

Safety Data Sheet

Brownish yellow stock solution BY(EP)

Version : V2.0.0.1

Report No. : BWQ0149-2016-MSDS-EP

Creation Date : 2025/12/23

Revision Date : -



*Prepared in accordance with EU REACH Regulation (REACH 1907/2006 with amendment 2020/878)

1 Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

| | |
|---------------------------|---------------------------------------|
| Product Name | Brownish yellow stock solution BY(EP) |
| Cat No. | BWQ0149-2016 |
| CAS No. | Not applicable |
| EC No. | Not applicable |
| Molecular Formula | Not applicable |
| REACH Registration Number | - |
| UFI | No information available |

1.2 Relevant identified uses of the substance or mixture and uses advised against

| | |
|--------------------------|------------------------------|
| Relevant identified uses | Please consult manufacturer. |
| Uses advised against | Please consult manufacturer. |

1.3 Details of the supplier of the Safety Data Sheet

| | |
|------------------------|--|
| Name of the company | Weiyel Inc |
| Address of the company | Hedian Light Industrial Park, Chengguan Town, Shangcheng County, Xinyang City, Henan Province, China |
| Post code | 465350 |
| Telephone number | 010-58103678 |
| Fax number | 010-84840368 |
| E-mail address | info@weiyel.com |

1.4 Emergency telephone number

| | |
|----------------------------|--------------|
| Emergency telephone number | 010-58103678 |
| Opening hours | 24h |

2 Hazards identification

2.1 CLP classification according to Regulation (EC) No. 1272/2008 with amendment 2023/707

| | |
|-------------------------------|-------------|
| Skin corrosion/irritation | Category 1 |
| Sensitization - skin | Category 1 |
| Serious eye damage/irritation | Category 1 |
| Sensitization - respiratory | Category 1 |
| Germ cell mutagenicity | Category 2 |
| Carcinogenicity | Category 1B |

| | |
|---|-------------|
| Reproductive toxicity | Category 1B |
| Hazardous to the aquatic environment - long-term (chronic) hazard | Category 3 |

2.2 Label elements

| | |
|-------------------|---|
| Hazard pictograms |  |
| Signal word | Danger |

Hazard statements

| | |
|-------|---|
| H314 | Causes severe skin burns and eye damage |
| H317 | May cause an allergic skin reaction |
| H318 | Causes serious eye damage |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled |
| H341 | Suspected of causing genetic defects |
| H350i | May cause cancer by inhalation |
| H360F | May damage fertility |
| H412 | Harmful to aquatic life with long lasting effects |

Precautionary statements

◆ Prevention

| | |
|------|--|
| P201 | Obtain special instructions before use. |
| P202 | Do not handle until all safety precautions have been read and understood. |
| P260 | Do not breathe gas/mist/vapour/spray. |
| P264 | Wash hands and other parts of the body (if related) thoroughly after handling. |
| 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. |
| P284 | [In case of inadequate ventilation] wear respiratory protection. |

◆ Response

| | |
|----------------|--|
| P310 | Immediately call a POISON CENTER/doctor. |
| P321 | Specific treatment (see related instructions on the label). |
| P363 | Wash contaminated clothing before reuse. |
| P302+P352 | IF ON SKIN: Wash with plenty of water. |
| P304+P340 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. |
| P308+P313 | IF exposed or concerned: Get medical advice/attention. |
| P333+P313 | If skin irritation or rash occurs: Get medical advice/attention. |
| P342+P311 | If experiencing respiratory symptoms: Call a POISON CENTER/doctor. |
| P362+P364 | Take off contaminated clothing and wash it before reuse. |
| P301+P330+P331 | IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. |
| P303+P361+P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower]. |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact |

lenses, if present and easy to do. Continue rinsing.

◆ Storage

P405 Store locked up.

◆ Disposal

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards

◆ Results of PBT and vPvB assessment

| Component | Results of PBT and vPvB assessment [according to (EC) No 1907/2006] |
|-------------------|---|
| Water | Insufficient information, temporarily unable to evaluate |
| Hydrogen chloride | Not PBT/vPvB |
| Cobalt dichloride | Not applicable |
| Iron trichloride | Not applicable |
| Copper sulphate | Not PBT/vPvB |

◆ Results of endocrine disrupting properties assessment

| Component | Results of endocrine disrupting properties assessment [according to (EU) No 2017/2100 or (EU) No 2018/605] |
|-------------------|--|
| Water | Insufficient information, temporarily unable to evaluate |
| Hydrogen chloride | Insufficient information, temporarily unable to evaluate |
| Cobalt dichloride | Insufficient information, temporarily unable to evaluate |
| Iron trichloride | Insufficient information, temporarily unable to evaluate |
| Copper sulphate | Insufficient information, temporarily unable to evaluate |

◆ Other

Not applicable.

