

Safety data sheet according to 1907/2006/EC
 Company: GHC Gerling, Holz & Co. Handels GmbH
 Product: **Oxalyl chloride**

Created at: 20.10.2004
 Revised at: 27.03.2007
 Print date: 27.03.2007

Art. No.: **2530**
 Version: **0004**
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OXALYL CHLORIDE

1. Identification of the substance / preparation and of the company

Substance / preparation:

Trade name: Oxalyl chloride
 Other means of identification: Oxalyl dichloride
 Use of the substance / preparation: Chemical for synthesis

Company identification:

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2. Hazards identification

Classification:

F - Highly flammable. C - Corrosive.
 Reacts violently with water, liberating extremely flammable gases. (R 14/15). Harmful by inhalation and if swallowed (R 20/22). Contact with water liberates toxic gas (R 29). Causes severe burns (R 35). Irritating to respiratory system (R 37).

Additional human health effect(s) and environmental effect(s):

Acute toxicity: Strong irritating effects to the mucous membrane and skin; pulmonary damage, cardiac dysfunction. Chronical toxicity: No data available.
 Dangerous substances are released in case of decomposition. Product decomposes in water.
 The vapour of the product is heavier than air and may accumulate below ground level, in pits, channels and basements in higher concentration.

3. Composition / Information on ingredients

Product name:	Oxalyl dichloride	Chemical formula:	CICOCOCI
Hazard(ous) Symbol(s):	F, C	Concentration:	99 %
R-Phrases:	R 14/15-20/22-29-35-37	CAS-No.:	79-37-8
(Full text of R-phrase: see under section 15 and 16.)		EC-No. (EINECS):	201-200-2
Not applicable.		UN-No.:	3159

Hazard(ous) impurity(ies)	Chem. formula	%	CAS-No.	Hazardous symbols	R-Phrases
Phosgene	CICOCI	≤ 0,2	75-44-5	T+	R 26-34
Trichloroacetyl chloride	Cl ₃ COCl	≤ 0,5	76-02-8	T+	R 14-22-26-35

4. First-aid measures

General information:

Take off immediately all contaminated clothing not adhering to the body. Seek medical advice. Note precautions for self-protection of first-aider.

On inhalation:

Move affected person into fresh air, keep warm and allow to rest. As soon as practicable treat initially with a corticosteroid spray, e.g. Ventolair metered dose inhaler. If there is difficulty in breathing, give oxygen. In case of respiratory arrest, ventilation with ventilator or perform mouth to nose or mouth to mouth respiration. Medical treatment necessary.

On contact with skin:

On contact with the skin, wash immediately with water for 10 minutes. In case of extensive wetting remove the liquid mechanically (e.g. dab away using wadding or cellulose material) before washing. Medical treatment necessary.

On contact with the eyes:

On contact with the eyes, rinse immediately with plenty of water for 10 minutes. Protect uninjured eye. Seek ophthalmic treatment. Continue the rinsing.

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If swallowed:

Rinse out mouth and then drink plenty of water. Do not induce vomiting. Keep affected person warm and allow to rest. Medical treatment necessary.

Information for the doctor:

The acute intoxication will be initially affected by irritating and corrosive effects. Dysfunctions of the heart on toxication after inhalation was referred to the effect of the Oxalate-ions (precipitation of calcium). In part they can also be aftereffects of the irritating effects.

5. Fire- fighting measures**Suitable extinguishing media:**

Dry powder, carbon dioxide, sand.

Extinguishing media which must not be used for safety reasons:

Water, foam.

Special exposure hazards arising from the substance, combustion products or resulting gases:

Substances potentially set free in case of fire: Hydrogen chloride, Carbon monoxide, Carbon dioxide.

Special protective equipment for firefighting:

Use breathing apparatus with independent air supply (isolated). Wear chemical protection clothing.

Additional information:

Substance is combustible (Flash point > 100 °C). Cool surrounding containers with water spray. If possible, take container out of dangerous zone. Heating causes a rise in pressure, risk of bursting and explosion

6. Accidental release measures

Personal precautions: see section 8. Warn affected surroundings.

