

# SAFETY DATA SHEETS

According to the UN GHS revision 10

## 1: Identification

### 1.1 GHS Product identifier

**Product name** 4-Chloro-2-methylaniline

### 1.2 Other means of identification

**Product number** 95-69-2

**Other names** 4-Chloro-2-methylaniline

### 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** Zhongshan Greenrock Technology Co., Ltd.

**Address** No. 138, Jinsan Avenue, Sanjiao Town, Zhongshan City, Guangdong Province, China

**Telephone** +86-2087066781

### 1.5 Emergency phone number

**Emergency phone number** +86-2087066781

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

## 2: Hazard identification

### 2.1 Emergency Overview

Highly toxic substances, even small amounts of which can cause death or serious health effects. They can enter the body through inhalation, skin contact, or ingestion. Immediate protective measures must be taken to avoid any contact.

### 2.2 GHS Classification

Acute toxicity, oral : Category 3

Acute toxicity, dermal : Category 3

Acute toxicity, inhalation : Category 3

Germ cell mutagenicity : Category 2

Carcinogenicity : Category 1, 1A, 1B

Hazardous to the aquatic environment, acute hazard : Category 1

Hazardous to the aquatic environment, long-term hazard : Category 1

## 2.3 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H301 Toxic if swallowed  
H311 Toxic in contact with skin  
H331 Toxic if inhaled  
H341 Suspected of causing genetic defects  
H350 May cause cancer  
H400 Very toxic to aquatic life  
H410 Very toxic to aquatic life with long lasting effects

Precautionary statement(s)

Prevention

P203 Obtain, read and follow all safety instructions before use.  
P261 Avoid breathing dust/fume/gas/mist/vapors/spray.  
P262 Do not get in eyes, on skin, or on clothing.  
P264 Wash hands [and ...] 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/hearing protection/...

Response

P316 Get emergency medical help immediately.  
P318 if exposed or concerned, get medical advice.  
P321 Specific treatment (see ... on this label).  
P330 Rinse mouth.  
P391 Collect spillage.  
P301+P316 IF SWALLOWED, Get emergency medical help immediately.  
P302+P352 IF ON SKIN, wash with plenty of water/...  
P304+P340 IF INHALED, Remove person to fresh air and keep comfortable for breathing.  
P361+P364 Take off immediately all contaminated clothing and wash it before reuse.

Storage

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

Disposal

P501 Dispose of contents/container to ...

## 2.4 Physical and chemical

Some substances may also be flammable or corrosive. Mixing with other substances may produce toxic products. Highly volatile substances can form toxic vapor clouds, expanding the hazard range.

## 2.5 Health hazards

Acute toxicity, May cause respiratory failure, cardiac arrest, nervous system depression, or organ failure. Severe symptoms may appear within a short period of exposure (minutes to hours). Long-term effects may include permanent organ damage.

## 2.6 Environmental hazards

It is extremely toxic to aquatic organisms and terrestrial ecosystems, and even a small release can cause large-scale biological mortality. It may persist in the environment and accumulate through the food chain,

causing long-term damage to ecosystems.

## 2.7 Other hazards which do not result in classification

no data available

# 3: Composition/information on ingredients

## 3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
4-Chloro-2-methylaniline	4-Chloro-2-methylaniline	95-69-2	202-441-6	99%

# 4: First-aid measures

## 4.1 General advice

Stop contact immediately and move to a safe area; bring the material SDS document and call emergency services immediately; record the route of exposure (inhalation/skin/ingestion), exposure time and dosage for the doctor's judgment.

## 4.2 If inhaled

Quickly transfer the patient to a place with fresh air, keep the patient lying flat with the head tilted to one side (to prevent suffocation by vomitus); if cyanosis or breathing difficulties occur, immediately give oxygen (flow rate 5-10L/min); it is strictly forbidden to feed/drink water to the unconscious person, and seek medical attention immediately.

## 4.3 In case of skin contact

Immediately remove contaminated clothing (if clothing is stuck to the skin, cut it with scissors to avoid tearing it). Rinse the affected area with plenty of running water for 20-30 minutes (the water temperature should be around 37°C, avoiding excessive heat or cold). If the skin is damaged, cover it with sterile gauze after rinsing. Do not apply ointment.