3 Composition/information on ingredients

3.1 Substance

Not applicable

3.2 Mixture

| Component | Weight % content(or range) | Classification according to Regulation (EC) No. 1272/2008 with amendment 2023/707 [CLP] | Specific Conc. Limits, M-factors |
|---|----------------------------|--|--|
| Water CAS : 7732-18-5 EC : 231-791-2 Index No. : - | 95.8 | Not Classified | - |
| Hydrogen chloride CAS : 7647-01-0 EC : 231-595-7 Index No. : 017-002-00-2 | 1 | Skin corrosion/irritation, Category 1B, H314; Specific target organ toxicity - single exposure; respiratory tract irritation, Category 3, H335 | H314B:C≥25% H315:10% ≤C<25% H319:10%≤C<25 % H335:C≥10% |
| Cobalt dichloride CAS : 7646-79-9 EC : 231-589-4 | 1.2 | Acute Toxicity - Oral, Category 4, H302; Sensitization - skin, Category 1, H317; Sensitization - respiratory, Category 1, | H350B:C ≥ 0.01%;M=10 |

| | | | |
|---|---|--|---|
| Index No. : 027-004-00-5 | | H334; Germ cell mutagenicity, Category 2, H341; Carcinogenicity, Category 1B, H350; Reproductive toxicity, Category 1B, H360; Hazardous to the aquatic environment - short-term (acute) hazard, Category 1, H400; Hazardous to the aquatic environment - long-term (chronic) hazard, Category 1, H410 | |
| Iron trichloride CAS : 7705-08-0 EC : 231-729-4 Index No. : - | 1 | Corrosive to metals, Category 1, H290; Acute Toxicity - Oral, Category 4, H302; Skin Corrosion/Irritation, Category 2, H315; Serious eye damage/irritation, Category 1, H318 | - |
| Copper sulphate CAS : 7758-98-7 EC : 231-847-6 Index No. : 029-004-00-0 | 1 | Acute Toxicity - Oral, Category 4, H302; Skin Corrosion/Irritation, Category 2, H315; Serious eye damage/irritation, Category 2, H319; Hazardous to the aquatic environment - short-term (acute) hazard, Category 1, H400; Hazardous to the aquatic environment - long-term (chronic) hazard, Category 1, H410 | - |

4 First-aid measures

4.1 Description of first aid measures

| | |
|-----------------------------------|---|
| General advice | Immediate medical attention is required. Show this safety data sheet (SDS) to the doctor in attendance. |
| Eye contact | Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician if feel uncomfortable. |
| Skin contact | Take off contaminated clothing and shoes immediately. Wash off with plenty of soap and water for at least 15 minutes and consult a physician if feel uncomfortable. |
| Ingestion | Never give anything by mouth to an unconscious person. Call a physician or Poison Control Center immediately. |
| Inhalation | Move victim into fresh air. If breathing is difficult, give oxygen. Do not use mouth to mouth resuscitation if victim ingested or inhaled the substance. If not breathing, give artificial respiration and consult a physician immediately. |
| Protecting of first-aiders | Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent spread of contamination. |

4.2 Most important symptoms/effects, acute and delayed

| | |
|---|--|
| 1 | Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. |
|---|--|

4.3 Indication of any immediate medical attention and special treatment needed

| | |
|---|--------------------------|
| 1 | Treat symptomatically. |
| 2 | Symptoms may be delayed. |

5 Fire-fighting measures

5.1 Extinguishing media

| | |
|-------------------------------------|--|
| Suitable extinguishing media | Small fire: dry chemical, CO ₂ or water spray; Large fire: dry chemical, CO ₂ , alcohol-resistant foam or water spray; Fire involving tanks, rail tank cars or highway tanks: Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Do not get water inside containers. |
|-------------------------------------|--|

| | |
|---------------------------------------|---------------------------|
| Unsuitable extinguishing media | No information available. |
|---------------------------------------|---------------------------|

