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SAFETY DATA SHEET

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

1.1. Product identifier:
Phenyl chloroformate

CAS number: 1885-14-9
EU number: 217-547-8
Registration number: 01-2119957121-45-0001; 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. Name of the 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 1 – H290
Acute toxicity 4 (oral) – H302
Skin corrosion 1B – H314
Acute toxicity 1 (inhalation) – H330
Specific target organ toxicity (STOT) – single exposure 3 – H335
Hazardous to the aquatic environment, Chronic 3 – H412

Warning **H statements:**
H290 – May be corrosive to metals.
H302 – Harmful if swallowed.
H314 – Causes severe skin burns and eye damage.
H330 – Fatal if inhaled.
H335 – May cause respiratory irritation.
H412 – Harmful to aquatic life with long lasting effects.

2.2. Label elements:

IUPAC name: Phenyl chloroformate
CAS number: 1885-14-9
EU number: 217-547-8

GHS05 GHS06

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DANGER

Warning **H statements:**
H290 – May be corrosive to metals.
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H330 – Fatal if inhaled.
H335 – May cause respiratory irritation.
H412 – Harmful to aquatic life with long lasting effects.

Precautionary **P statements:**
P273 – Avoid release to the environment.
P280 – Wear protective clothing/eye protection/face protection.
P284 – Wear respiratory protection.
P303 + P361 + P353 – IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
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.
P304 + P340 + P310 – IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor.

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

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances:

IUPAC name: Phenyl chloroformate
CAS number: 1885-14-9
EU number: 217-547-8
Synonim: Chlorformate-phenyl ester
Formula: $C_7H_5ClO_2$
Molar mass: 156.57 g/mol
Purity: > 99.8%

4. SECTION 1: FIRST AID MEASURES

4.1. Description of first aid measures:
GENERAL INFORMATION: Transport the injured into the hospital.
IN CASE OF INGESTION:
Measures:
- Obtain immediate medical help and/or take the victim to the hospital.

IN CASE OF INHALATION:
Measures:
- Take the victim into fresh air, loosen his clothes and let him rest (recovery position is recommended) and protect from cooling down.
- Obtain immediate medical help and/or take the victim to the hospital!

IN CASE OF SKIN CONTACT:
Measures:
- Immediately remove the contamined clothing and shoes.
- The affected skin surface should be flushed/cleaned with plenty of water and soap for at least 15 minutes, if possible, under a shower.
- Obtain immediate medical help and/or take the victim to the hospital.

IN CASE OF EYE CONTACT:
Measures:
- In case of contact with eyes flush with plenty of flowing water holding eyelids apart and moving the eyeballs (for at least 15 minutes).

- Obtain immediate medical help and/or take the victim to the hospital.

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: FIREFIGHTING MEASURES

5.1. Appropriate extinguishing media:

5.1.1. Suitable extinguishing media:
Carbon dioxide, dry powder, foam.

5.1.2. Unsuitable extinguishing media:
Do not use water!

5.2. Special hazards arising from the substance or mixture:
In case of thermal decomposition, toxic and corrosive vapours, fumes (such as carbon dioxide, carbon monoxide, hydrochloric acid) can form, the inhalation of such combustion products may seriously damage health!
In case of hydrolysis: hydrochloric acid and phenol are formed.

5.3. Advise for fire fighters
Wear a self-contained respiratory device operating with overpressure and compressed air (self-rescue breathing apparatus) and appropriate full protective clothing and protective equipment which avoids contact of the product with skin, eyes and the inhalation of hazardous gases and smoke generated during the combustion.

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 hazardous waste use appropriate 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:
Ensure adequate ventilation (local suction)!
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, tightly closed and properly labelled container.
The place of storage has to be properly ventilated and cleanable.
Store in a cool, dry, well-ventilated place.
Protect from moisture and heat.
Follow all instructions on the label.
Incompatible materials. : water, amines, bases, acides.
Packaging material: Metal container lined with polyethylene, with inert material or polyethylene container.
Avoid the use of non protecte metal containers.

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 control:
25/2000. (IX. 30.) 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. Do not inhale the vapours.
Ensure adequate ventilation, especially in closed areas.
Do not eat or smoke during the processing.
Before the breaks and after the work hours wash your hands and yourself thoroughly.
In the vicinity of the workplace safety shower and eye wash fountain has to be installed.
Personal protective equipment should be selected based on the task to be performed and the risks involved.
Apply proper technique when removing protective clothing and clean contaminated clothing before reuse.

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:
   a. Hand protection: use appropriate protective gloves according to EN 374 (made of PVC or rubber).
   b. Other: use appropriate, acid resistant protective clothes according to EN ISO 6529.
3. Respiratory protection: use adequate respirator (for organic vapours) according to EN 136, EN 141.
4. Thermal hazard: none known.