## 4.4 In case of eye contact

Immediately flush with an eyewash station for 15 minutes (open the eyelids to ensure thorough flushing of the upper and lower fornixes); wear a light-shielding eye mask after flushing to avoid strong light stimulation, and immediately seek medical attention from an ophthalmologist (bring along the substance SDS).

## 4.5 If swallowed

Self-induced vomiting is strictly prohibited (especially with corrosive and toxic substances, which may cause secondary burns to the esophagus). If the patient is conscious and not convulsing, they can drink 50-100ml of milk under the guidance of a doctor (to protect the gastric mucosa).

## 4.6 Most important symptoms and effects, both acute and delayed

Acute symptoms: nausea and vomiting, abdominal pain, dyspnea, convulsions, confusion, and decreased blood pressure; delayed symptoms: liver and kidney damage (appearing within 24-72 hours), methemoglobinemia (such as nitrite poisoning).

#### **4.7 Protection of first-aiders**

Rescuers must wear fully enclosed chemical protective clothing, a gas mask (with a targeted gas filter cartridge, such as for organic vapors and acid gases), and chemical protective gloves; avoid direct contact with the patient's vomitus/secretions, and wash hands immediately with chlorine-containing disinfectant after contact.

#### **4.8 Notes to physician**

Inform the physician of the substance's toxicity (e.g., oral LD50 = 5 mg/kg) and route of exposure; prioritize gastric lavage (physician evaluation required for appropriateness) and administer antidotes (e.g., atropine for organophosphate poisoning); monitor liver and kidney function, electrolytes, and coagulation function.

### **5: Fire-fighting measures**

#### **5.1 Unsuitable extinguishing media**

It is strictly forbidden to use fire extinguishing agents that may cause the spread of toxic substances (such as high-pressure water jets); if flammable liquids are involved, avoid using carbon dioxide (which may cause toxic vapor condensation).

#### **5.2 Specific hazards during fire fighting**

Combustion may be accompanied by the release of highly toxic substances (such as cyanide and arsenide), which are fatal by inhalation or skin contact; the combustion of flammable components can easily cause explosions and intensify the spread of toxic substances; toxic vapors are heavier than air and tend to accumulate in low-lying areas.

#### **5.3 Hazardous combustion products**

Highly toxic gases (such as hydrogen chloride, hydrogen fluoride, phosgene), carbon monoxide, nitrogen oxides; some contain heavy metal components that release toxic fumes such as mercury and lead.

#### **5.4 Specific extinguishing methods**

For small areas: use dry powder fire extinguishing agent to extinguish the fire, and dilute the toxic vapor with mist water (avoid direct spraying); for large areas: give priority to evacuation. If fire extinguishing is necessary, set up a fire extinguishing point upwind and cover it with foam (to isolate oxygen); after extinguishing the fire, test the area for toxicity concentration (entry is allowed only when the value is below MAC).

#### **5.5 Special protective equipment for fire-fighters**

Wear fully enclosed chemical protective clothing, gas masks (with targeted gas filter boxes, such as organic vapor + acidic gas), and chemical protective gloves (made of fluororubber); carry a portable toxic gas detector; equipment must be disinfected after the operation, and personnel must undergo health monitoring.

## 6: Accidental release measures

### 6.1 Protective measures for workers

Wear fully enclosed chemical protective clothing, positive pressure air respirator, chemical protective gloves (toxic-resistant type) and goggles; avoid direct contact with the skin and wash immediately after work.

### 6.2 Environmental protection measure

Isolate the 30-meter contaminated area to prevent the leak from spreading through rainwater/groundwater; take samples of water/soil for testing, and use activated carbon adsorption (organic poison) or neutralizer (inorganic poison) for treatment when exceeding the standard; strictly prohibit the leak from entering the drinking water source.

### 6.3 Containment methods for leaked chemicals

Collect liquids in corrosion-resistant sealed containers (marked with "toxic substances"); collect solids in chemical-resistant bags (to avoid dust); and store them separately in a hazardous waste warehouse after collection, away from food/feed.

### 6.4 Cleanup methods for chemical spills

Small leakage: absorb with special absorbent cotton (toxic-resistant) and put into chemical-proof bag; large leakage: professionals use chemical-proof pump to transfer to special storage tank; after cleaning, treat the ground with neutralizer (weak base for acid poison and weak acid for alkali poison).

