

# SAFETY DATA SHEETS

According to the UN GHS revision 10

## 1: Identification

### 1.1 GHS Product identifier

**Product name** Cobalt sulfate

### 1.2 Other means of identification

**Product number** 10124-43-3

**Other names** Cobalt sulfate

### 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

It is highly corrosive and can cause irreversible damage to the skin and eyes. If in contact, rinse immediately with plenty of water and seek medical help as soon as possible.

### 2.2 GHS Classification

Acute toxicity, oral : Category 4

Sensitization, Skin : Category 1, 1A, 1B

Serious eye damage/eye irritation : Category 2A

Sensitization, respiratory : Category 1, 1A, 1B

Germ cell mutagenicity : Category 2

Carcinogenicity : Category 1, 1A, 1B

Reproductive toxicity : 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)**

H302 Harmful if swallowed  
H317 May cause an allergic skin reaction  
H319 Causes serious eye irritation  
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled  
H341 Suspected of causing genetic defects  
H350 May cause cancer  
H350i May cause cancer by inhalation  
H360 May damage fertility or the unborn child  
H360F May damage fertility  
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.  
P233 Keep container tightly closed.  
P260 Do not breathe dust/fume/gas/mist/vapors/spray.  
P261 Avoid breathing dust/fume/gas/mist/vapors/spray.  
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.  
P272 Contaminated work clothing should not be allowed out of the workplace.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...  
P284 [In case of inadequate ventilation] Wear respiratory protection.  
P264+P265 Wash hands [and ...] thoroughly after handling. Do not touch eyes.

**Response**

P318 if exposed or concerned, get medical advice.  
P321 Specific treatment (see ... on this label).  
P330 Rinse mouth.  
P391 Collect spillage.  
P301+P317 IF SWALLOWED, Get medical help.  
P302+P352 IF ON SKIN, wash with plenty of water/...  
P304+P340 IF INHALED, Remove person to fresh air and keep comfortable for breathing.  
P305+P351+P338 IF IN EYES, Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do - continue rinsing.  
P333+P317 If skin irritation or rash occurs, Get medical help.  
P337+P317 If eye irritation persists, Get medical help.  
P342+P316 If experiencing respiratory symptoms, Get emergency medical help immediately.  
P362+P364 Take off contaminated clothing and wash it before reuse.

**Storage** P403 Store in a well-ventilated place.  
P405 Store locked up.  
**Disposal** P501 Dispose of contents/container to ...

## 2.4 Physical and chemical

Acidic or alkaline substances that react with metals to produce flammable hydrogen. May cause violent exothermic reactions when in contact with other substances. At high concentrations, they have strong oxidizing or reducing properties.

## 2.5 Health hazards

Skin contact: May cause severe burns, tissue necrosis, and scarring. Eye contact: May cause corneal damage, vision loss, or even blindness. Inhalation of vapor or mist may cause respiratory burns and pulmonary edema.

## 2.6 Environmental hazards

Leakage into the environment can change the pH value of soil and water, causing serious ecological damage. It is highly toxic to aquatic organisms and can cause the death of aquatic organisms and the collapse of the ecosystem.

## 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
Cobalt sulfate	Cobalt sulfate	10124-43-3	233-334-2	99%

# 4: First-aid measures

## 4.1 General advice

Stop contact immediately and remove contaminated clothing; rinse the exposed area with plenty of running water and seek medical attention immediately with the material's SDS. If the corrosive substance is acidic (such as sulfuric acid), neutralize it with a weak alkaline solution (such as 5% sodium bicarbonate) after rinsing. For alkaline corrosive substances (such as sodium hydroxide), neutralize them with a weak acidic solution (such as 1% acetic acid).

## 4.2 If inhaled

Move to fresh air and keep the airway open. If corrosive vapors (such as hydrochloric acid mist) are inhaled, immediately administer nebulized inhalation (normal saline + dexamethasone). If laryngeal edema or breathing difficulties occur, immediately perform a tracheotomy (requires professional operation) and seek medical attention.

### **4.3 In case of skin contact**

Rinse with plenty of running water for 20-30 minutes (make sure to rinse thoroughly, especially between the fingers, in the armpits, and other folds). If blisters are present, do not prick them; instead, apply a sterile gauze compress (to avoid adhesion). Do not apply oily ointments to avoid affecting subsequent treatment.