5.2 Specific hazards arising from the substance or mixture

| | |
|---|---|
| 1 | Fire may produce irritating, poisonous or corrosive gases. |
| 2 | Development of hazardous combustion gases or vapor possible in the event of fire. |
| 3 | May expansion or decompose explosively when heated or involved in fire. |

5.3 Advice for firefighters

| | |
|---|--|
| 1 | As in any fire, wear self-contained breathing apparatus (MSHA/NIOSH approved or equivalent) and full protective gear. |
| 2 | Fight fire from a safe distance, with adequate cover. |
| 3 | Prevent fire extinguishing water from contaminating surface water or the ground water system. |

6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

| | |
|---|---|
| 1 | Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. |
| 2 | Do not touch or walk through spilled material. |
| 3 | Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. |
| 4 | Use personal protective equipment, do not breathe gas/mist/vapour/spray. |
| 5 | Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges. |
| 6 | Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. |

6.2 Environmental precautions

| | |
|---|---|
| 1 | Prevent further leakage or spillage if safe to do so. |
| 2 | Discharge into the environment must be avoided. |

6.3 Methods and materials for containment and cleaning up

| | |
|---|---|
| 1 | Do not touch or cross spills. |
| 2 | It is recommended that emergency personnel wear a self-contained breathing apparatus with positive pressure and wear anti-corrosion clothing. |
| 3 | Transfer to a tank truck or special collector with a corrosion-resistant pump. |
| 4 | Do not touch broken containers and spills before putting on appropriate protective clothing. |
| 5 | Cut off the source of the leak as much as possible. |
| 6 | Keep leaks in a ventilated place. |
| 7 | Absorb spilled material in dry sand or inert absorbent. In case of large amount of spillage, contain a spill by bunding. |
| 8 | Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. |
| 9 | Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container. |

6.4 Reference to other sections

| | |
|---|--|
| 1 | Personal Protective Equipment advice is contained in Section 8 of the SDS. |
| 2 | Disposal considerations advice is contained in Section 13 of the SDS. |

7 Handling and storage

7.1 Precautions for safe handling

◆ Protective measures

| | |
|---|---|
| 1 | Handling is performed in a well ventilated place. |
| 2 | Wear suitable protective equipment. |
| 3 | Avoid contact with skin and eyes. |

◆ Measures to prevent fire

| | |
|---|---|
| 1 | Keep away from heat/sparks/open flames/ hot surfaces. |
|---|---|

◆ Measures to prevent aerosol and dust generation

| | |
|---|-----------------|
| 1 | Not applicable. |
|---|-----------------|

◆ Advice on general occupational hygiene

| | |
|---|---|
| 1 | Wash hands and face after using the substances. |
| 2 | Replace the contaminated clothing immediately. |

7.2 Conditions for safe storage, including any incompatibilities

| | |
|---|--|
| 1 | Keep containers tightly closed. |
| 2 | Keep containers in a dry, cool and well-ventilated place. |
| 3 | Keep away from heat/sparks/open flames/hot surfaces. |
| 4 | Store away from incompatible materials and foodstuff containers. |

7.3 Specific end use(s)

| | |
|---|--|
| 1 | In addition to use mentioned in the Section 1.2, unforeseen other specific end uses. |
|---|--|

8 Exposure controls/personal protection

8.1 Control parameters

◆ Occupational exposure limit values

| Component | Country/Region | Limit value - Eight hours | | Limit value - Short term | |
|-------------------|---|---------------------------|-------------------|--------------------------|-------------------|
| | | ppm | mg/m ³ | ppm | mg/m ³ |
| Hydrogen chloride | Japan - JSOH(2024-2025) | - | - | - | - |
| | Permissible exposure standards for workers in the workplace | - | - | - | - |
| | European Union | 5 | 8 | 10 | 15 |
| | France | - | - | 5 | 7.6 |
| | Germany (AGS) | 2 | 3 | 4 | 6 |
| | Germany (DFG) | 2 | 3 | 4 | 6 |
| Cobalt dichloride | Japan - JSOH(2024-2025) | - | 0.05 (as Co) | - | - |
| | Finland | - | 0.02 | - | - |
| | Spain | - | 0.02 | - | - |
| | Sweden | - | 0.02 | - | - |
| Iron trichloride | USA - ACGIH | - | 1(as Fe) | - | - |

| | | | | | |
|------------------------|---------|---|------|---|---|
| Copper sulphate | Finland | - | 0.02 | - | - |
|------------------------|---------|---|------|---|---|

