

Chemical Safety Data Sheet MSDS / SDS

2,3,4,5-tetrachlorophenol SDS

Revision Date:2024-04-25 Revision Number:1

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

Product name: 2,3,4,5-tetrachlorophenol

CAS: 4901-51-3

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.in

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SECTION 2: Hazards identification**Classification of the substance or mixture**Acute toxicity - Category 3, Oral
Skin irritation, Category 2

Serious eye damage, Category 1
Specific target organ toxicity - single exposure, Category 3
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H301 Toxic if swallowed
H315 Causes skin irritation
H318 Causes serious eye damage
H335 May cause respiratory irritation
H410 Very toxic to aquatic life with long lasting effects

Precautionary statement(s)

Prevention

P264 Wash ... thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.

Response

P301+P316 IF SWALLOWED: Get emergency medical help immediately.
P321 Specific treatment (see ... on this label).
P330 Rinse mouth.
P302+P352 IF ON SKIN: Wash with plenty of water/...
P332+P317 If skin irritation occurs: Get medical help.
P362+P364 Take off contaminated clothing and wash it before reuse.
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.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P319 Get medical help if you feel unwell.
P391 Collect spillage.

Storage

P405 Store locked up.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

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 which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	2,3,4,5-tetrachlorophenol
Common names and synonyms:	2,3,4,5-tetrachlorophenol
CAS number:	4901-51-3
EC number:	225-531-7
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately. Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

Following skin contact

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

Following eye contact

Rinse with pure water for at least 15 minutes. Consult a doctor.

Following ingestion

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

Most important symptoms/effects, acute and delayed

SYMPTOMS: Symptoms of exposure to this compound may include irritation of the skin, eyes, mucous membranes and upper respiratory tract. Depending on the intensity and duration of exposure, effects may vary from mild irritation to severe destruction of tissue. Prolonged contact can cause eye damage. It can also cause irritation of the nose and throat. Exposure to this type of compound may cause profuse sweating, intense thirst, abdominal pain, nausea, vomiting, diarrhea, cyanosis from methemoglobinemia, hyperactivity, stupor, blood pressure fall, hyperpnea, hemolysis, convulsions, collapse, coma and pulmonary edema followed by pneumonia. If death from respiratory failure is not immediate, jaundice and oliguria or anuria may occur. Other symptoms of exposure to this type of compound may include headache, dizziness, rapid and difficult breathing, weakness, severe burns and internal damage. Chronic exposure may result in digestive disturbances, nervous disorders, skin eruptions and liver and kidney damage. Skin contact with this type of compound may result in softening and whitening of the skin, followed by the development of painful burns. Prolonged contact may lead to dermatitis. Local contact may also result in painless blanching or erythema and corrosion of the skin. Skin sensitivity reactions occur occasionally. **ACUTE/CHRONIC HAZARDS:** This compound is highly toxic by inhalation, ingestion and skin absorption. It is an irritant of the skin, eyes, mucous membranes and upper respiratory tract; and prolonged contact may result in severe irritation or destruction of tissue. It is also an irritant of the nose and throat. When heated to decomposition it emits toxic fumes of carbon monoxide, carbon dioxide and hydrogen chloride gas. (NTP, 1992)

Indication of immediate medical attention and special treatment needed, if necessary

Absorption, Distribution and Excretion

The compounds are readily absorbed from the gastrointestinal tract and from parenteral sites of injection. Chlorophenols

SECTION 5: Firefighting measures

Suitable extinguishing media

Fires involving this material can be controlled with a dry chemical, carbon dioxide or Halon extinguisher. (NTP, 1992)

Specific hazards arising from the chemical

Flash point data for this chemical are not available. It is probably combustible. (NTP, 1992)

Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

Environmental precautions

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

Collect and arrange disposal. Keep the chemical in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and 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

Store the container tightly closed in a dry, cool and well-ventilated place. Store apart from foodstuff containers or incompatible materials.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

Component	2,3,4,5-tetrachlorophenol			
CAS No.	4901-51-3			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m ³	ppm	mg/m ³
Finland	?	0,5	?	1,5 (1)
	Remarks			
Finland	(1) 15 minutes average value			

Biological limit values

no data available

Appropriate engineering 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, such as personal protective equipment (PPE)

Eye/face protection

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

Skin protection

Wear fire/flame resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	PHYSICAL DESCRIPTION: Needles (from petroleum ether, ligroin) or beige solid. (NTP, 1992)
Colour:	Needles from petroleum ether (sublimes)
Odour:	no data available
Melting point/freezing point:	69-70°C
Boiling point or initial boiling point and boiling range:	164(3.06kPa)
Flammability:	no data available
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	4°C
Auto-ignition temperature:	no data available
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	no data available
Solubility:	less than 1 mg/mL at 70° F (NTP, 1992)
Partition coefficient n-octanol/water:	log Kow = 4.21
Vapour pressure:	no data available
Density and/or relative density:	1.6(60/4°C)
Relative vapour density:	no data available

Particle characteristics:

no data available

SECTION 10: Stability and reactivity

Reactivity

no data available

Chemical stability

no data available

Possibility of hazardous reactions

2,3,4,5-TETRACHLOROPHENOL is incompatible with acid chlorides, acid anhydrides and oxidizing agents (NTP, 1992).