### **4.4 In case of eye contact**

Immediately flush with an eyewash or plenty of normal saline for 15-20 minutes (use a gentle flow to avoid direct exposure to the cornea); apply antibiotic eye ointment (such as erythromycin ointment) to the eyelids, wear a sterile eye patch, and seek immediate medical attention from an ophthalmologist.

### **4.5 If swallowed**

Do not induce vomiting (to avoid secondary damage to the esophageal mucosa). If the substance is acidic, take milk or egg white orally (to protect the gastric mucosa). If the substance is alkaline, take diluted vinegar (1:10 ratio) orally. If you carry SDS, seek medical attention immediately for a gastroscopy.

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

Acute symptoms: skin redness, swelling, blisters, ulcers, severe eye pain, photophobia, blurred vision, oral/esophageal burns, and difficulty swallowing; long-term effects: skin scarring, corneal scarring (possibly causing blindness), and esophageal stenosis.

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

Rescuers must wear corrosion-resistant chemical protective clothing, chemical protective gloves (made of fluororubber), chemical goggles and masks; stand upwind when flushing to avoid inhaling volatile corrosive gases; after contact, equipment must be cleaned with a neutralizer and then rinsed with clean water.

### **4.8 Notes to physician**

Inform the doctor of the type of corrosive agent (acid/base), concentration, and duration of contact. Skin burns should be treated according to their depth (superficial II degree and above require skin grafting). Eye injuries should be checked for corneal epithelial integrity and, if necessary, corneal repair drugs (such as recombinant human epidermal growth factor) should be used.

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

### **5.1 Unsuitable extinguishing media**

Acidic corrosive substances (such as sulfuric acid): It is strictly forbidden to use water (it releases heat when in contact with water, causing splashing) or alkaline fire extinguishing agents (it neutralizes the heat and increases the risk); Alkaline corrosive substances (such as sodium hydroxide): It is strictly forbidden to use acidic fire extinguishing agents.

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

Combustion is accompanied by splashing of corrosive liquids, causing severe burns to the skin/eyes; some corrosive substances (such as nitric acid) release toxic gases when burned and also corrode fire-fighting equipment; high-temperature molten substances (such as molten alkali) easily adhere to the skin and cause deep burns.

### **5.3 Hazardous combustion products**

Acidic corrosive substances release hydrogen chloride and sulfur dioxide (such as sulfuric acid); alkaline corrosive substances release ammonia (such as ammonia water); chlorine-containing corrosive substances release chlorine gas.

### **5.4 Specific extinguishing methods**

Small area: Use dry powder fire extinguishing agent to put out the fire. If it is solid corrosive material, cover it with dry sand (to isolate it from the air); Large area: Cool the surrounding containers first, then use dry powder to put out the fire. It is strictly forbidden to use water directly to prevent splashing; After extinguishing the fire, use a neutralizer (weak base for acid, weak acid for alkali) to deal with the leaked material.

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

Wear fully enclosed corrosion-resistant chemical protective clothing, chemical protective gloves (fluororubber), chemical goggles + mask; carry a pH tester (to monitor the pH value of the leak); after the operation, the equipment needs to be cleaned with a neutralizer and then rinsed with clean water.

## **6: Accidental release measures**

### **6.1 Protective measures for workers**

Wear fully enclosed chemical protective clothing (acid and alkali resistant), chemical protective gloves (fluororubber), chemical goggles + face mask; wear a gas mask (acid/alkali filter box) when dealing with volatile corrosive substances.

### **6.2 Environmental protection measure**

Prevent leaked material from contacting skin or eyes; do not discharge into water or soil; treat contaminated ground with a neutralizer (sodium carbonate for acid, dilute acetic acid for alkali) until neutral.

### **6.3 Containment methods for leaked chemicals**

Collect liquids in sealed polyethylene containers; collect solids with corrosion-resistant tools and place them in chemical-resistant bags (marked "corrosive"); store them in isolation after collection.