◆ Biological limit values

| Component | Standard | Biological monitoring index | Biological limits value | Sampling time | Remark |
|--------------------------|------------|-----------------------------|-------------------------|----------------------------------|--------|
| Cobalt dichloride | USA -ACGIH | Cobalt(Urine) | 15µg/L | End of shift at end of work week | |

◆ Monitoring methods

| | |
|---|---|
| 1 | EN 14042 Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents. |
| 2 | GBZ/T 300 and GBZ/T 160 series standard Determination of toxic substances in workplace air. |

◆ Derived No effect level (DNEL)

| Component | Route of exposure | DNEL for Workers | | | |
|--------------------------|-------------------|-----------------------|--------------------------|--------------------------|----------------------------|
| | | Acute effects (local) | Acute effects (systemic) | Chronic effects (local) | Chronic effects (systemic) |
| Water | Inhalation | No data available | No data available | No data available | No data available |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Hydrogen chloride | Inhalation | No data available | No data available | 8 mg/m ³ | No data available |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Cobalt dichloride | Inhalation | No data available | No data available | 0.0881 mg/m ³ | No data available |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Iron trichloride | Inhalation | No data available | No data available | No data available | No data available |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Copper sulphate | Inhalation | No data available | No data available | 1 mg/m ³ | 1 mg/m ³ |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |

◆ Predicted No Effect Concentration (PNEC)

| Component | A | B | C | D | E | F | G | H |
|--------------------------|----------------------|----------------------|----------------------|------------------------|------------------------|----------------------|----------------------|----------------------------------|
| Hydrogen chloride | No hazard identified | No hazard identified | No hazard identified | No hazard identified | No hazard identified | No hazard identified | No data available | No potential for bioaccumulation |
| Cobalt dichloride | 1.06 µg/L | 2.36 µg/L | 370 µg/L | 53.8 mg/kg sediment dw | 69.8 mg/kg sediment dw | No hazard identified | 10.9 mg/kg soil dw | No potential for bioaccumulation |
| Iron trichloride | No hazard identified | No hazard identified | No hazard identified | No hazard identified | No hazard identified | No hazard identified | No hazard identified | No potential for |

| | | | | | | | | |
|---|----------|----------|----------|----------------------|-----------------------|----------------------|------------------|----------------------------------|
| | | | | | | | | bioaccumulation |
| Copper sulphate | 7.8 µg/L | 5.2 µg/L | 230 µg/L | 87 mg/kg sediment dw | 676 mg/kg sediment dw | No hazard identified | 65 mg/kg soil dw | No potential for bioaccumulation |
| Note 1: A: Freshwater; B: Seawater; C: Sewage treatment plant; D: Sediment (freshwater); E: Sediment (seawater); F: Air; G: Soil; H: Secondary poisoning(Hazard for Predators). | | | | | | | | |
| Note 2: The PNEC values of the remaining components not shown in the product are not available yet. | | | | | | | | |

8.2 Exposure controls

8.2.1 Engineering controls

| | |
|---|--|
| 1 | Ensure adequate ventilation, especially in confined areas. |
| 2 | Ensure that eyewash stations and safety showers are close to the workstation location. |
| 3 | Use explosion-proof electrical/ventilating/lighting/equipment. |
| 4 | Set up emergency exit and necessary risk-elimination area. |

8.2.2 Personal protection equipment

| | |
|--------------------------|---|
| General requirement |  |
| Eye protection | Must wear appropriate anti-corrosion goggles. |
| Hand protection | Must wear acid and alkali resistant chemical protective gloves. |
| Respiratory protection | Must wear appropriate personal respiratory protective equipment. |
| Skin and body protection | Must wear acid and alkali resistant chemical protective clothing. |

8.2.3 Environmental exposure controls

| | |
|---------------------------------|--------------------------|
| Environmental exposure controls | No information available |
|---------------------------------|--------------------------|

