



SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.0
Creation Date: July 15, 2019
Revision Date: July 15, 2019

SECTION 1: Identification

1.1 GHS Product identifier

Product name 2-chlorophenol

1.2 Other means of identification

Product number -

Other names o-Chlorphenol; ortho-chlorophenol; Phenol,2-chloro

1.3 Recommended use of the chemical and restrictions on use

Identified uses Industrial and scientific research use.

Uses advised against no data available

1.4 Supplier's details

Company Shanghai Yien Chemical Technology Co., Ltd
Address Building 6, 28 Yingong Road, Fengxian District, Shanghai
Chemical Industry Zone, Shanghai, 201400, China
Telephone +86-400-133-2688

1.5 Emergency phone number

Emergency phone number +86-400-133-2688

Service hours Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Acute toxicity - Category 4, Oral

Acute toxicity - Category 4, Dermal

Acute toxicity - Category 4, Inhalation

Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 2

2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Hazard statement(s)

Warning

H302 Harmful if swallowed

H312 Harmful in contact with skin

H332 Harmful if inhaled

	H411 Toxic to aquatic life with long lasting effects
Precautionary statement(s)	
Prevention	<p>P264 Wash ... thoroughly after handling.</p> <p>P270 Do not eat, drink or smoke when using this product.</p> <p>P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...</p> <p>P261 Avoid breathing dust/fume/gas/mist/vapours/spray.</p> <p>P271 Use only outdoors or in a well-ventilated area.</p> <p>P273 Avoid release to the environment.</p>
Response	<p>P301+P317 IF SWALLOWED: Get medical help.</p> <p>P330 Rinse mouth.</p> <p>P302+P352 IF ON SKIN: Wash with plenty of water/...</p> <p>P317 Get medical help.</p> <p>P321 Specific treatment (see ... on this label).</p> <p>P362+P364 Take off contaminated clothing and wash it before reuse.</p> <p>P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.</p> <p>P391 Collect spillage.</p>
Storage	none
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.

2.3 Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
2-chlorophenol	2-chlorophenol	95-57-8	202-433-2	100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Fresh air, rest. Half-upright position. Artificial respiration may be needed. Refer for medical attention.

Following skin contact

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

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth. Do NOT induce vomiting. Refer for medical attention .

4.2 Most important symptoms/effects, acute and delayed

Poisonous; may be fatal if inhaled, swallowed or absorbed through skin. Irritating to skin and eyes; direct contact may cause burns. Rats receiving lethal doses via oral, subcutaneous or intraperitoneal routes displayed similar symptoms: restlessness, increased breathing rate and motor weakness followed by tremors, chronic convulsions, dyspnea, coma and death. (USCG, 1999)

Excerpt from ERG Guide 153 [Substances - Toxic and/or Corrosive (Combustible)]: TOXIC; inhalation, ingestion or skin contact with material may cause severe injury or death. Contact with molten substance may cause severe burns to skin and eyes. Avoid any skin contact. Effects of contact or inhalation may be delayed. Fire may produce irritating,

corrosive and/or toxic gases. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution. (ERG, 2016)

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

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Phenols and related compounds

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Alcohol foam.

5.2 Specific hazards arising from the chemical

Special Hazards of Combustion Products: Contain poisonous chloride fumes. Behavior in Fire: Burns and produces toxic and irritating gases. (USCG, 1999)
Excerpt from ERG Guide 153 [Substances - Toxic and/or Corrosive (Combustible)]: Combustible material: may burn but does not ignite readily. When heated, vapors may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards. Those substances designated with a (P) may polymerize explosively when heated or involved in a fire. Contact with metals may evolve flammable hydrogen gas. Containers may explode when heated. Runoff may pollute waterways. Substance may be transported in a molten form. (ERG, 2016)

5.3 Special protective actions for fire-fighters

Use water spray, powder, foam, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal protection: chemical protection suit and filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in covered containers as far as possible. Carefully collect remainder. Then store and dispose of according to local regulations.