8.2.3. Occupational exposure controls
Emissions from ventilation or work process equipment should be checked to ensure compliance with environmental regulations. In some cases, technical modifications of fume scrubbers, filters or engineering modifications are necessary to to reduce emissions of the process equipment to acceptable levels.
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:**	colourless, clear liquid		
2. **Odour:**	pungent		

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3.	Odour threshold:	no data available*	
4.	pH value:	not applicable	in aqueous solution
5.	Melting point/ freezing point:	- 38 °C	
6.	Initial boiling point and boiling range:	185 °C	
7.	Flash point:	69 °C	
8.	Evaporation rate:	no data available*	
9.	Flammability (solid, gas):	not applicable (liqud)	
10.	Upper/lower flammability or explosive limits	no data available*	
11.	Vapour pressure	102 Pa 27x10² Pa	20 °C 89 °C
12.	Vapour density:	5,4	air = 1
13.	Relative density	no data available*	
14.	Solubility(ies):	in case of contact with water, decomposes, soluble in common solvents.	
15.	Partition coefficient: n-octanol/water:	no data available*	
16.	Auto-ignition temperature:	500 °C	
17.	Decompositon temperature:	no data available*	
18.	Viscosity:	no data available*	
19.	Explosive properties:	no data available*	
20.	Oxidizing properties:	no data available*	

9.2. Other information:
Density (20 °C): 1.25 g/cm³
Reacts with water with formation of HCl and phenol.
*: The manufacturer did not carry out any tests on this parameter regarding the product or the results of the examinations were not available at the time the data sheet was issued.

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity:
At normal temperature and general conditions of work stabile.

10.2. Chemical stability:
Stable at room temperature.

10.3. Possibility of hazardous reactions:
Reacts with water.
See Section 10.5.

10.4. Conditions to avoid:
Contact with water.

10.5. Incompatible materials:
Bases, water, amines and alcohol.

10.6. Hazardous decomposition products:
In case of thermal decomposition: carbon dioxide, carbon monoxide and hydrogen chloride, in case of hydrolysis: hydrochloric acid and phenol are formed.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects:
Acute toxicity: Harmful if swallowed. Fatal if inhaled.
Skin corrosion/irritation: Causes severe burns.
Serious eye damage/eye irritation: Causes serious eye damage.
Respiratory or skin sensitisation: Based on the information available, the criteria for classification is not fulfilled.
Germ cell mutagenicity: Based on the information available, the criteria for classification is not fulfilled.
Carcinogenicity: Based on the information available, the criteria for classification is not fulfilled.
Reproductive toxicity: Based on the information available, the criteria for classification is not fulfilled.
STOT-single exposure: may cause respiratory irritation.
STOT-repeated exposure: Based on the information available, the criteria for classification is not fulfilled.
Aspiration hazard: Based on the information available, the criteria for classification is not fulfilled.

11.1.1. For substances subject to registration, brief summaries of the information derived from the test conducted
No data available.

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11.1.2. Relevant toxicological properties of the hazardous substances:
LD_{50} (oral, rat): 1581 mg/kg
LD50 (dermal, rabbit): 4800 mg/kg
LC50 (inhalative, rat): 44 ml/m^3/4h

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:
Ingestion: No data available.
Inhalation: May cause pulmonary oedema (even several hours later).
Skin contact: May cause serious irritation and burning.
Eye contact: May cause serious irritation and burning.
Irritation: Extremely irritates the mucuous membranes. Extremely skin and eyes irritating substance.

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.
may cause respiratory irritation.

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
Harmful to aquatic life with long lasting effects.
LC_{50} (Pimephales promelas): 11.6 mg/l/48h;
EC_{50} (Daphnia magna): 29 mg/l/24h

12.2. Persistence and degradability
No data available about the substance.
Phenol (degradation product): quickly biodegradable.

12.3. Bioaccumulation potential:
No data available about the substance.
Phenol (degradation product): Very slightly bioaccumulative.

12.4. Mobility in soil:
The substance decomposes with hydrolysis and hydrochloric acid and phenol is formed, which are soluble in water.
Phenol: solubility in water: 8 w % 20 °C.

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.
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 EWC codes indicated below are only recommendations, but they may have to be changed due to special circumstances, in such cases new classification may be needed.

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.

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SECTION 14: TRANSPORT INFORMATION

14.1. UN Number:
2746

14.2. UN proper shipping name
PHENYL CHLOROFORMATE

14.3. Transport hazard class(es)
ADR/RID: 6.1. TC1
Labels: 6.1 + 8
IMDG: 6.1
IATA: 6.1

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

14.5. Environmental hazard:
ADR/RID: yes
IMDG: yes
IATA: no

14.6. Special precautions for user:
IMDG:
EmS: F-A, S-B

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:

1. REACH international regulation:
   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
2. CLP international regulation:
   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
3. 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 hazard classification of the substance has been changed compared to the previous version.
The safety data sheet has been revised according to Regulation 830/2015/EU (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: carcinogenity, mutagenicity and toxicity for reproduction. PBT: Persistent, bioaccumulative and toxic. vPvB: very persistent and very bioaccumulative. n.d.: not defined. n.a.: not applicable. ÁK value: allowed average concentration. CK value: allowed peak concentration. MK value: maximum concentration. VOC: volatile organic compound

Data sources: previous version of the safety data sheet (31. 10. 2014., version: CLP _ C), data from the REACH registration dossier

Relevant H-Phrases (number and full text) of Section 2:
H290 – May be corrosive to metals.
H302 – Harmful if swallowed.

H314 – Causes severe skin burns and eye damage.
H330 – Fatal if inhaled.
H335 – May cause respiratory irritation.
H412 – Harmful to aquatic life with long lasting effects.

Training instructions: no data available

This safety data sheet had been prepared on the basis of information provided by the manufacturer/supplier of the product and meets the requirements of 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. During the use and handling of the product – within given circumstances – additional, hereby non indicated considerations may 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.

Professional help regarding the explanation of the safety data sheet:
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