

SAFETY DATA SHEET

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

- 1.1. Product identifier:
OXYDIETHYLENE BIS (CHLOROFORMATE)
- Chemical name: Oxydiethylene bis (chloroformate)
CAS number: 106-75-2
EC number: 203-430-9
Index number: 607-141-00-2
Registration number: 01-2120762241-63-0002; Complete registration.
- 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):
Acute toxicity (oral), Hazard Category 4 – H302
Skin corrosion/irritation, Hazard Category 2 – H315
Sensitisation - Skin, Hazard Category 1B – H317
Serious eye damage/eye irritation, Hazard Category 1 – H318
Hazardous to the aquatic environment – Chronic Hazard, Category 2 – H411

Warning H statements:

H302 – Harmful if swallowed.
H315 – Causes skin irritation.
H317 – May cause an allergic skin reaction.
H318 – Causes serious eye damage.
H411 – Toxic to aquatic life with long lasting effects.

- 2.2. Label elements:

Chemical name: Oxydiethylene bis (chloroformate)
CAS number: 106-75-2
EC number: 203-430-9

GHS05



GHS07



GHS09



DANGER

Warning H statements:

- H302** – Harmful if swallowed.
- H315** – Causes skin irritation.
- H317** – May cause an allergic skin reaction.
- H318** – Causes serious eye damage.
- H411** – Toxic to aquatic life with long lasting effects.

Precautionary P statements:

- P234** – Keep only in original container.
- P390** – Absorb spillage to prevent material damage.
- P406** – Store in a corrosive resistant container with a resistant inner liner.
- P273** – Avoid release to the environment.
- P391** – Collect spillage.
- P501** – Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3. Other hazards:

The substance has no other known specific hazards for human or environment.
The substance is not PBT/vPvB.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance:

Chemical name: Oxydiethylene bis (chloroformate)
Synonym: Diethylene glycol bis (chloroformate)
CAS number: 106-75-2
EC number: 203-430-9
Index number: 607-141-00-2
Formula: C₆H₈O₅Cl₂
Molar mass: 231 g/mol
Purity: ≥ 99.5 %

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures:

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

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 administer a corticosteroid from a controlled dose inhaler.

IN CASE OF SKIN CONTACT:

Measures:

- Immediately wash thoroughly with plenty of water, apply sterile dressings, consult a skin specialist.

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:

Symptoms: eye irritation, skin irritation, allergic symptoms.

Hazards: symptoms can appear delayed.

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

Treatment: 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:

May be released in case of fire: hydrogen chloride. The inhalation of such combustion products can cause serious adverse effects on health.

- 5.3. Advice for fire fighters:
Wear self-contained breathing apparatus and chemical-protective clothing.
Suppress gases/vapours/mists with water spray jet.
Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems.

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:
Use personal protective clothing.
Avoid contact with the skin, eyes and clothing. Avoid inhalation.
Keep people away and stay on the upwind side.
6.2. Environmental precautions:
Do not empty into drains. Do not discharge into the subsoil/soil.
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 section 8 and 13.

SECTION 7: HANDLING AND STORAGE

- 7.1. Precautions for safe handling:
Observe conventional hygiene precautions.
Protect against moisture.
Technical measures:
Ensure thorough ventilation of stores and work areas.
Adequate extraction of the vapours is necessary when working with open containers.
In case of insufficient ventilation, wear suitable respiratory equipment.
Precautions against fire and explosion:
Prevent electrostatic charge.
Keep away from sources of ignition.
Keep fire extinguishers at hand.
7.2. Conditions for safe storage, including any incompatibilities:
Technical measures and storage condition:
Segregate from alkalies and alkalizing substances. Keep away from water. Segregate from foods and animal feeds.
Protect from direct sunlight. Protect against heat. Keep only in the original container. Frequently check condition of drums (increase in pressure, bulging, rust).
Product has to be immediately consumed or disposed of, if signs of pressure increase or bulging are being detected at a drum. Formation of CO₂ and build-up of pressure possible. Danger of bursting when sealed gastight.
Keep container tightly closed in a cool, well-ventilated place.
Storage stability:
Storage temperature: < 40 °C
Storage duration: 6 months
Improper storage may result in a pressure build-up in the storage containers.
From the data on storage duration in this safety data sheet no agreed statement regarding the warrantee of application properties can be deduced.
Incompatible materials: see section 10.5.
Packaging material: no special prescription.
7.3. Specific end use(s):
For the relevant identified use(s) listed in section 1 the advice mentioned in this section 7 is to be observed.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

- 8.1. Control parameters:

Occupational exposure limit values (Commission Directive 2000/39/EC of 8 June 2000):
The substance is not regulated with exposure limit value.

PNEC values:

Freshwater: 36 mg/l
Freshwater – intermittent release: 59 mg/l
Marine water: 7 mg/l
STP: 200 mg/l

Freshwater sediment: 28 mg/kg sediment dry weight
 Marine water sediment: 5.7 mg/kg sediment dry weight
 Air: no hazard identified
 Soil: 1.5 mg/kg soil dry weight
 Secondary poisoning: no potential for bioaccumulation

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.