### 6.5 Measures to prevent the spread of leaks

Set up a 30-meter isolation zone and prohibit unauthorized personnel from entering; volatile toxic substances require explosion-proof ventilation to reduce gas concentration; use chemical defense isolation belts to block them, and focus on monitoring low-lying areas (to prevent the accumulation of toxic substances).

### 6.6 Container leakage treatment

Minor leaks: Seal with compatible sealant; Serious leaks: Evacuate immediately, close the upstream valve (if safe), and have the toxic material disposal team handle it. It is strictly forbidden to open the container without authorization.

### 6.7 Special considerations

Workers must receive poisoning first aid training and carry antidotes (if applicable). In case of skin contact, flush immediately with plenty of water for 15 minutes. In case of inhalation poisoning, move immediately to fresh air and seek medical attention.

## 7: Handling and storage

### 7.1 Safe storage conditions

Store in a closed, impermeable dedicated warehouse (the walls are made of anti-corrosion materials, such as polyethylene coating); the container is made of corrosion-resistant material (such as

polytetrafluoroethylene, glass-lined steel), with a double sealing cover (threaded cover + nitrile rubber sealing ring); the warehouse is equipped with a negative pressure ventilation system (air changes ? 8 times/hour), and the exhaust gas must be treated with activated carbon adsorption (adsorption efficiency ? 95%).

## 7.2 Storage precautions

Store them separately from food, feed, and medicine (isolation distance ? 3 meters), and strictly prohibit them from being adjacent to drinking water sources; clearly mark "highly toxic" and H code on container labels and store them separately on locked shelves; check the sealing of containers weekly and immediately transfer them to the emergency treatment area if any leakage is found; workers must wear fully enclosed chemical protective clothing before entering the warehouse.

## 7.3 VCI Storage Grade

Level 1 (highest): The inner wall of the metal container is coated with a VCI anti-rust coating (thickness ? 50?m), and the outer surface of the container is wrapped with a vapor phase anti-rust film; the concentration of toxic substances in the warehouse is tested monthly to ensure that it is lower than the MAC value (for example, MAC of oral toxic substances ? 0.1mg/m<sup>3</sup>).

## 7.4 Recommended storage temperature

10-30?, avoid extreme temperatures (below 0? or above 35?); volatile toxic substances must be kept at a temperature ?25? to reduce vapor release; refrigerated storage substances (such as certain biotoxins) must be maintained at 2-8? and equipped with dual power supply protection (if the label has a recommended storage temperature, the label shall prevail).

## 7.5 Handling

For precautions see Safety Data Sheet section 2

Advice on safe handling : Work under hood. Do not inhale substance/mixture.

# 8: Exposure controls/personal protection

## 8.1 Respiratory protection

Choose according to the exposure route: volatile substances require positive pressure air respirators; dust/aerosols require powered air-purifying respirators to ensure the protection factor (APF) ? 1000.

## 8.2 Recommended Filter type

For organic toxic substances, choose Type A filter cartridge (to protect against organic vapors, such as benzene and methanol); for inorganic toxic substances, choose Type B (to protect against ammonia) or Type E (to protect against acidic gases, such as hydrogen chloride); for dust, add Type P3 filter cotton.

## 8.3 Eye/face protection

Wear a full-face chemical protective mask. The mask material must be resistant to toxic penetration (such as fluororubber), and the lens must be anti-fog and anti-chemical corrosion.

## 8.4 Skin and body protection

Wear fully enclosed chemical protective clothing. The material must be compatible with toxic substances (such as polyethylene + neoprene composite material); the cuffs and ankles must be tightened and

equipped with emergency escape zippers.

## 8.5 Hand protection

Wear toxic and chemical-resistant gloves, preferably made of fluororubber or butyl rubber, with a length of 30 cm, covering the forearm, and change every 4 hours

## 8.6 Hygiene measures

Immediately after the operation, clean the skin with a special detergent (such as a weak alkaline detergent), and then rinse with running water for 15 minutes; clothes need to be disinfected at high temperature (above 60°C) before washing; regular physical examinations (blood routine, liver and kidney function tests every 3 months).