9 Physical and chemical properties

9.1 Information on basic physical and chemical properties

| | |
|---|---|
| Physical state | Reddish-brown to yellowish-brown transparent liquid |
| Colour | Reddish-brown to yellowish-brown transparent liquid |
| Odor | No information available |
| Odor threshold | No information available |
| pH | 1.2 (Hydrogen chloride) |
| Melting point/freezing point(°C) | -114.2 (Hydrogen chloride) |
| Initial boiling point and boiling range(°C) | -85.1 (Hydrogen chloride) |
| Flash point(Closed cup, °C) | No information available |
| Evaporation rate | No information available |
| Flammability | No information available |
| Upper/lower explosive | Upper limit : No information available ; Lower limit : No information available |

| | |
|---------------------------------------|------------------------------------|
| limits[%d(v/v)] | |
| Vapor pressure | No information available |
| Vapor density(Air = 1) | 1.3 (Hydrogen chloride) |
| Relative density(Water=1) | 1.00045 (Hydrogen chloride) |
| Solubility | 500g/L (20 °C,Hydrogen chloride) |
| n-octanol/water partition coefficient | 0.25 (Hydrogen chloride) |
| Auto-ignition temperature(°C) | No information available |
| Decomposition temperature(°C) | No information available |
| Kinematic viscosity | No information available |
| Explosive properties | No information available |
| Oxidizing properties | No information available |
| Particle characteristics | Not applicable |

9.2 Other information

9.2.1 Information with regard to physical hazard classes

| | |
|--|--------------------------|
| Information with regard to physical hazard classes | No information available |
|--|--------------------------|

9.2.2 Other safety characteristics

| | |
|------------------------------|--------------------------|
| Other safety characteristics | No information available |
|------------------------------|--------------------------|

10 Stability and reactivity

Stability and reactivity

| | |
|---|--|
| 10.1 Reactivity | Contact with incompatible substances can cause decomposition or other chemical reactions. |
| 10.2 Chemical stability | Stable under proper operation and storage conditions. |
| 10.3 Possibility of hazardous reactions | In contact with active metals (alkali metals, Na, Ca etc.) causes a reaction and release hydrogen. In contact with magnesium, sodium, potassium, copper and other metals or metal acetylene may cause a fire or explosion. Mixtures with active metals are sensitive to mechanical vibration and may cause a severe explosion. |
| 10.4 Conditions to avoid | Incompatible materials, heat, flame and spark. |
| 10.5 Incompatible materials | Alkali, sodium, calcium, and other active metal, halogen, metal oxide, nonmetal oxide, acyl halide and metal phosphide. Magnesium, sodium, potassium, copper, oxidants, acetylene metal compounds, alcohols, alkanes, hydrogen and water. Active metal, nitric acid ester, epoxy compounds, alkenes and nitro compounds. |
| 10.6 Hazardous decomposition products | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |

11 Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008 with amendment 2023/707

| Brownish yellow stock solution BY(EP) | |
|---------------------------------------|---|
| Skin corrosion/irritation | Causes severe skin burns and eye damage(Category 1) |
| Serious eye damage/irritation | Causes serious eye damage(Category 1) |
| Skin sensitization | May cause an allergic skin reaction(Category 1) |
| Respiratory sensitization | May cause allergy or asthma symptoms or breathing difficulties if |

| | |
|-------------------------------|--|
| | inhaled(Category 1) |
| Reproductive toxicity | May damage fertility(Category 1B) |
| STOT-single exposure | Based on available data, the classification criteria are not met |
| STOT-repeated exposure | Based on available data, the classification criteria are not met |
| Aspiration hazard | Based on available data, the classification criteria are not met |
| Germ cell mutagenicity | Suspected of causing genetic defects(Category 2) |

| Acute toxicity

| Component | LD ₅₀ (oral) | LD ₅₀ (dermal) | LC ₅₀ (inhalation,4h) |
|--------------------------|-------------------------|---------------------------|----------------------------------|
| Copper sulphate | 300mg/kg(Rat) | No information available | No information available |
| Hydrogen chloride | 900mg/kg(Rabbit) | No information available | 1405ppmV(Rat) |
| Cobalt dichloride | 766mg/kg(Rat) | > 2000mg/kg(Rat) | No information available |
| Iron trichloride | 450mg/kg(Rat) | No information available | No information available |

| Carcinogenicity

| Component | List of carcinogens by the IARC Monographs | Report on Carcinogens by NTP |
|--------------------------|--|------------------------------|
| Water | Not Listed | Not Listed |
| Hydrogen chloride | Category 3 | Not Listed |
| Cobalt dichloride | Category 2A(Remark 1) | Category R |
| Iron trichloride | Not Listed | Not Listed |
| Copper sulphate | Not Listed | Not Listed |

Remark 1: Soluble cobalt(II) salts

| 11.2 Information on other hazards

| 11.2.1 Endocrine disrupting properties

| Component | Endocrine disrupting properties |
|--------------------------|---------------------------------|
| Water | No information available |
| Hydrogen chloride | No information available |
| Cobalt dichloride | No information available |
| Iron trichloride | No information available |
| Copper sulphate | No information available |

| 11.2.2 Other Information

| | |
|--------------------------|------------------|
| Other Information | See Section 11.1 |
|--------------------------|------------------|