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

Avoid contact with the skin, eyes and clothing. Avoid inhalation of vapours.

When using, do not eat, drink or smoke.

Hands and/or face should be washed before breaks and at the end of the shift.

At the end of the shift the skin should be cleaned and skin-care agents applied.

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

2. Skin protection:

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

Suitable chemical resistant safety gloves (EN 374) also with prolonged, direct contact (recommended: protective index 6, corresponding > 480 minutes of permeation time according to EN 374):

E.g. nitrile rubber (0.4 mm), chloroprene rubber (0.5 mm), butyl rubber (0.7 mm) etc.

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: wearing of closed work clothing is required additionally to the stated personal protection equipment.

3. Respiratory protection: in case of vapour/aerosol release, use combination filter for gases/vapours of organic compounds and solid and liquid particles (e.g. EN 14387, Type A-P2).

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.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties:

Parameter:		Test method:	Remarks:
1. Appearance:	colourless liquid		
2. Odour:	no data available*		
3. Odour threshold:	no data available*		
4. pH:	no data available*		
5. Melting point/freezing point:	melting range: 6.0-7.2 °C		
6. Initial boiling point/boiling range:	264.5 °C	1013.25 hPa	
7. Flash point:	182.2 °C	101325 Pa	
8. Evaporation rate:	no data available*		
9. Flammability (solid, gas):	not applicable		
10. Upper/lower flammability or explosive limits:	no data available*		
11. Vapour pressure:	0.0016 hPa	20 °C	
12. Vapour density:	no data available*		

13. Relative density:	1.384	20 °C
14. Solubility(ies):	not applicable (substance is hydrolytically unstable at pH 4, 7 and 9 (half-life less than 12 hours))	
15. Partition coefficient: n-octanol/water:	not applicable (substance decomposes)	20 °C
16. Auto-ignition temperature:	317 °C	101325 Pa
17. Decomposition temperature:	no data available*	
18. Viscosity:	dynamic: 8.76 mPa.s	20 °C
19. Explosive properties:	non explosive	
20. Oxidizing properties:	no oxidising properties	

9.2. Other information:

Surface tension: not surface active (based on the chemical structure).

Flammability (liquid): non-flammable liquid.

The substance has no pyrophoric properties and does not liberate flammable gases on contact with water.

There are no chemical groups associated with explosive properties present in the molecule.

The substance is incapable of reacting exothermically with combustible materials on the basis of the chemical structure.

The dissociation constant study does not need to be performed as the substance is hydrolytically unstable.

*: 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:

No hazardous reactions if stored and handled as prescribed.

Corrosive effect to metals: Corrodes metals in the presence of water.

Forms no flammable gases in the presence of water.

10.2. Chemical stability:

Even when products are stored appropriately a slowly decomposition reaction takes place. If the storage conditions and duration are taken into account, no hazard is caused by the product.

10.3. Possibility of hazardous reactions:

At elevated temperatures gas forming exothermic decomposition reaction may occur. The formation of gaseous decomposition products builds up pressure in tightly closed containers if the product is greatly overheated. Reacts with water and basic components to generate heat. Reacts with alcohols, amines, aqueous acids and alkalies. Reacts with water and moisture, with formation of hydrogen chloride. Evolution of corrosive gases/vapours. Partly very violent reactions with bases and numerous organic classes of substances such as alcohols and amines. Impurities promote decomposition. Energy is released when reacting with e.g. acids, alkaline reacting substances, amines or catalysts. ppm traces of heavy metals reduce the onset temperature and lead to instability and exothermic product release with gas formation. Vapours may form ignitable mixture with air.

10.4. Conditions to avoid:

Temperature: > 40 °C

Avoid all sources of ignition: heat, sparks, open flame. Avoid direct sunlight. Avoid electro-static charge. Avoid humidity.

Avoid heat. Avoid excessive temperatures. Avoid contamination.

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

10.5. Incompatible materials:

Alkaline reactive substances, alcohols, bases, amines, iron compounds, heavy metal salts, water.

10.6. Hazardous decomposition products:

Hydrogen chloride, bis(2-chloroethyl) ether, 2,2' -oxybisethanol; diethylene glycol.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects:

Acute toxicity: Harmful if swallowed.

Skin corrosion/irritation: Causes skin irritation.

Serious eye damage/eye irritation: Causes serious eye damage.

Respiratory or skin sensitisation: May cause an allergic skin reaction.