# 9: Physical and chemical properties and safety characteristics

<b>Physical state</b>	clear dark brown Crystals
<b>Colour</b>	Crystalline, fused, grayish-white solid (commercial product)
<b>Odour</b>	no data available
<b>Melting point/freezing point</b>	122°C(lit.)
<b>Boiling point or initial boiling point and boiling range</b>	241°C(lit.)
<b>Flammability</b>	Combustible. Gives off irritating or toxic fumes (or gases) in a fire.
<b>Lower and upper explosion limit/flammability limit</b>	no data available
<b>Flash point</b>	38°C(lit.)
<b>Auto-ignition temperature</b>	560°C
<b>Decomposition temperature</b>	no data available
<b>pH</b>	no data available
<b>Kinematic viscosity</b>	no data available
<b>Solubility</b>	less than 1 mg/mL at 20°C
<b>Partition coefficient n-octanol/water</b>	2.27
<b>Vapour pressure</b>	Pa at 25°C: 5.5
<b>Density and/or relative density</b>	1.14
<b>Relative vapour density</b>	(air = 1): 4.9

## 10: Stability and reactivity

### 10.1 Reactivity

no data available

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

4-CHLORO-O-TOLUIDINE is incompatible with acids, acid chlorides, acid anhydrides, chloroformates and strong oxidizing agents. . A halide- and amine-substituted aromatic compound. Amines are chemical bases. They neutralize acids to form salts plus water. These acid-base reactions are exothermic. The amount of heat that is evolved per mole of amine in a neutralization is largely independent of the strength of the amine as a base. Amines may be incompatible with isocyanates, halogenated organics, peroxides, phenols (acidic), epoxides, anhydrides, and acid halides. Flammable gaseous hydrogen is generated by amines in combination with strong reducing agents, such as hydrides.

### 10.4 Conditions to avoid

no data available

### 10.5 Incompatible materials

no data available

### 10.6 Hazardous decomposition products

no data available

## 11: Toxicological information

### 11.1 Acute toxicity

Oral: no data available

Inhalation: no data available

Dermal: no data available

### 11.2 Skin corrosion/irritation

no data available

### 11.3 Serious eye damage/irritation

no data available

## 11.4 Respiratory or skin sensitization

no data available

## 11.5 Germ cell mutagenicity

no data available

## 11.6 Carcinogenicity

Evaluation: There is sufficient evidence for the carcinogenicity of para-chloro-ortho-toluidine hydrochloride in experimental animals. There is limited evidence for the carcinogenicity of para-chloro-ortho-toluidine in humans. In formulating the overall evaluation, the Working Group took note of the fact that any salt of para-chloro-orthotoluidine with a strong acid can be expected to behave chemically in a manner similar to the hydrochloride salt in solution and in vivo. Overall evaluation: para-Chloro-ortho-toluidine and its strong acid salts are probably carcinogenic to humans (Group 2A).

## 11.7 Reproductive toxicity

no data available

## 11.8 STOT-single exposure

no data available

## 11.9 STOT-repeated exposure

no data available

## 11.10 Aspiration hazard

no data available

# 12: Ecological information

## 12.1 Toxicity

Toxicity to fish: no data available

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

## 12.2 Persistence and degradability

5 ppm of <sup>14</sup>C labeled 4-chloro-o-toluidine was added to soil (pH 7.5, and organic matter, sand, silt, and clay contents of 3.4, 36.6, 28.2, and 35.2%, respectively); nearly 20% of the added 4-chloro-o-toluidine was metabolized to CO<sub>2</sub> over a period of 40 days under aerobic conditions(1). Evolution of CO<sub>2</sub> from the ring-labelled compound gives evidence for biologically mediated ring cleavage. Autoclaved soil control samples with added 4-chloro-o-toluidine did not produce CO<sub>2</sub>(1). Incubation of 4-chloro-o-toluidine with aniline oxidase or L-3 peroxidase obtained from the soil fungus *Geotrichum candidum* resulted in the formation of 2,2'-dimethyl-4,4'dichloroazobenzene through polymerizing transformations of the original compound(2). 4-Chloro-o-toluidine from a petrochemical industrial process wastewater at an initial concentration of 110 mg/l with activated sludge as an inoculum and a one day acclimation period gave 16% removal by measuring COD(Mn) and 7% removal of TOC after a 24 hour period under aerobic

conditions(3). This compound was considered to be non-biodegradable using this test(3). Gas chromatography however, used to measure biodegradation during this same 24 hour period, showed better degradability of 4-chloro-o-toluidine suggesting that structural breakdown of this compound occurs prior to oxidation of carbon into carbon dioxide(3). 0% biodegradation of 4-chloro-o-toluidine was shown via BOD in a 2 week experiment using activated sludge as an inoculum and with 4-chloro-o-toluidine present at 100 mg/ml(4).