Environmental precautions:

Keep away sources of ignition. Contain spillage.

Do not allow to enter into soil / subsoil. Do not allow to enter drains / surface waters / groundwater.

In case of entry into waterways, soil or drains, inform the responsible authorities.

Methods for cleaning up:

Pick up with absorbent material (limestone or anhydrous soda). Treat recovered material observing environmental regulations. Attention! Substance reacts violently with water, liberating extremely flammable carbon monoxide. Avoid contact with water.

7. Handling and Storage**Handling:**

- Hints for safe handling: It is essential to design all working procedures principally to avoid the following: Inhalation of substance, skin contact, eye contact. Take care to keep workplace clean and dry. Product may not get in contact with water. Open and handle container with care. If release of the substance cannot be prevented, then it should be exhausted directly at place of formation. Keep vapours away from hot surfaces (risk of decomposition). Tightly screw on the valve outlet protection seal and the valve protection cap. Prevent cylinders from falling over.
- Technical measures: When filling, transferring, measuring out or sampling have to be used: closed arrangements, which is properly specified and suitable for the product, its supply pressures and temperatures. Dangerous pressure levels can result from the effect of heat. Therefore suitable safety arrangements must be used.
- Hints for protection against fire and explosion: Product is combustible. Explosion area. Have fire-extinguishers in readiness. Take precautionary measure against electrostatic loading. Keep away from sources of ignition. Do not use any tools that cause sparks.
- Other hints: Ensure good aeration and ventilation of the workplace. Since vapours / gases are heavier than air, corresponding ventilation must be provided in the basement area.

Storage:

- Requirements for storage rooms and vessels: Keep container tightly closed and store in a cool, well ventilated place. Protect from heat, direct sunlight and humidity. Tightly screw on the valve outlet protection seal and the valve protection cap when storing. Prevent cylinders from falling over.

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- Packaging materials: suitable: Polyethylene, glass bottle (as an inner receptacle in a shatter resistant outer packaging), enamel.
Unsuitable: iron, rubber and porous materials acting as catalysts for the decomposition.
- Hints on storage assembly: Do not store with pharmaceuticals, foods, and animal feeds including additives; infectious, radioactive and explosive materials; Compressed, liquefied, Cold liquefied gases or pressure dissolved gases; spontaneously flammable materials; substances liberating flammable gases in contact with water; organic peroxides; oxidizing agents of group 1 - 3 of TRGS 515; preparations containing ammonium nitrate, Combustible materials, e.g. paper, carton, wood, plastic film. This product should not be stored with substances, which dangerous chemical reactions are possible (see section 10).
- Further information on storage conditions: Storage temperature: at room temperature (+ 15 °C to + 25 °C).
- Germany: The provisions of TRGS 280 should be observed.
Storage class: 4.3 (Substances that form flammable gases in contact with water)

Specific use(s): No applicable.

8. Exposure limitation and personal protective equipment

Exposure limits:

Substance	CAS-No.	Limit (term)	Limit		Upper limit exceeding factor	Source
			[ppm]	[mg/m ³]		
Phosgene	75-44-5	TWA (8 h)	0.1	0.4		NIOSH 2005
Phosgene	75-44-5	TWA (15 min)	0.2	0.8		NIOSH 2005
Phosgene	75-44-5	PEL	0.1	0.4		NIOSH 2005
Phosgene	75-44-5	AGW	0.02	0.082	2(l)	TRGS 900, Issue Jan. 2006

Occupational exposure controls:

