

## Chemical Safety Data Sheet MSDS / SDS

## 2-Chlorophenol

Revision Date:2025-02-01 Revision Number:1

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

**Product identifier**

Product name : 2-Chlorophenol  
CBnumber : CB1325292  
CAS : 95-57-8  
EINECS Number : 202-433-2  
Synonyms : Ortho Chloro Phenol,2-chlorophenol

**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**

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

**Label elements****Pictogram(s)**

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Signal word : Danger

**Hazard statement(s)**

H225 Highly Flammable liquid and vapour  
H227 Combustible liquid  
H300 Fatal if swallowed  
H302 Harmful if swallowed  
H312 Harmful in contact with skin

H314 Causes severe skin burns and eye damage

H332 Harmful if inhaled

H360 May damage fertility or the unborn child

H370 Causes damage to organs

H401 Toxic to aquatic life

H411 Toxic to aquatic life with long lasting effects

#### **Precautionary statement(s)**

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

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

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

P264 Wash hands thoroughly after handling.

P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

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

P273 Avoid release to the environment.

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

P311 Call a POISON CENTER or doctor/physician.

P391 Collect spillage. Hazardous to the aquatic environment

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P302+P352 IF ON SKIN: wash with plenty of soap and water.

P307+P311 IF exposed: call a POISON CENTER or doctor/physician.

P405 Store locked up.

P403+P235 Store in a well-ventilated place. Keep cool.

P501 Dispose of contents/container to.....

#### **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+P317 IF SWALLOWED: Get medical help.

P330 Rinse mouth.

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

P317 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.

P391 Collect spillage.

#### **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.

## Other hazards

no data available

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# SECTION 3: Composition/information on ingredients

## Substance

Product name	: 2-Chlorophenol
Synonyms	: Ortho Chloro Phenol,2-chlorophenol
CAS	: 95-57-8
EC number	: 202-433-2
MF	: C6H5ClO
MW	: 128.56

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# SECTION 4: First aid measures

## Description of 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 .

## Most important symptoms and effects, both 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)

## Indication of any immediate medical attention and special treatment needed

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

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## SECTION 5: Firefighting measures

### Extinguishing media

Alcohol foam.

### Specific Hazards Arising from the Chemical

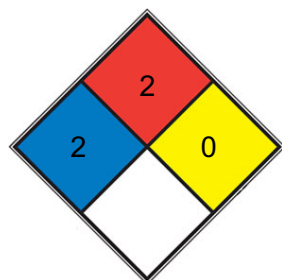
Special Hazards of Combustion Products: Contain poisonous chloride fumes. Behavior in Fire: Burns and produces toxic and irritating gases. (USCG, 1999)

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)

### Advice for firefighters

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

### NFPA 704



HEALTH 2 Intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury (e.g. [diethyl ether](#), ammonium phosphate, iodine)

FIRE 2 Must be moderately heated or exposed to relatively high ambient temperature before ignition can occur and multiple finely divided suspended solids that do not require heating before ignition can occur. Flash point between 37.8 and 93.3 °C (100 and 200 °F). (e.g. diesel fuel, [sulfur](#))

REACT 0 Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium, [N<sub>2</sub>](#))

SPEC.

HAZ.

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## SECTION 6: Accidental release measures

### 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.

### 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.

### 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

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## SECTION 7: Handling and storage

### 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.

### 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

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## SECTION 8: Exposure controls/personal protection

### Control parameters

#### Occupational Exposure limit values

Component	2-chlorophenol			
CAS No.	95-57-8			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>
Denmark	?	0,5	?	1,0
	Remarks			

#### 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 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

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## SECTION 9: Physical and chemical properties

### Information on basic physicochemical properties

Physical state	neat
Colour	Clear Colourless to Pale Orange
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	alcohol: freely soluble
Partition coefficient n-octanol/water	log Pow = 2.18. Temperature:20 °C.
Vapour pressure	13.3 hPa (50 °C)
Density and/or relative density	1.272 g/cm <sup>3</sup> . Temperature:0 °C.;1.265 g/cm <sup>3</sup> . Temperature:4.8 °C.;1.259 g/cm <sup>3</sup> . Temperature:10 °C.
Relative vapour density	(air = 1): 4.4
Particle characteristics	no data available

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## SECTION 10: Stability and reactivity

### Reactivity

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

### Chemical stability

no data available

### 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).

### Conditions to avoid

no data available

### Incompatible materials

Can react with oxidizing materials

### Hazardous decomposition products

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

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## 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

Test Type: Ames test

Test system: Salmonella typhimurium TA100, TA1535, TA98, TA1537, Escherichia coli WP2 uvrA

Method: Guidelines for Screening Mutagenicity Testing of Chemicals (Chemical Substances Control Law of Japan) and OECD Test Guideline 471

Metabolic activation: with and without metabolic activation

Result: Negative

Test Type: Chromosome aberration test in vitro

Test system: Chinese hamster CHL/IU cells

Method: Guidelines for Screening Mutagenicity Testing of Chemicals (Chemical Substances Control Law of Japan) and OECD Test Guideline 473

Metabolic activation: with and without metabolic activation

Result: Structural chromosomal aberrations were induced at 125, 250, and 500 µg/ mL with 6 hr short-term treatment with S9 mix (6.0, 12.0, and 38.6 %, respectively) and at 500 µg/ mL after 6 hr short term treatment without S9 mix (34.0 %). Polyploidy was not ind

### **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.

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## **SECTION 12: Ecological information**

### **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 CaCO<sub>3</sub>; 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

### **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).

### **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.



### **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).

### **Toxics Screening Level**

The current initial threshold screening level (ITSL) for 2-chlorophenol is 18 µg/m<sup>3</sup> based on a 24 hour averaging time.

### **Other adverse effects**

no data available

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## **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.

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## **SECTION 14: Transport information**

### **UN Number**

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

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

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

### **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.)

### **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: III (For reference only, please check.)

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

IATA: III (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

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## 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**

Listed.

#### **New Zealand Inventory of Chemicals (NZIoC)**

Listed.

#### **PICCS**

Listed.

#### **Vietnam National Chemical Inventory**

Listed.

#### **IECSC**

Listed.

#### **Korea Existing Chemicals List (KECL)**

Listed.

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## 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?pagelD=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pagelD=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.

### Disclaimer:

The information in this MSDS is only applicable to the specified product, unless otherwise specified, it is not applicable to the mixture of this product and other substances. This MSDS only provides information on the safety of the product for those who have received the appropriate professional training for the user of the product. Users of this MSDS must make independent judgments on the applicability of this SDS. The authors of this MSDS will not be held responsible for any harm caused by the use of this MSDS.