SAFETY DATA SHEETS

According to the UN GHS revision 10

1: Identification

1.1 GHS Product identifier

Product name	Phenol

1.2 Other means of identification

Product number	108-95-2
Other names	Phenol

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
Skin corrosion/irritation : Category 1, 1A, 1B, 1C
Serious eye damage/eye irritation : Category 1
Acute toxicity, inhalation : Category 3
Germ cell mutagenicity : Category 2
Specific target organ toxicity, repeated exposure : Category 2
Hazardous to the aquatic environment, long-term hazard : Category 2

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 H314 Causes severe skin burns and eye damage H318 Causes serious eye damage H331 Toxic if inhaled H341 Suspected of causing genetic defects H373 May causes damage to organs through prolonged or repeated exposure H411 Toxic to aquatic life with long lasting effects
Precautionary statement(s)	
Prevention	P203 Obtain, read and follow all safety instructions before use. P260 Do not breathe dust/fume/gas/mist/vapors/spray. 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/... P264+P265 Wash hands [and ...] thoroughly after handling. Do not touch eyes.
Response	P316 Get emergency medical help immediately. P317 Get emergency medical help. P318 if exposed or concerned, get medical advice. P319 Get medical help if you feel unwell. P321 Specific treatment (see ... on this label). P330 Rinse mouth. P363 Wash contaminated clothing before reuse. P391 Collect spillage. P301+P316 IF SWALLOWED,Get emergency medical help immediately. P301+P330+P331 IF SWALLOWED,Rinse mouth. Do NOT induce vomiting. P302+P352 IF ON SKIN,wash with plenty of water/... P302+P361+P354 IF ON SKIN,Take off Immediately all contaminated clothing. Immediately rinse with water for several minutes. P304+P340 IF INHALED,Remove person to fresh air and keep comfortable for breathing. P305+P354+P338 IF IN EYES,Immediately rinse with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. 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
Phenol	Phenol	108-95-2	203-632-7	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^3).

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

Physical state	transparent crystalline solid
Colour	Colorless acicular crystals or white, crystalline mass
Odour	Distinct aromatic, somewhat sickening sweet and acrid odor, discernable at 0.5 to 5 ppm
Melting point/freezing point	236°C(dec.)(lit.)
Boiling point or initial boiling point and boiling range	182°C(lit.)
Flammability	Combustible SolidCombustible.
Lower and upper explosion limit/flammability limit	1.7%-8.6% IN AIR
Flash point	79°C

Auto-ignition temperature	715°C
Decomposition temperature	When heated to decomposition it emits acrid smoke and irritating fumes.
pH	about 6.0 (aq soln)
Kinematic viscosity	3.437 mPa s @ 50°C; 1.784 mPa s @ 75°C; 1.099 mPa s @ 100°C
Solubility	In water:8 g/100 mL
Partition coefficient n-octanol/water	no data available
Vapour pressure	0.09 psi (55 °C)
Density and/or relative density	1.071g/mLat 25°C(lit.)
Relative vapour density	3.24 (vs air)
Particle characteristics	no data available

10: Stability and reactivity

10.1 Reactivity

no data available

10.2 Chemical stability

Prone to redden on exposure to air and light, hastened by presence of alkalinity.

10.3 Possibility of hazardous reactions

May be ignited by electrostatic discharge.Phenols do not behave as organic alcohols, as one might guess from the presence of a hydroxyl (-OH) group in their structure. Instead, they react as weak organic acids. Phenols and cresols are much weaker as acids than common carboxylic acids (phenol has pKa = 9.88). These materials are incompatible with strong reducing substances such as hydrides, nitrides, alkali metals, and sulfides. Flammable gas (H_2) is often generated, and the heat of the reaction may ignite the gas. Heat is also generated by the acid-base reaction between phenols and bases. Such heating may initiate polymerization of the organic compound. Phenols are sulfonated very readily (for example, by concentrated sulfuric acid at room temperature). The reactions generate heat. Phenols are also nitrated very rapidly, even by dilute nitric acid. Phenol may explode in contact with peroxodisulfuric acid (D'Ans, J. Ber., 1910, 43, 1880; Z. Anorg. Chem., 1911, 73, 1911.) or peroxomonosulfuric acid. (Sidgwick, 1950, 939)

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Addition of aluminum chloride to a large volume of recovered nitrobenzene containing 5% phenol caused a violent explosion. Experiment showed that mixtures containing all three components reacted violently at

120°C.

10.6 Hazardous decomposition products

When heated to decomposition it emits acrid smoke and irritating fumes.

11: Toxicological information

11.1 Acute toxicity

Oral: LD50 Rat oral 530 mg/kg
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 inadequate evidence in humans for the carcinogenicity of phenol. There is inadequate evidence in experimental animals for the carcinogenicity of phenol. Overall evaluation: Phenol is not classifiable as to its carcinogenicity to humans (Group 3).