- Respiratory protection: Escapes with adequate ventilation. In an emergency (e.g. unintentional release of substance) respiratory protection must be worn. Observe the wear time limits. Filter apparatus against low-boiling organic compounds, group 1: Gas filter AX, identification colour: brown.
Respiratory protection: insulating device. Use for concentrations above the usage limits for filter device, for oxygen concentration below 17 % volume, or in circumstances which are unclear.
Use only respiratory protection equipment that complies with national / international standards.
- Hand protection: Wear chemical resistant protective gloves. The glove material must be sufficient impermeable and resistant to the substance. Check the tightness before wear. Protect the skin. Ask the producer for suitable materials. Following materials are unsuitable for protective gloves: Natural rubber / Natural latex – NR; Polychloroprene – CR; Nitrile rubber/Nitrile latex – NBR; Butyl rubber – Butyl; Fluoro carbon rubber – FKM; Polyvinyl chloride - PVC.
- Eye protection: Sufficient eye protection must be worn. Wear chemical safety goggles. If the face is at risk as well as the eyes, a protective shield must also be worn. If vapours or aerosols that may injure the eyes arise, then safety of the eyes can best be guaranteed by wearing a full mask.
- Protective clothing: Depending on the danger, wear thick aprons and boots or chemical protection clothing.
- General health and safety measures: Do not eat, drink, smoke or take snuff while working. Keep away of foods drinks and feeding stuffs. Wash hands before breaks and on finishing work.
Avoid contact with eyes, skin and clothing. Do not breathe gas/fume/vapour/spray.

Environmental exposure controls See section 7. No additional measures necessary.

9. Physical and chemical Properties

General information:

Physical state:	Liquid
Colour:	Colourless, clear
Odor:	pungent

Important health, safety and environmental information:

pH-value:	No data available
Melting-point / Melting range:	- 12 °C
Boiling point / Boiling range:	63 °C
Flash point:	> 100 °C
Explosion limits: lower/upper:	No data available
Ignition temperature:	No data available
Critical temperature:	No data available
Critical pressure:	No data available

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Vapour pressure:	232 hPa	(at 20 °C)
Vapour pressure:	612 hPa	(at 47 °C)
Density:	1.478 g/cm ³	(at 20 °C)
Water solubility:	Decomposition	(at 20 °C)
Fat solubility:	No data available.	
Solubility in org. menstruum:	No data available.	
Partition coefficient:	No data available.	n-Octanol / water (log p O/W)
Viscosity (dynamic):	No data available.	(at 25 °C)

10. Stability and Reactivity

Conditions to avoid: warmth, warmth sources, light, humidity

Materials to avoid:

Oxidising agents, base. Violent exothermic reaction, development of heat with: Water -> Decomposition -> Hydrogen chloride, Carbon monoxide, Carbon dioxide. Risk of explosion with: Dimethyl sulfoxide. Violent exothermic reaction, development of heat, risk of explosion with: Alkali metals (rare).

Hazardous decomposition products: Hydrogen chloride, Carbon monoxide, carbon dioxide.

Further informations:

Decomposition at > 560 °C.

11. Toxicological information

Toxicity tests:

- Acute toxicity:
 - LC₅₀ inhalative, rat: 1850 ppm = 350 mg/l (1 hour exposure)
 - LC₅₀ inhalative, rat: 2.4 mg/l (4 hours exposure)
 - LD₅₀ oral, rat: 200 mg/kg
 - LD₅₀ dermal, rat: no data available
- Specific symptoms in animal studies: Studies on the acute toxicity indicate a primary effect as an irritating gas. With rats the inhalation of 462 ppm for one hour resulted in shortness of breath, increased salivation, necrosis at the nose, and lesion of the callus. Above 866 ppm in addition changes in the lung tissue were detected. As one hour LC₅₀-value 1850 ppm was determined. The histopathological findings (acute bronchiolitis, exudate in the alveoli, congestion, and miscellaneous indications of inflammation) suggest that the development of pulmonary oedema was the main cause of death.
- Irritant-/corrosive effects: The strong hygroscopic and in the air fumigating liquid corrosively affects the mucosa an the skin. Also vapours act as a strong irritating agent on the respiratory tract. On inhalation of low concentrations for one time a vitriolic taste of smoke was felt, resulting in a dysfunction of appetite. Further disorders did not appear in the following 4 – 10 days. Later on appeared strong cough at night and shortness of breath.

Abnormal fatigue, obnubilation, and shortness of breath appeared already on comparatively low muscular effort, the heart was enlarged, the pulse rate was increased. Nausea, diarrhoea and impaired visions appeared. Recovery was obtained after four weeks, but shortness of breath and increased action of the heart on low muscular effort remained.
- Sensitization: No data available.
- Subacute to chronic toxicity: No data available.
- Carcinogenic, mutagenic and reproductive toxic effects:
 - Carcinogenicity: No data available.
 - Genotoxicity: No data available.
 - Reproductive toxicity and fetotoxicity: No data available.

