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</tr>
<tr>
<td>no data available</td>
<td>Long term (continuous)</td>
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</tr>
<tr>
<td>no data available</td>
<td>Short term (single use)</td>
<td>no data available</td>
</tr>
<tr>
<td>no data available</td>
<td>Long term (continuous)</td>
<td>no data available</td>
</tr>
</tbody>
</table>

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 the place of regular use/in the workplace, hand washing facility should be available. Disinfectant should be available.
Ensure adequate ventilation, especially in closed areas.
Do not eat or smoke during the processing.
Do not inhale the vapours.
Keep away from skin and eyes.
Wash thoroughly after the work hours.
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:
1. Eye/face protection: use appropriate protective glasses/protective mask according to EN 166.
2. Skin protection:
SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test method:</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>colourless liquid</td>
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<td>Odour</td>
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<tr>
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<td></td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>&lt; 21 °C</td>
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</tr>
<tr>
<td>Initial boiling point/boiling range</td>
<td>60 – 61 °C</td>
<td>10 Pa</td>
</tr>
<tr>
<td>Flash point</td>
<td>61 °C</td>
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<tr>
<td>Evaporation rate</td>
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<td></td>
</tr>
<tr>
<td>Flammability</td>
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<td></td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits</td>
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<td></td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>4 Pa</td>
<td>20 °C</td>
</tr>
<tr>
<td>Vapour density</td>
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<td></td>
</tr>
<tr>
<td>Relative density</td>
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<td></td>
</tr>
<tr>
<td>Solubility (ies)</td>
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</tr>
<tr>
<td>Partition coefficient: n-octanol/water:</td>
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<td></td>
</tr>
<tr>
<td>Self-ignition temperature</td>
<td>no data available</td>
<td></td>
</tr>
<tr>
<td>Degradation temperature</td>
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<td></td>
</tr>
<tr>
<td>Viscosity</td>
<td>no data available</td>
<td></td>
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<tr>
<td>Explosive properties</td>
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<td></td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>no data available</td>
<td></td>
</tr>
</tbody>
</table>

9.2. Other information:
Density (20 °C): 1.007 g/cm³

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity:
Stable at room temperature.

10.2. Chemical stability:
Stable at room temperature.
Decomposes due to heat, moist air or water.

10.3. Possibility of hazardous reactions:
Reacts with alkalis, water, acids, amines and alcohols.

10.4. Conditions to avoid:
Contact with water.

10.5. Incompatible materials:
Alkalis, water, acids, amines and alcohols.

10.6. Hazardous decomposition products:
In case of thermal decomposition carbon monoxide, hydrogen chloride gas and carbon dioxide are formed.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects:
Acute toxicity: Toxic if swallowed, Toxic if inhaled. Toxic in contact with skin.
Skin corrosion/irritation: Causes severe skin burns and eye damage.
Serious eye damage/eye irritation: Causes severe skin burns and eye damage.
Respiratory or skin sensitisation: none known.
Germ cell mutagenicity: none known.
Carcinogenicity: none known.
Reproductive toxicity: none known.
STOT-single exposure: may cause respiratory irritation.
STOT-repeated exposure: none known.
Aspiration hazard: none known.
Toxic if swallowed.
Toxic in contact with skin.
Causes severe skin burns and eye damage.
Toxic if inhaled.

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): 300 – 500 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:
**Acute effects:**
Corrosive substance. In case of inhalation, ingestion or absorption through skin is toxic, may cause fatal poisoning! The product extremely destructs the tissues, the mucous membranes, the upper respiratory tract, the eyes and the skin.
Ingestion: Toxic! Mucous membrane irritation and burning is likely.
Inhalation: Toxic! The inhalation of the vapors may cause mucous membrane irritation, and it may cause convulsions and inflammation in the larynx and in the bronchia.
May cause burning in the respiratory tract. Pneumonia, pulmonary edema may occur.
Symptoms of the exposition: burning feeling, coughing, labored breath, inflammation of the larynx, short breath, headache, nausea, vomiting.
Skin contact: Toxic, corrosive substance, causes skin irritation.
Eye contact: It may cause serious eye damage, the injury of the cornea, the deterioration of the eyesight, blindness.

11.1.5. Delayed and immediate effects as well as chronic effects from short and long-term exposure:
Toxic if swallowed.
Toxic in contact with skin.
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:**
LC50 (aerosol, rat) 0, 980 mg/l/4h

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

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

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

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:**
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:
The packaging material contaminated with hazardous waste should be disposed according to the local regulations.

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: 3277

14.2. UN proper shipping name:
ADR/RID: CHLOROFORMATES, TOXIC, CORROSIVE, N.O.S. (Hexyl-chloroformate)
IMDG: CHLOROFORMATES, TOXIC, CORROSIVE, N.O.S. (Hexyl-chloroformate)
IATA: CHLOROFORMATES, TOXIC, CORROSIVE, N.O.S. (Hexyl-chloroformate)

14.3. Transport hazard class(es)
ADR/RID: 6.1 (8)
IMDG: 6.1 (8)
IATA: 6.1 (8)

14.4. Packaging group
ADR/RID: II
IMDG: II
IATA: II

14.5. Environmental hazard
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 73/78 and the IBC Code:
Not applicable.

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture:


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 453/2010/EU (Section 1-16).
The classification has been amended according to Regulation 1272/2008/EC (CLP) and its amendments.

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.

Data sources: information submitted by the manufacturer.

Relevant R-Phrases (number and full text) of Section 2 and 3:
R 23/24/25 - Toxic by inhalation, in contact with skin and if swallowed.
R 34 - Causes burns.

Relevant H-Phrases (number and full text) of Section 2 and 3:
H301 – Toxic if swallowed.
H311 – Toxic in contact with skin.
H314 – Causes severe skin burns and eye damage.
H331 – Toxic 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 Ltd.

Professional help regarding the explanation of the safety data sheet:
+36 70 335 8480; info@msds-europe.hu

Download of safety data sheet: