ChemicalBook

Chemical Safety Data Sheet MSDS / SDS

Chlorothalonil

Revision Date:2024-04-06 Revision Number:1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product name	: Chlorothalonil
CBnumber	: CB4132626
CAS	: 1897-45-6
EINECS Number	: 217-588-1
Synonyms	: Chlorothalonil,CHLOROTALONIL

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	: For R&D use only. Not for medicinal, household or other use.
Uses advised against	: none

Company Identification

Company	: Chemicalbook
Address	: Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing
Telephone	: 400-158-6606

SECTION 2: Hazards identification

Classification of the substance or mixture

Serious eye damage, Category 1

Skin sensitization, Category 1

Acute toxicity - Category 2, Inhalation

Specific target organ toxicity – single exposure, Category 3

Carcinogenicity, Category 2

Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1

Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

Label elements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H225 Highly Flammable liquid and vapour

H302 Harmful if swallowed

H312 Harmful in contact with skin

H317 May cause an allergic skin reaction

H318 Causes serious eye damage

H319 Causes serious eye irritation

H330 Fatal if inhaled

H332 Harmful if inhaled

H335 May cause respiratory irritation

H351 Suspected of causing cancer

H410 Very toxic to aquatic life with long lasting effects

Precautionary statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P284 Wear respiratory protection.

P310 Immediately call a POISON CENTER or doctor/physician.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continuerinsing.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

Prevention

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P272 Contaminated work clothing should not be allowed out of the workplace.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P271 Use only outdoors or in a well-ventilated area.

P284 [In case of inadequate ventilation] wear respiratory protection.

P203 Obtain, read and follow all safety instructions before use.

P273 Avoid release to the environment.

Response

P305+P354+P338 IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P317 Get medical help.

P302+P352 IF ON SKIN: Wash with plenty of water/...

P333+P317 If skin irritation or rash occurs: Get medical help.

P321 Specific treatment (see ... on this label).

P362+P364 Take off contaminated clothing and wash it before reuse.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P316 Get emergency medical help immediately.

P320 Specific treatment is urgent (see ... on this label).

P319 Get medical help if you feel unwell.

P318 IF exposed or concerned, get medical advice.

P391 Collect spillage.

Storage

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

Disposal

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards

no data available

SECTION 3: Composition/information on ingredients

Substance

Product name	: Chlorothalonil
Synonyms	: Chlorothalonil,CHLOROTALONIL
CAS	: 1897-45-6
EC number	: 217-588-1
MF	: C8Cl4N2
MW	: 265.91

SECTION 4: First aid measures

Description of first aid measures

If inhaled

Fresh air, rest.

Following skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention .

Following eye contact

Rinse with plenty of water (remove contact lenses if easily possible). Refer immediately for medical attention.

Following ingestion

Rinse mouth. Refer for medical attention .

Most important symptoms and effects, both acute and delayed

SYMPTOMS: Symptoms of exposure to this compound include dermatitis and gastrointestinal, skin and upper respiratory tract irritation. ACUTE/CHRONIC HAZARDS: This compound is a positive animal carcinogen. When heated to decomposition it emits toxic fumes of chloride ion, NOx and cyanide ion. (NTP, 1992)

Indication of any immediate medical attention and special treatment needed

1. Wash off dermal contamination with soap and water. Remove contamination of the eyes by flushing with copious amounts of water. If irritation persists, specialized medical care should be obtained. Substituted benzenes

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SECTION 5: Firefighting measures

Extinguishing media

Fire Extinguishing Media: CO2, foam, dry chemical or water.

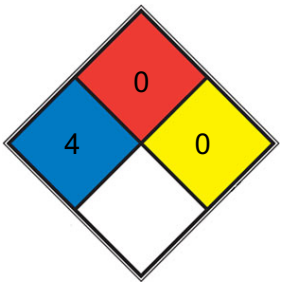
Specific Hazards Arising from the Chemical

Literature sources indicate that this compound is nonflammable. (NTP, 1992)

Advice for firefighters

Use water spray, foam, powder, carbon dioxide.