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): 1650 mg/kg bw
LD50 (dermal, rabbit): 3400 mg/kg bw
LC0 (inhalative, rat): 0.087 mg/l air/8h
LD50 (intraperitoneal, mouse): 56 mg/kg bw
LC50 (intraperitoneal, mouse): 0.04 ml/kg bw
Skin irritation/corrosion:
Rabbit: the results indicate a strong potential for skin irritation.
Eye irritation:
Rabbit: highly irritating.
Skin sensitization:
Guinea pig: sensitizing.
Genetic toxicity:
in vitro gene mutation study in bacteria:
Species: S. typhimurium TA 1535, TA 1537, TA 98 and TA 100
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:
Acute effects:
Irritates the mucous membranes. May cause pneumonia if inhaled. The symptoms may be delayed.
Ingestion: harmful if swallowed.
Skin contact: Skin irritating.
Eye contact: Strongly irritant, may cause serious eye damage.
- 11.1.5. Delayed and immediate effects as well as chronic effects from short and long-term exposure:
Harmful if swallowed.
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye damage.
- 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:
Toxic to aquatic life with long lasting effects.
Short-term toxicity to fish:
LC50 (Leuciscus idus): 1.78 mg/l/96h (nominal) (DIN 38412-15)
LC50 (Pimephales promelas): 75200 mg/l/96h (measured) (OECD 203)
LC50 (Cyprinus carpio): 4.92 mg/l/96h (OECD 202)
Short-term toxicity to aquatic invertebrates:
EC50 (Daphnia magna): > 10000 mg/l/24h (nominal) (DIN 38412-11)
EC50 (Daphnia magna): 0.492 mg/l/48h (OECD 202)
Toxicity to aquatic algae and cyanobacteria:
EC3 (Scenedesmus quadricauda): 2700 mg/l/7d (nominal)
EC50 (green algae): 62052 mg/l/96h (ECOSAR v1.11)
ErC50 (Pseudokirchneriella subcapitata): 0.0492 mg/l/72h (OECD 201)
Toxicity to microorganisms:
EC10 (Pseudomonas putida): 69 mg/l/17h (not neutralized, nominal)
EC50 (activated sludge): > 1000 mg/l/3h (OECD 209)
EC20 (activated sludge): > 1995 mg/l/30min (nominal) (ISO 8192)
EC0 (Pseudomonas putida): 80000 mg/l/16h (nominal)
- 12.2. Persistence and degradability:
Phototransformation in air:

Oxydiethylene bis(chloroformate) and its hydrolysis product diethylene glycol will be rapidly degraded by photochemical processes after evaporation or exposure to air. This estimation refers to dry air. In mist, rain, droplets and aerosols, hydrolysis will be the major fate process in air due to the short half-life of the chloroformate in aqueous solutions.

Hydrolysis:

Oxydiethylene bis(chloroformate) rapidly hydrolyses in contact with water.

Hydrolysis of its transformation product diethylene glycol is not expected according to structural properties.

Biodegradability:

Oxydiethylene bis(chloroformate) rapidly hydrolyses in contact with water; therefore, the assessment of its biodegradability is not relevant.

Its hydrolysis product diethylene glycol is readily biodegradable, but failing the 10-d window.

Biodegradation does not apply to the inorganic hydrolysis products (HCl and CO₂).

12.3. Bioaccumulation potential:

Significant accumulation in organisms is not to be expected.

12.4. Mobility in soil:

Adsorption:

It can be concluded that adsorption of oxydiethylene bis(chloroformate) as well as its hydrolysis product diethylene glycol to the solid soil phase are not to be expected.

Henry's Law Constant:

Oxydiethylene bis(chloroformate) rapidly hydrolyses in contact with water; therefore, the assessment of the parent compound is of low relevance. Oxydiethylene bis(chloroformate) as well as its hydrolysis product diethylene glycol will not evaporate into the atmosphere from the water surface.

Environmental distribution:

Over time, the substance and its hydrolysis product diethylene glycol will preferentially distribute into the compartment water (100%).

12.5. Results of PBT and vPvB assessment:

The substance is not PBT/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:

07 02 07* halogenated still bottoms and reaction residues

*: hazardous waste.

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:

ADR/RID; ADN; IMDG; IATA: UN 3265

14.2. UN proper shipping name:

ADR/RID; ADN: CORROSIVE, ACIDIC, ORGANIC LIQUID, N.O.S. (Oxydiethylene bis(chloroformate))

IMDG; IATA: CORROSIVE, ACIDIC, ORGANIC LIQUID, N.O.S. (Oxydiethylene bis(chloroformate))

14.3. Transport hazard class(es):

ADR/RID; ADN; IMDG; IATA: Class: 8

Labels: 8

ADR: Tunnel restriction code: E

IMDG: EmS: F-A, S-B

14.4. Packaging group:

ADR/RID; ADN; IMDG; IATA: III

14.5. Environmental hazard:

ADR/RID; ADN; IATA: Hazardous for the environment

IMDG: Marine pollutant

14.6. Special precautions for user:

Warning! CORROSIVE ON METALS.

- 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 classification of the substance has been changed 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, 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. ADN: The European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways. IMDG: International maritime code for dangerous goods. IATA: International Air Transport Association.

Key literature references and sources for data:

previous version of the safety data sheet (12. 03. 2018, version CLP _ C),
REACH Registration dossier.

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

- H302** – Harmful if swallowed.
- H315** – Causes skin irritation.
- H317** – May cause an allergic skin reaction.
- H318** – Causes serious eye damage.
- H411** – Toxic to aquatic life with long lasting effects.

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.

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