### **6.4 Cleanup methods for chemical spills**

Small leakage: absorb with acid/alkali resistant cotton and then neutralize; Large leakage: transfer to storage tank with corrosion resistant pump; After cleaning, flush the ground with plenty of water (if compatible), and collect the flushing water for neutralization.

### **6.5 Measures to prevent the spread of leaks**

Designate an 8-meter isolation zone; use corrosion-resistant isolation belts for blocking; and enhance ventilation (corrosion-resistant fans) for volatile corrosive substances.

### **6.6 Container leakage treatment**

Minor leaks: seal with acid/alkali resistant putty; severe leaks: evacuate, have professionals transfer remaining substances, and do not reuse damaged containers.

## 6.7 Special considerations

In case of skin contact, rinse with an eyewash for 15 minutes; in case of eye contact, rinse with an eyewash for 15 minutes and seek medical attention; add reagents slowly during neutralization (to prevent heat release); clean protective equipment with neutralizer and then rinse with clean water.

## 7: Handling and storage

### 7.1 Safe storage conditions

Store in a corrosion-resistant warehouse (the floor is epoxy resin coated, and the walls are acid/alkali-resistant tiles); the container is made of corrosion-resistant material (glass fiber reinforced plastic for acid corrosion, high-density polyethylene for alkaline corrosion), with a capacity of 200L to prevent dumping; the warehouse is equipped with an emergency neutralization tank (volume 5m<sup>3</sup>) and equipped with acid/alkali neutralizers (such as sodium carbonate, dilute acetic acid).

### 7.2 Storage precautions

Store them separately from materials that may come into contact with the skin (such as clothing and gloves) to avoid cross contamination. Use a corrosion-resistant forklift to transport containers and avoid impact. Check the humidity in the warehouse daily (<65%) to prevent moisture from exacerbating corrosion. In case of leakage, immediately absorb it with inert materials (such as sand) and then treat it with a neutralizer.

### 7.3 VCI Storage Grade

Level 2 (medium-high): Metal pipes and valves are coated with VCI anti-rust paint (acid/alkali resistant type) and maintained once every six months; VCI anti-rust blocks (such as urethane) are placed in the warehouse and replenished once every quarter to prevent corrosion of metal parts.

### 7.4 Recommended storage temperature

5-35°, avoid sudden temperature changes (such as moving directly from a low temperature environment to a high temperature environment); concentrated acids/bases must be kept at a temperature >30° to prevent temperature increases from causing increased container pressure; in winter, they must be protected from freezing (temperature >5°) to prevent the solution from freezing and cracking the container (if the label has a recommended storage temperature, follow the label).

### 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

When exposed to corrosive vapors (such as hydrochloric acid mist and sulfuric acid mist), wear a powered air-purifying respirator (APF>50); in high-concentration environments, a positive pressure air respirator is

required to avoid inhalation burns to the respiratory tract.

## 8.2 Recommended Filter type

For acidic corrosive substances, choose Type E filter cartridge (protects against acidic gases such as SO<sub>2</sub> and HCl); for alkaline corrosive substances, choose Type K filter cartridge (protects against ammonia and amines); if the product contains dust, add Type P2 filter cotton.

## 8.3 Eye/face protection

Wear chemical protective goggles + full-face mask. The mask must cover the chin. The lens should be made of polycarbonate (corrosion-resistant and impact-resistant). Check the sealing regularly.

## 8.4 Skin and body protection

Wear corrosion-resistant chemical protective clothing made of fluororubber or polytetrafluoroethylene (PTFE) to avoid direct skin contact; wear an apron (of the same material) with protection covering the chest to the knees.

## 8.5 Hand protection

Wear corrosion-resistant gloves. For acid corrosion, choose neoprene material; for alkaline corrosion, choose nitrile rubber material. The thickness of the gloves should be ≥0.5mm. Perform a water leakage test before use.

## 8.6 Hygiene measures

Immediately after the operation, rinse the skin with running water for 10 minutes. If there is stinging at the contact site, apply a neutralizer (5% sodium bicarbonate for acid and 1% acetic acid for alkali) for 5 minutes. Do not use irritating skin care products to avoid aggravating skin damage.