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: LC50 Lepomis macrochirus >10; >15 mg/l/24-48 hr /Conditions of bioassay not specified
Toxicity to daphnia and other aquatic invertebrates: LC50 Daphnia magna (young) 17 mg/l/24-48 hr /Conditions of bioassay not specified
Toxicity to algae: no data available
Toxicity to microorganisms: no data available

12.2 Persistence and degradability

AEROBIC: Phenol is a benchmark chemical in screening tests and there is abundant data to indicate that phenol biodegrades fast in aerobic screening tests using a variety of techniques and inocula, including acclimated and unacclimated activated sludge, sewage, and soil(SRC). Only selected results are included here (SRC). In a 2-week biodegradation screening test (MITI test) using phenol (100 mg/l) and an activated sludge inoculum, 85% of theoretical BOD was removed(1). Phenol was completely removed in 1 day or less using a soil suspension(2) or activated sludge inocula(3,6). Complete degradation was observed in 4 days using sediment from an oil refinery settling pond as an inoculum(4). It was shown that the presence of aromatic compounds like benzene and naphthalene had a mild inhibitory effect on degradation(4). In five days, the BOD consumed was 90% and 50% of theoretical using a sewage inoculum and freshwater and seawater, respectively(5). Another investigator who obtained 80% of theoretical BOD consumed after 5 days demonstrated that adaptation of the inoculum has a marked effect on the biodegradation rate(8). Decreasing the concn of phenol significantly reduces the lag time required to initiate degradation and increases the removal rate(9). The maximum mineralization rates of phenol in sewage and landfill leachate were 6.5X10-4 and 2.7X10-4 hr-1, respectively(7). A lag period was observed in landfill leachate(7).

12.3 Bioaccumulative potential

The BCFs reported in fish include: Goldorfe, 20 (1); goldfish, (Carassius auratus), 1.9(2); fish (unspecified), 17(3); fish (unspecified), 1.7(4); and 39, rainbow trout (Salmo gairdneri) (5). Phenol was rapidly eliminated from goldfish(6) and therefore would be unlikely to bioaccumulate(SRC). When U-14C-phenol was interperitonially administered to goldfish, the concn decreased to one tenth the initial concn in 2 hr(6). A BCF of 15,800 was reported in fathead minnows using 14C labeled phenol(7). Minor amounts of 14C in tissues were present as parent compound after 28 days of exposure to radiolabeled phenol(7). Parent compound comprised 1.5% of total 14C as phenol after 28 days of depuration(7). According to a classification scheme(8), reported BCF values and the rapid elimination of phenol suggests that bioaccumulation of phenol is unlikely(SRC). According to a classification scheme, BCF values <30 are low and from 100 or greater are high(8).

12.4 Mobility in soil

Phenol is reported to have low adsorptivity to clay soils and silt loam(1) and no adsorption to aquifer material(3) and montmorillonite and kaolinite clays(8). The Koc for phenol to a Batcombe silt loam soil (pH 6.7, organic carbon 2.51%) was 30(6). It was 16 for a Brookstone clay loam (pH 5.7, organic matter 5.1%) and varied with pH and iron content of the soil(7). The Freundlich K and (1/N) for phenol in Captina (pH 5.7, 1.1 % organic matter) and Palouse silt loam (pH 5.7, 3.6% organic matter) soils were 0.58 (1.15) and 0.81 (1.00)(2); the Koc values for these soils are 91 and 39(SRC). Based on the reported Koc values, phenol would be expected to generally exhibit very high mobility in soil, based on a classification scheme(4). In a study of the adsorption of phenol onto siltstone associated with a Wyoming coal deposit suitable for in situ gasification, the pH of the solution was the major controlling factor with adsorption occurring at pH's below the pKa of phenol and no adsorption occurring at pH's above the pKa(5). The log of the Freundlich K value was approximately -4(5). Therefore, phenol may be transported by groundwater near in situ coal gasification sites due to the elevated pH's at these sites after gasification(5). The pKa of phenol is 9.99(9), indicating that it will be partially dissociated at the upper end of environmental pH range and its mobility may be pH dependent(SRC). In general, anions generally do not adsorb to organic carbon and clay as strongly as their neutral counterparts(10).

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: UN1671	IMDG: UN1671	IATA: UN1671

14.2 UN Proper Shipping Name

ADR/RID: PHENOL, SOLID	IMDG: PHENOL, SOLID	IATA: PHENOL, 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: II	IMDG: II	IATA: II

14.5 Environmental hazards

ADR/RID: no	IMDG: no	IATA: no

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
Phenol	Phenol	108-95-2	203-632-7
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			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			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
- 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

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