6.2 Environmental precautions

Personal protection: chemical protection suit and filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in covered containers as far as possible. Carefully collect remainder. Then store and dispose of according to local regulations.

6.3 Methods and materials for containment and cleaning up

Phenolic cmpds in wastewater are oxidized with hydrogen peroxide catalyzed by iron(3+)-iron(2+). When the wt ratio of phenol:hydrogen peroxide is 1:3 and iron 5-100 ppm, more than 95% of the phenols are removed in 30 min from a 500 ppm phenol soln at pH 5-6 and 25-50 deg C. Phenolic cmpd

SECTION 7: Handling and storage

7.1 Precautions for safe handling

NO open flames. Above 64°C use a closed system and ventilation. 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.

7.2 Conditions for safe storage, including any incompatibilities

Separated from strong oxidants and food and feedstuffs. Well closed. Store in tightly closed containers in a cool, well ventilated area. Metal containers involving the transfer of this chemical should be grounded and bonded. Where possible, automatically pump liquid from drums or other storage containers to process containers. Drums must be equipped with self-closing valves, pressure vacuum bungs, and flame arresters. Use only non-sparking tools and equipment, especially when opening and closing containers of this chemical. Sources of ignition such as smoking and open flames, are prohibited where this chemical is used, handled, or stored in a manner that could create a potential fire or explosion hazard. Monochlorophenols

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

Component	2-chlorophenol			
CAS No.	95-57-8			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m³	ppm	mg/m³
Denmark		0,5		1,0
	Remarks			

Biological limit values

no data available

8.2 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.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear face shield or eye protection in combination with breathing protection.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Liquid. Liquid.
Colour	Colourless.
Odour	Unpleasant penetrating odor
Melting point/freezing point	9 °C.;7 °C.
Boiling point or initial boiling point and boiling range	174.9 °C. Atm. press.:1 013.25 hPa.
Flammability	Combustible. Gives off irritating or toxic fumes (or gases) in a

	fire.
Lower and upper explosion limit/flammability limit	no data available
Flash point	64 °C. Atm. press.:1 013.25 hPa.
Auto-ignition temperature	550 °C. Atm. press.:1 013.25 hPa.
Decomposition temperature	no data available
pH	weakly acidic
Kinematic viscosity	3.579 cP at 25 deg C
Solubility	Miscible with water
Partition coefficient n-octanol/water	log Pow = 2.18. Temperature:20 °C.
Vapour pressure	1.33 hPa. Temperature:12.1 °C. Remarks:Equivalent to 1 mm Hg.;6.66 hPa. Temperature:38.2 °C. Remarks:Equivalent to 5 mm Hg.;13.33 hPa. Temperature:51.2 °C. Remarks:Equivalent to 10 mm Hg.
Density and/or relative density	1.272 g/cm ³ . Temperature:0 °C.;1.265 g/cm ³ . Temperature:4.8 °C.;1.259 g/cm ³ . Temperature:10 °C.
Relative vapour density (air = 1):	4.4
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Decomposes on burning. This produces toxic and corrosive fumes of hydrochloric acid and chlorine. Reacts with oxidants.

10.2 Chemical stability

no data available

10.3 Possibility of hazardous reactions

Combustible liquid. The vapour is heavier than air. 2-CHLOROPHENOL is a weak acid. Neutralizes bases in exothermic reactions. Incompatible with oxidizing agents. Incompatible with acid chlorides and acid anhydrides. Forms ethers, esters and salts with metals and amines (NTP, 1992).

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Can react with oxidizing materials

10.6 Hazardous decomposition products

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

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Rat oral 670 mg/kg. From table
- Inhalation: LC50 - rat (male/female) - \geq 4.77 mg/L air (analytical).
- Dermal: LD50 - rat (male/female) - $>$ 1 000 - $<$ 1 580 mg/kg bw.

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

The substance is severely irritating to the eyes, skin and respiratory tract. Inhalation of the aerosol may cause lung oedema. See Notes. The substance may cause effects on the central nervous system.