12 Ecological information

| 12.1 Toxicity

| Acute aquatic toxicity

| Component | Fish | Crustaceans | Algae or other aquatic plants |
|-----------|------|-------------|-------------------------------|
| | | | |

| | | | |
|--------------------------|--|---|--|
| Copper sulphate | LC ₅₀ : 0.31mg/L (96h)(Fish) | EC ₅₀ : 0.06mg/L (48h)(Crustaceans) | ErC ₅₀ : 0.05mg/L (96h)(Algae) |
| Hydrogen chloride | LC ₅₀ : 20.5mg/L (96h)(Fish) | No information available | No information available |
| Cobalt dichloride | LC ₅₀ : 1.5mg/L (96h)(Fish) | EC ₅₀ : 1.49mg/L (48h)(Crustaceans) | ErC ₅₀ : 9.02mg/L (96h)(Algae) |
| Iron trichloride | LC ₅₀ : 21mg/L (96h)(Fish) | No information available | No information available |

Chronic aquatic toxicity

| | |
|--------------------------|--------------------------|
| Chronic aquatic toxicity | No information available |
|--------------------------|--------------------------|

12.2 Persistence and degradability

| Component | Persistence (water/soil) | Persistence (air) |
|-------------------|--------------------------|-------------------|
| Cobalt dichloride | High | High |

12.3 Bioaccumulative potential

| Component | Bioaccumulative potential | Comments |
|-------------------|---------------------------|--------------|
| Cobalt dichloride | Low | Log Kow=0.85 |

12.4 Mobility in soil

| Component | log Koc | Remark |
|-------------------|---------|--------|
| Cobalt dichloride | 1.375 | |

12.5 Results of PBT and vPvB assessment

| Component | Results of PBT and vPvB assessment [according to (EC) No 1907/2006] |
|-------------------|---|
| Water | Insufficient information, temporarily unable to evaluate |
| Hydrogen chloride | Not PBT/vPvB |
| Cobalt dichloride | Not applicable |
| Iron trichloride | Not applicable |
| Copper sulphate | Not PBT/vPvB |

12.6 Endocrine disrupting properties

| Component | Endocrine disrupting properties |
|-------------------|---------------------------------|
| Water | No information available |
| Hydrogen chloride | No information available |
| Cobalt dichloride | No information available |
| Iron trichloride | No information available |
| Copper sulphate | No information available |

12.7 Other adverse effects

| | |
|--|--------------------------|
| | No information available |
|--|--------------------------|

13 Disposal considerations

13.1 Waste treatment methods

| | |
|--------------------------|--|
| Waste chemicals | Before disposal should refer to the relevant national and local laws and regulation. Recommend the use of incineration disposal. |
| Contaminated packaging | Containers may still present chemical hazard when empty. Keep away from hot and ignition source of fire. Return to supplier for recycling if possible. |
| Disposal recommendations | Refer to section waste chemicals and contaminated packaging. |

14 Transport information**Label and Mark**

| | |
|--------------------|---|
| Transporting Label |  |
|--------------------|---|

IMDG-CODE

| | |
|--|---|
| 14.1 UN number | 3264 |
| 14.2 UN proper shipping name | CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. |
| 14.3 Transport hazard class | 8 |
| 14.4 Packing group | III |
| 14.5 Environmental hazards (Yes or no) | No |

IATA-DGR

| | |
|--|---|
| 14.1 UN number | 3264 |
| 14.2 UN proper shipping name | CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. |
| 14.3 Transport hazard class | 8 |
| 14.4 Packing group | III |
| 14.5 Environmental hazards (Yes or no) | No |

UN-ADR

| | |
|--|---|
| 14.1 UN number | 3264 |
| 14.2 UN proper shipping name | CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. |
| 14.3 Transport hazard class | 8 |
| 14.4 Packing group | III |
| 14.5 Environmental hazards (Yes or no) | No |

Special precautions for user

| | |
|--|---|
| | Transport vehicles should be equipped with the appropriate variety and quantity of fire equipment and emergency equipment leakage during transport. Before transport, should be preceded by checking whether container integrity, sealing. The transport unit must be placarded and marked in accordance with relevant transporting requirements. |
|--|---|