NFPA 704



■	HEALTH	4	Very short exposure could cause death or major residual injury (e.g. hydrogen cyanide, phosgene, methyl isocyanate, hydrofluoric acid)
■	FIRE	0	Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand. Materials that will not burn in air when exposed to a temperature of 820 °C (1,500 °F) for a period of 5 minutes.(e.g. Carbon tetrachloride)
■	REACT	0	Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium,N2)
□	SPEC. HAZ.		

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal protection: chemical protection suit and protective gloves. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

Environmental precautions

Personal protection: chemical protection suit and protective gloves. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

Methods and materials for containment and cleaning up

Solid spillage should be picked up with an industrial vacuum cleaner and disposed of in accordance with local regulations.

SECTION 7: Handling and storage

Precautions for safe handling

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

Conditions for safe storage, including any incompatibilities

Provision to contain effluent from fire extinguishing. Separated from food and feedstuffs. Store in an area without drain or sewer access.Keep in cool, dry, ventilated place.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

MAK sensitization of skin (SH)

Biological limit values

no data available

Exposure controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

Individual protection measures

Eye/face protection

Wear safety spectacles or eye protection in combination with breathing protection if powder.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties

Information on basic physicochemical properties

Physical state	Powder
Colour	White
Odour	Odorless in pure form
Melting point/freezing point	251°C(lit.)
Boiling point or initial boiling point and boiling range	350°C(lit.)
Flammability	Liquid formulations containing organic solvents may be flammable. Gives off irritating or toxic fumes

	(or gases) in a fire.
Lower and upper explosion limit/flammability limit	no data available
Flash point	126°C(lit.)
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	less than 0.1 mg/mL at 70° F (NTP, 1992)
Partition coefficient n-octanol/water	log Kow = 3.05
Vapour pressure	7.6×10^{-5} Pa (25 °C)
Density and/or relative density	1.71g/cm3
Relative vapour density	no data available
Particle characteristics	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on heating. This produces toxic and corrosive fumes including hydrogen chloride (see ICSC 0163) and nitrogen oxides.

Chemical stability

Thermally stable at ambient temperatures. Stable to u.v. light in aqueous media and in crystalline state. Stable in acidic and moderately alkaline aqueous solutions; slow hydrolysis at pH >9.

Possibility of hazardous reactions

Chlorothalonil is non-flammable and non-explosive.CHLOROTHALONIL is stable in neutral or acidic aqueous media. May react violently with strong oxidizing acids [Farm Chemicals Handbook]. Incompatible with other oxidizing agents such as peroxides and epoxides. Breaks down slowly in basic aqueous media (half-life 38.1 days at pH 9). [Farm Chemicals Handbook].

Conditions to avoid

no data available

Incompatible materials

Cyanides

Hazardous decomposition products

May decompose at high temp to emit hydrogen chloride.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Mouse oral 3700 mg/kg

- Inhalation: LC50 Rat inhalation 310 mg/cu m/1hr
- Dermal: LD50 Rabbit (albino) percutaneous >5000 mg/kg

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

Cancer Classification: Group B2 Probable Human Carcinogen

Reproductive toxicity

no data available

STOT-single exposure

The substance is severely irritating to the eyes. The substance is irritating to the respiratory tract. The substance is mildly irritating to the skin.

STOT-repeated exposure

Repeated or prolonged contact with skin may cause dermatitis. Repeated or prolonged contact may cause skin sensitization.

Aspiration hazard

A harmful concentration of airborne particles can be reached quickly when dispersed.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50; Species: /Oncorhynchus mykiss/ (Rainbow trout); Concentration: 76 ug/L for 96 hr /Technical chlorothalonil; conditions of bioassay not specified
Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Water flea) age <24 hr; Conditions: static; Concentration: 70 ppb for 48 hr (95% confidence limit: 34.2-143 ppb); Effect: intoxication, immobilization) /96% AI formulated product
Toxicity to algae: EC50; Species: Pseudokirchneriella subcapitata (Green algae); Conditions: static; Concentration: 190 ppb/120 hr (95% confidence limit: 180-210 ppb); Effect: decreased population abundance /97.9% AI formulated product
Toxicity to microorganisms: no data available