Experiences made in practice:

- Observations relevant for classification / Other observations: No data available.

General remarks: -

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12. Ecological information

Ecotoxicity:

Fish toxicity: LC₅₀: No data available.
 Daphnia toxicity: EC₅₀: No data available.
 Algae toxicity: EC₅₀: No data available.

Mobility:

- Surface tension: No data available.
- Transport soil-water: Adsorption coefficient: log KOC = No data available.
- Transport water-air: Henry-constant: (H) No data available.
- Transport soil-air: no data available.
- Evaluation: Reaction with water liberates toxic products of decomposition.

Information about elimination (persistence and degradation):

- Abiotic degradation: No data available.
- Biotic degradation: No data available.

Taking up and accumulation in organisms (bioaccumulation potential):

No data available.

Other adverse effects:

- Ozone depletion potential (ODP) / Global warming potential (GWP): No data available.

Further ecological information:

- Chemical oxygen demand (COD) / Biochemical oxygen demand (BOD): not applicable.
- Other hints: Contact with water liberates hydrogen chloride, carbon monoxide and carbon dioxide.

13. Disposal considerations

Disposal / Waste (product): Ask the supplier / manufacturer.
 Disposal in accordance with national / local legislation / regulations.

List of proposed waste codes / waste designations in accordance with EWC:

07 01 07 – halogenated still bottoms and reaction residues
 Hazardous waste pursuant to Directive 91/689/EEC.

Uncleaned Packages: Return non decontaminated packaging at residual pressure and with the cap nut screwed closed on the side connective fitting to the supplier / manufacturer.

14. Transport information

Land transport (ADR / RID):

Class:	4.3	classification code: WC1	Hazard identification No.:	X382
UN-No.:	3129	Packing group: I		
Label(s):	4.3 + 8	Name and description: WATER-REACTIVE SUBSTANCES, LIQUID, CORROSIVE, N.O.S. (Oxalyl chloride)		

Marine transport (IMDG):

Class:	4.3	Packing group: I	EmS: F-G; S-N	marine pollutant: no
UN-No.:	3129	Subsidiary risk: 8		
		Proper shipping name (description): WATER-REACTIVE SUBSTANCES, LIQUID, CORROSIVE, N.O.S. (Oxalyl chloride)		

Air transport ICAO/IATA:

forbidden

Other informations: -

15. Regulatory information

Classification.

F, R 14/15
 Xn; R 20/22
 R 29
 C; R 35
 Xi; R 37

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Labelling:

- Hazardous symbols: F Highly flammable
C Corrosive

- R-phrase: R 14/15 Reacts violently with water, liberating extremely flammable gases.
R 20/22 Harmful by inhalation and if swallowed.
R 29 Contact with water liberates toxic gas.
R 35 Causes severe burns.
R 37 Irritating to respiratory system.

- S-phrase: S 13 Keep away from food, drink and animal feeding stuffs.
S 16 Keep away from sources of ignition - No smoking.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 27 Take off immediately all contaminated clothing.
S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S 38 In case of insufficient ventilation, wear suitable respiratory equipment.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

National regulations:

Observe the national legislative regulations.

EU / Germany

- Directive 96/82/EC / 12. BImSchV – Störfallverordnung: Dangerous substance according to Directive 96/82/EC.
- Directive 1999/13/EC / 31. BImSchV – VOC-Verordnung: This chemical is a VOC according to Directive 1999/13/EC.
- Water hazard class (Germany): WGK 3 - severe hazard to waters (classification according VwVwS, Annex 3)
- Gefahrstoff-Verordnung: GefStoffV Annex IV No. 10 "Decorating objects containing the substance or its formulations that require labelling must not be produced"

Other regulations: None.

16. Other informations

The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. This applies to product which conforms to the specification, unless otherwise stated. In the case of combinations and mixtures one must make sure that no new dangers can arise. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and protection of human welfare and the environment.