Maritime transport in bulk according to IMO instruments

| | |
|--|---------------|
| ◆ Transport in bulk according to Annex II of MARPOL and the IBC code | Not Available |
|--|---------------|

◆ Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

| | |
|--|---------------|
| | Not Available |
|--|---------------|

◆ Transport in bulk in accordance with the IGC Code

| | |
|--|---------------|
| | Not Available |
|--|---------------|

15 Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

International chemical inventory

| Component | A | B | C | D | E | F | G | H | I | J | K | L | M |
|-------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Water | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Hydrogen chloride | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Cobalt dichloride | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Iron trichloride | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Copper sulphate | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |

- [A] China Inventory of Existing Chemical Substances(IECSC)
 [B] European Inventory of Existing Commercial Chemical Substances(EC inventory)
 [C] United States Toxic Substances Control Act Inventory(TSCA)
 [D] Canadian Domestic Substances List(DSL)
 [E] New Zealand Inventory of Chemicals(NZIoC)
 [F] Philippines Inventory of Chemicals and Chemical Substances(PICCS)
 [G] Korea Existing Chemicals Inventory(KECL)
 [H] Australian. Inventory of Industrial Chemical (AIICS)
 [I] Japan Inventory of Existing & New Chemical Substances(ENCS)
 [J] Thailand Existing Chemicals Inventory(TECI)
 [K] Mexico National Inventory of Chemical Substances (INSQ)
 [L] Russia Inventory of Existing Substances(DRAFT)
 [M] Inventory of Existing Chemical Substances in Taiwan, China (TCSI)

List of Chemical Substances under International Conventions

| Component | A | B | C |
|-------------------|---|---|---|
| Water | × | × | × |
| Hydrogen chloride | × | × | × |
| Cobalt dichloride | × | × | × |
| Iron trichloride | × | × | × |
| Copper sulphate | × | × | × |

- [A] The Montreal Protocol on Substances that Deplete the Ozone Layer
 [B] Stockholm Convention on Persistent Organic Pollutants (POPs)
 [C] Rotterdam Convention on the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade

European chemical inventory

| Component | A | B | C | D | E | F | G | H | I |
|-------------------|---|---|---|---|---|---|---|---|---|
| Water | × | × | × | √ | × | × | × | × | × |
| Hydrogen chloride | × | × | × | √ | √ | × | × | × | × |

| | | | | | | | | | |
|--------------------------|---|---|---|---|---|---|---|---|---|
| Cobalt dichloride | √ | × | √ | √ | √ | × | × | × | × |
| Iron trichloride | × | × | × | √ | √ | × | × | × | × |
| Copper sulphate | × | × | × | √ | √ | × | × | × | × |

- [A] Candidate list of Substances of Very High Concern for authorization under EU REACH regulation
 [B] Substances requiring authorisation under EU REACH regulation
 [C] Substances restricted under EU REACH
 [D] Pre-registered substances under EU REACH
 [E] Registered substances under EU REACH
 [F] Substance Evaluation – CoRAP under EU REACH
 [G] List of priority substances under EU water policy (Directive 2455/2001/EC)
 [H] Substances subject to POPs Regulation
 [I] Substances proposed as POPs

Note:

- “√” Indicates that the substance included in the regulations.
 “×” No data or not included in the regulations.

German water hazard class(WGK)

| Component | WGK | Remark |
|--------------------------|-------|---|
| Hydrogen chloride | WGK 1 | The regular and professional use of this substance for drinking water treatment, surface water remediation or waste water treatment is not restricted by this classification. |
| Cobalt dichloride | WGK 3 | |
| Iron trichloride | WGK 1 | The regular and professional use of this substance for drinking water treatment, surface water remediation or waste water treatment is not restricted by this classification. |
| Copper sulphate | WGK 3 | |

- 【WGK 1】 slightly hazardous to water
 【WGK 2】 obviously hazardous to water
 【WGK 3】 highly hazardous to water
 【nwg】 non-hazardous to water
 【awg】 hazardous to water in general