# 9: Physical and chemical properties and safety characteristics

<b>Physical state</b>	Odorless rose-pink solid.
<b>Colour</b>	Red to lavender dimorphic, orthorhombic crystals
<b>Odour</b>	Odorless
<b>Melting point/freezing point</b>	96-98°C
<b>Boiling point or initial boiling point and boiling range</b>	330°C at 760mmHg
<b>Flammability</b>	Not 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>	no data available
<b>Auto-ignition temperature</b>	no data available
<b>Decomposition temperature</b>	735°C

<b>pH</b>	Acidic salts, such as cobalt sulfate ... resulting aqueous solutions contain moderate concentrations of hydrogen ions and have pH's of less than 7.0. They react as acids to neutralize bases.
<b>Kinematic viscosity</b>	no data available
<b>Solubility</b>	38.3 G/100 ML WATER @ 25 DEG C
<b>Partition coefficient n-octanol/water</b>	no data available
<b>Vapour pressure</b>	3.35E-05mmHg at 25°C
<b>Density and/or relative density</b>	1.948 at 20°C (USCG, 1999)
<b>Relative vapour density</b>	no data available
<b>Particle characteristics</b>	no data available

## 10: Stability and reactivity

### 10.1 Reactivity

no data available

### 10.2 Chemical stability

Stable to 708°C.

### 10.3 Possibility of hazardous reactions

Acidic salts, such as COBALT SULFATE, are generally soluble in water. The resulting solutions contain moderate concentrations of hydrogen ions and have pH's of less than 7.0. They react as acids to neutralize bases. These neutralizations generate heat, but less or far less than is generated by neutralization of inorganic acids, inorganic oxoacids, and carboxylic acid. They usually do not react as either oxidizing agents or reducing agents but such behavior is not impossible. Many of these compounds catalyze organic reactions.

### 10.4 Conditions to avoid

no data available

### 10.5 Incompatible materials

Reacts as a dust with strong oxidants causing fire and explosion hazard.

### 10.6 Hazardous decomposition products

The substance decomposes on heating to 735C, producing toxic fumes of sulfur oxides

## 11: Toxicological information

### 11.1 Acute toxicity

Oral: LD50 Rat oral 424 mg/kg bw

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

Cobaltous Sulfate: reasonably anticipated to be a human carcinogen.

### 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

no data available

## 12.3 Bioaccumulative potential

Food Chain Conc'n Potential: Bioconcentration of 200-1000 fold only under constant exposure. Not significant in spill conditions. /Heptahydrate/

## 12.4 Mobility in soil

no data available

## 12.5 Other adverse effects

no data available

# 13: Disposal considerations

## 13.1 Disposal methods for waste chemicals

Acidic corrosives can be treated with alkaline neutralizers (such as sodium carbonate) until neutralized and then disposed of as ordinary waste. Alkaline corrosives can be treated with acidic neutralizers (such as dilute hydrochloric acid) until neutralized and then disposed of. Those that cannot be neutralized must be incinerated at high temperature or chemically decomposed by a professional unit. The container must be thoroughly cleaned before being disposed of.

## 13.2 Precautions

Neutralization reactions must be conducted in well-ventilated, dedicated facilities, with the reaction rate controlled to prevent splashing. Disposal personnel must wear corrosion-resistant protective gear. The pH value of the neutralized waste must be controlled between 6 and 9. Direct disposal of unneutralized corrosive materials is prohibited. Emergency pools must be established at the disposal site to prevent leakage and contamination.

# 14: Transport information

## 14.1 UN Number

ADR/RID: UN3082

IMDG: UN3082

IATA: UN3082

## 14.2 UN Proper Shipping Name

ADR/RID:  
ENVIRONMENTALLY  
HAZARDOUS SUBSTANCE,  
LIQUID, N.O.S.

IMDG: ENVIRONMENTALLY  
HAZARDOUS SUBSTANCE,  
LIQUID, N.O.S.

IATA: ENVIRONMENTALLY  
HAZARDOUS SUBSTANCE,  
LIQUID, N.O.S.

## 14.3 Transport hazard class(es)

ADR/RID: 9

IMDG: 9

IATA: 9

**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
Cobalt sulfate	Cobalt sulfate	10124-43-3	233-334-2
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			Not 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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