Conditions to avoid

no data available

Incompatible materials

no data available

Hazardous decomposition products

When heated to decomposition it emits toxic fumes of /hydrogen chloride/.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 Mouse oral 400 mg/kg

Inhalation: no data available

Dermal: no data available

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

no data available

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50 *Pimephales promelas* (fathead minnow) 410 mg/l/96 hr (confidence limit 380 - 440 mg/l), flow-through bioassay with measured concentrations, 25.7 deg C, dissolved oxygen 7.5 mg/l, hardness 45.1 mg/l calcium carbonate, alkalinity 41.3 mg/l calcium carbonate, and pH 7.29. Effect: loss of equilibrium

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

Persistence and degradability

31% biodegradation of 2,3,4,5-tetrachlorophenol was reported in an aerobic clay loam soil after 160 days(1). No significant degradation of 2,3,4,5-tetrachlorophenol was reported in an 80 day period in an anaerobic clay loam soil(1). In a river die-away study, 2,3,4,5-tetrachlorophenol had a biodegradation rate constant of 1.4×10^{-7} M/hr; a lag phase of 400 hours was reported(2). Groundwater containing 2,3,4,5-tetrachlorophenol at an average concn of 140 ug/l was present at 0.04 ug/l in the effluent of a sewage (activated sludge with phosphorus precipitation) treatment plant; dewatered sludge contained this compound at 0.07 mg/kg total solids(3). Half-lives of 2,3,4,5-tetrachlorophenol were reported as 7 (lag phase of 2 days) and 21 (lag phase of 12.5 days) days under aerobic and anaerobic conditions, respectively(4). A first-order biodegradation rate constant of 0.107/day (half-life of 6.5 days) was reported for 2,3,4,5-tetrachlorophenol in anaerobic estuarine sediment(5). Intermediates formed during this reaction are as follows: 3,4,5-trichlorophenol (27%), 2,4,5-trichlorophenol (22%), 2,3,5-trichlorophenol (3%), and 2,3,4-trichlorophenol (5%); 3,4-dichlorophenol > 3,5-dichlorophenol > 2,4,5-dichlorophenol; 3/4-chlorophenol(5). 94.9, 96.5, and 64.9% removal efficiency was reported for 2,3,4,5-tetrachlorophenol initially present at 0.37, 1.20, and 2.21 umol/l, respectively, following treatment in an upflow anaerobic sludge blanket reactor(6).

Bioaccumulative potential

An estimated BCF of 930 was calculated for 2,3,4,5-tetrachlorophenol(SRC), using a log Kow value of 4.21(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is high(SRC). BCF values of 38 to 41 and 213 to 351 were measured in two species of earthworms, *E. fetida andrei* and *L. rubellus*, respectively(4). Leeches exposed to water in Thunder Bay Harbor, Lake Superior, Canada for 3 weeks bioaccumulated 2,3,4,5-tetrachlorophenol at 63 to 427 ng/g near wastewater discharge points from a pulp mill; at sites located at a greater distance from the discharge area no bioaccumulation in leeches was seen(5).

Mobility in soil

The Koc of 2,3,4,5-tetrachlorophenol is estimated as approximately 4600(SRC), using a log Kow value of 4.21(1) and a regression-derived equation(2,SRC). According to a classification scheme(3), this estimated Koc value suggests that 2,3,4,5-tetrachlorophenol is expected to have slight mobility in soil(SRC). Koc values of 13200, 13900, and 12500 were measured for a lake sediment (foc=0.094), river sediment (foc=0.026), and aquifer material (foc=0.0084), respectively(7). A Kp value of 0.94 was measured for 2,3,4,5-tetrachlorophenol in aquifer sand at a pH value of 2(4). 2,3,4,5-Tetrachlorophenol added to Eustis fine sand (0.23-0.39%

organic carbon; 96.4% sand) had a measured Kp value of 4.19 mL/g; 47% of this compound was ionized in this experiment(6). In addition, a desorption rate coefficient of 2.07 per hour was measured(6). In an aqueous adsorption study, 1360 pg/g 2,3,4,5-tetrachlorophenol was found in the sediment, 480 pg/g in suspended matter, and 2 pg/g in the water; the sediment to water ratio is 680 and suspended matter to water ratio is 240(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: UN1230 (For reference only, please check.)

IMDG: UN1230 (For reference only, please check.)

IATA: UN1230 (For reference only, please check.)

UN Proper Shipping Name

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

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

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

Transport hazard class(es)

ADR/RID: 3 (For reference only, please check.)
IMDG: 3 (For reference only, please check.)
IATA: 3 (For reference only, please check.)

Packing group, if applicable

ADR/RID: II (For reference only, please check.)
IMDG: II (For reference only, please check.)
IATA: II (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

Not Listed.

China Catalog of Hazardous chemicals 2015

Not Listed.

New Zealand Inventory of Chemicals (NZIoC)

Not Listed.

(PICCS)

Not Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Not Listed.

Korea Existing Chemicals List (KECL)

Not 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/>

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any