German technical instructions on air quality control(TA LUFT)

| Component | TA LUFT | Remark |
|--------------------------|--|--------|
| Hydrogen chloride | Chapter 5.2.4 Gaseous inorganic substances. Class III. Following values are not allowed to be exceeded in the exhaust gas: Mass flow: 0,15 kg/hr or Mass conc.: 30 mg/m ³ . Specified as hydrogen chlorid. | |
| Cobalt dichloride | Chapter 5.2.7.1.1 Carcinogenic substances. Class I. As minimum requirement, the following values are in all not allowed to be exceeded in the exhaust gas: Mass flow: 0,15 g/hr or Mass conc.: 0,05 mg/m ³ . Specified as Co. | |
| Iron trichloride | Chapter 5.2.1 Overall Dust, including fine dust. The emissions of dust in the exhaust gas are not allowed to | |

| | | |
|------------------------|---|--|
| | <p>exceed the following values: Mass flow: 0,20 kg/hr or Mass conc.: 20 mg/m³ The mass per unit volume of 0,15 g/m³ in exhaust gas is not allowed to be exceeded also on observance or lower deviation of a mass flow of 0,20 kg/h. For emission sources that exceed the mass flow rate of 0.40 kg/h, the mass concentration in waste gas the mass concentration must not exceed 10 mg/m³.</p> | |
| Copper sulphate | <p>Chapter 5.2.2 Inorganic dusts. Class III. Also with the presence of several substances of the same class, the following values are in all not allowed to be exceeded in the exhaust gas: Mass flow: 5 g/hr or Mass conc.: 1 mg/m³. Specified as Cu.</p> | |

German technical rules for hazardous substances (TRGS)

| Component | TRGS | Remark |
|--------------------------|--|--------|
| Water | TRGS 500 TRGS 509 TRGS 510 | |
| Hydrogen chloride | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 402 TRGS 401 TRGS 407 TRGS 745 TRBS 3145 TRGS 746 TRBS 3146 TRGS 510 TRGS 500 | |
| Cobalt dichloride | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 401 TRGS 406 TRGS 410 TRGS 500 TRGS 509 TRGS 510 TRGS 560 | |
| Iron trichloride | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 401 TRGS 500 TRGS 509 TRGS 510 | |
| Copper sulphate | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 401 TRGS 500 TRGS 509 TRGS 510 | |

15.2 Chemical safety assessment

| | |
|--|--|
| | No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier. |
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16 Other information

Information on revision

| | |
|----------------------------|------------|
| Creation Date | 2025/12/23 |
| Revision Date | - |
| Reason for revision | - |

Reference

- [1] IPCS: The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>.
- [2] IARC, website: <http://www.iarc.fr/>.
- [3] OECD: The Global Portal to Information on Chemical Substances, website: <https://www.chemportal.org/chemportal/>.
- [4] CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>.
- [5] NLM: ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>.

- [6] EPA: Integrated Risk Information System, website: <http://cfpub.epa.gov/iris/>.
 [7] U.S. Department of Transportation: ERG, website: <http://www.phmsa.dot.gov/hazmat/library/erg>.
 [8] Germany GESTIS-database on hazard substance, website: <http://gestis-en.itrust.de/>.

Abbreviations and acronyms

| | | | |
|------------------|--------------------------------------|-----------|---|
| CAS | Chemical Abstracts Service | UN | The United Nations |
| PC-STEL | Short term exposure limit | OECD | Organization for Economic Co-operation and Development |
| PC-TWA | Time Weighted Average | IMDG-CODE | International Maritime Dangerous Goods CODE |
| MAC | Maximum Allowable Concentration | IARC | International Agency for Research on Cancer |
| DNEL | Derived No Effect Level | ICAO | International Civil Aviation Organization |
| PNEC | Predicted No Effect Concentration | IATA | International Air Transportation Association |
| NOEC | No Observed Effect Concentration | ACGIH | American Conference of Governmental Industrial Hygienists |
| LC ₅₀ | Lethal Concentration 50% | NFPA | National Fire Protection Association |
| LD ₅₀ | Lethal Dose 50% | NTP | National Toxicology Program |
| EC ₅₀ | Effective Concentration 50% | PBT | Persistent, Bioaccumulative, Toxic |
| EC _x | Effective Concentration X% | vPvB | very Persistent, very Bioaccumulative |
| P _{OW} | Partition coefficient Octanol: Water | CMR | Carcinogens, mutagens or substances toxic to reproduction |
| BCF | Bioconcentration factor | RPE | Respiratory Protective Equipment |
| ED | Endocrine disruptor | | |

Disclaimer

This Safety Data Sheet (SDS) was prepared according to REACH Regulation. The data included was derived from international authoritative database and provided by the enterprise. Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. However, due to the diversity of information sources and the limitations of our knowledge, this document is only for user's reference. Users should make their independent judgment of suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.