### **12.3 Bioaccumulative potential**

Bioconcentration of 4-chloro-o-toluidine was measured in carp over a 6 week time period. At concentrations of 0.34 mg/ml and 0.034 mg/ml 4-chloro-o-toluidine, BCF values of 7.7-12 and <35 respectively, were reported(1). These values suggest that bioconcentration of 4-chloro-o-toluidine in aquatic organisms is not an important fate process for this compound(SRC).

### **12.4 Mobility in soil**

The Koc for 4-chloro-o-toluidine was estimated as 410(SRC), using a recommended regression-derived equation(1) and an estimated log Kow of 2.27(2,SRC). According to a suggested classification scheme(3), this estimated Koc value suggests that 4-chloro-o-toluidine has moderate mobility in soil(SRC). <sup>14</sup>C labelled 4-chloro-o-toluidine was added to autoclaved soil (pH 7.5, and organic matter, sand, silt, and clay contents of 3.4, 36.6, 28.2, and 35.2%, respectively) and incubated for several weeks; 12.2% of the radioactive label was removed as volatiles, 25% was recovered in a Soxhlet extract, and 55.1% of the radioactive label was obtained after Soxhlet extraction using Bleidner distillation (bound residue fraction)(4). This suggests that a significant portion of the 4-chloro-o-toluidine is bound strongly by this soil(4). Over a 24 hour time period, 34% of applied 4-chloro-o-toluidine was found in the bound residue fraction(5). Binding due to the high reactivity of the aromatic amino group to humus or soil organic matter rather than to clay particles is proposed as a reason for the soil binding ability of anilines(4,5). Low adsorption is observed at a neutral pH with pure clay minerals or soils for substituted anilines(5).

### **12.5 Other adverse effects**

no data available

## **13: Disposal considerations**

### **13.1 Disposal methods for waste chemicals**

This must be handled by a qualified unit that handles highly toxic waste, using high-temperature incineration (800-1000°C) or chemical neutralization (such as oxidative decomposition) to completely destroy the toxicity. Liquid highly toxic substances must be solidified before incineration. Those that cannot be incinerated must be stabilized/solidified before being safely landfilled.

### **13.2 Precautions**

Disposal personnel must wear fully enclosed chemical protective suits and positive pressure respirators; waste must be strictly classified and packaged to prevent leakage; exhaust gas and wastewater generated during the disposal process must meet discharge standards; mixing with other types of waste is prohibited; and disposal records must be kept for at least 10 years for traceability.

## 14: Transport information

### 14.1 UN Number

ADR/RID: UN2239

IMDG: UN2239

IATA: UN2239

### 14.2 UN Proper Shipping Name

ADR/RID:  
CHLOROTOLUIDINES, SOLID

IMDG: CHLOROTOLUIDINES,  
SOLID

IATA: CHLOROTOLUIDINES,  
SOLID

### 14.3 Transport hazard class(es)

ADR/RID: 6.1

IMDG: 6.1

IATA: 6.1

### 14.4 Packing group, if applicable

ADR/RID: III

IMDG: III

IATA: III

### 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

## 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
4-Chloro-2-methylaniline	4-Chloro-2-methylaniline	95-69-2	202-441-6
New Zealand Inventory of Chemicals (NZIoC)			Not Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Not Listed.
Vietnam National Chemical Inventory			Not Listed.
Australian Inventory of Industrial Chemicals (AIIC)			Not Listed.
Catalogue of Strictly Restricted Toxic Chemicals in China			Not Listed.
China Catalog of Hazardous chemicals 2015			Not Listed.
European INventory of Existing Commercial chemical Substances			Not Listed.
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans			Listed.
TSCA Inventory of Chemical Substances			Listed.

## 16: Other information

### Information on revision

**SDS Creation Date** July 1, 2025

**SDS Revision Date** July 1, 2025

### Abbreviations and acronyms in SDS

- 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%

### SDS 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](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/>

**Any questions regarding this Safety Data Sheet, Please send your inquiry to [sales@MolBest.com](mailto:sales@MolBest.com)**

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