STOT-repeated exposure

no data available

Aspiration hazard

No indication can be given about the rate at which a harmful concentration of this substance in the air is reached on evaporation at 20°C.

SECTION 12: Ecological information**12.1 Toxicity**

- Toxicity to fish: LC50; Species: *Danio rerio* (Zebra danio, length 2.5 cm); Conditions: freshwater, static, 22 deg C, pH 7.8-8, hardness 150 mg/L CaCO₃; Concentration: 35000-100000 ug/L
- Toxicity to daphnia and other aquatic invertebrates: EC50 - *Daphnia magna* - 5.7 mg/L - 48 h.
- Toxicity to algae: EC100 - *Chlorella pyrenoidosa* - 500 mg/L - 72 h.
- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

AEROBIC: 2-Chlorophenol, present at 100 mg/L, reached 0% of its theoretical BOD in 2 weeks using an activated sludge inoculum(1). In an aerobic screening test, the microorganism *Pseudomonas gladioli* was able to degrade 2-chlorophenol 74.6% after an incubation period of 24 hours and an initial concn of 8.78 ug/ml(2). 2-Chlorophenol was 100% degraded by a microbial mixture inoculum after an incubation time of 96 hours(3). The aerobic biodegradation of 2-chlorophenol in the cyclone fermentor system revealed 0% remaining after 200 hours and a lag time of 25 hours; this corresponds to a half-life of 140 hours(4). Incubation at 30 deg C resulted in incomplete removal of 2-chlorophenol, which ceased after 48 hours. 64.8% of 2-chlorophenol was removed; however, only 30.2% of the total chloride was released. Degradation proceeded via meta-cleavage and a build-up of the metabolite 3-chlorocatechol was observed(5). 2-Chlorophenol reached 38.0% of its theoretical BOD in river water obtained from the Jilin section of the Songhua River, China. A test concn of 2 mg/L (based on the Theoretical Oxygen Demand for 2-chlorophenol) was tested at 15-20 deg C, pH 6.8-7.0, and a dissolved oxygen concn of 8.0 mg/L using standard iodometric titration(6).

12.3 Bioaccumulative potential

BCF's of 214 (log BCF = 2.33) in bluegill sunfish after 28 days exposure(1), 14 to 29 in carp(2), and 6 for goldfish(3) were determined for 2-chlorophenol. According to a classification scheme(4), BCF values of zero to 30 are low and from 100 to 1,000 are high.

12.4 Mobility in soil

Experimentally determined Koc's for 2-chlorophenol in various soil conditions were reported as 51 in clay loam soil and 398 in unspecified soil(1). Koc values of 3,981 in coarse sediment, and 5,012 in fine sediment have also been reported(1). According to a

classification scheme(2), 2-chlorophenol will exhibit high to moderate mobility depending on soil type(SRC).

12.5 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 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

14.1 UN Number

ADR/RID: UN2021 (For reference only, please check.)

IMDG: UN2021 (For reference only, please check.)

IATA: UN2021 (For reference only, please check.)

14.2 UN Proper Shipping Name

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

IMDG: CHLOROPHENOLS, LIQUID (For reference only, please check.)

IATA: CHLOROPHENOLS, LIQUID (For reference only, please check.)

14.3 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.)

14.4 Packing group, if applicable

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

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

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

14.5 Environmental hazards

ADR/RID: Yes

IMDG: Yes

IATA: Yes

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

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

Chemical name	Common names and synonyms	CAS number	EC number
2-chlorophenol	2-chlorophenol	95-57-8	202-433-2
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	Listed.
New Zealand Inventory of Chemicals (NZIoC)	Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	Listed.
Vietnam National Chemical Inventory	Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)	Listed.
Korea Existing Chemicals List (KECL)	Listed.

SECTION 16: Other information

Information on revision

Creation Date July 15, 2019

Revision Date July 15, 2019

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

The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation is therefore essential. Immediate administration of an appropriate spray, by a doctor or a person authorized by him/her, should be considered.

Any questions regarding this SDS, Please send your inquiry to sds@xixisys.com

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