Persistence and degradability

AEROBIC: In an aerobic grab sample study, 60.5% chlorothalonil (initial concentration of 38 ppm) remained in an alluvial silty loam (25 deg C and pH 6.4) after 7 days(1). At an initial concentration of 40 ppm, 67.5% (20 deg C) and 45.0% (25 deg C) chlorothalonil remained after 7

days in an alluvial silty loam (pH 6.4) held at a 60% moisture capacity(1). In the same soil held at moisture capacities of 100, 60, 40, and 20%, the amount of chlorothalonil (initial concentration of 40 ppm) remaining was determined to be 85, 22, 45, and 65%, respectively, after 7 days. Chlorothalonil biodegraded mainly through dechlorination and partly by substitution reaction yielding the biodegradation products: isophthalonitrile, mono-, di- and tri-chlorinated isophthalonitriles, 2,5,6-trichloro-4-hydroxyisophthalonitrile and 2,5,6-trichloro-4-methoxyisophthalonitrile(1). Aerobic biodegradation half-lives of chlorothalonil in four different soils were reported as 10, 10, 15 and 40 days(2). After 60 days the metabolite 2,5,6-trichloro-4-hydroxyisophtalonitrile was present at up to 32% of the initially applied amount; the metabolite 3-cyano-2,4,5,6-tetrachlorobenzamide was present at up to about 7% at both days 7 and 16 of the study. Aerobic aquatic half-lives of chlorothalonil typically range from 2 to 200 hours(2). Other reported metabolites are 1,3-dicarbamoyl-2,4,5,6-tetrachlorobenzene, 1-carbamoyl-3-cyano-4-hydroxy-2,5,6-trichlorobenzene, 2,4,6-trichloro-4-(methylthio)isophthalonitrile and pentachloronitrobenzene(3).

Bioaccumulative potential

Bioconcentration factors of 75 (edible) and 264 (whole body) were measured for chlorothalonil in bluegill sunfish(1). BCF values of 9.4 (edible) and 16 (whole body) were reported for catfish(1). Carp exposed to 3 ug/L chlorothalonil over a 6 week incubation period had reported maximum BCF values of 125 (2). A BCF of 264 was determined in bluegill (Lepomis macrochirus) exposed for 28 days(3). According to a classification scheme(4), these BCF values suggest bioconcentration in aquatic organisms can be low to high(SRC). Chlorothalonil BAFs wet weight and lipid based in zooplankton from three lakes in southern Ontario, Canada were 14-1500 and 140-190,000, respectively; samples were collected in 2003 and 2004(5).

Mobility in soil

A Koc value of 1800 has been determined based on adsorption isotherms of chlorothalonil on 3 black soils and 1 clay mineral, Na-bentonite soil(1). Other reported Koc values are 1300 to 14,000(2). Laboratory batch equilibrium studies with four soils showed chlorothalonil to possess limited mobility in silty clay loam, silt, sandy loam, and sand with calculated Koc values were 1400, 7000, 1100, and 900, respectively(3). According to a classification scheme(4), these Koc values suggest the mobility of chlorothalonil in soils will be low to immobile(SRC). The Koc of sediment from recycling ponds was 2270 to 2450(5).

Other adverse effects

no data available

SECTION 13: Disposal considerations

Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

UN Number

ADR/RID: UN3439 (For reference only, please check.)

IMDG: UN3439 (For reference only, please check.)

IATA: UN3439 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: NITRILES, SOLID, TOXIC, N.O.S. (For reference only, please check.)

IMDG: NITRILES, SOLID, TOXIC, N.O.S. (For reference only, please check.)

IATA: NITRILES, SOLID, TOXIC, N.O.S. (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 6.1 (For reference only, please check.)

IMDG: 6.1 (For reference only, please check.)

IATA: 6.1 (For reference only, please check.)

Packing group, if applicable

ADR/RID: I (For reference only, please check.)

IMDG: I (For reference only, please check.)

IATA: I (For reference only, please check.)

Environmental hazards

ADR/RID: Yes

IMDG: Yes

IATA: Yes

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

EC Inventory

Listed.

United States Toxic Substances Control Act (TSCA) Inventory

Listed.

China Catalog of Hazardous chemicals 2015

Not Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

PICCS

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC

Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

References

IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home

HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple

ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg

Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Other Information

Carrier solvents used in commercial formulations may change physical and toxicological properties.