

## Safety Data Sheet

In accordance with the Globally Harmonized System (GHS)

Version date: 30/03/2023

Version: 01

### Section 1: Product identification

- 1.1 GHS product identifier** : Copper concentrate.
- 1.2 Recommended use of the chemical and restrictions on use** : **Recommended uses:** Raw material.  
**Restrictions on use:** Any use other than that reported in this SDS is not recommended.
- 1.3 Supplier's details** : **Name:** Minera Teck Quebrada Blanca Company.  
**Address:** Esmeralda 340, Piso 10. Iquique. Región de Tarapacá. Chile.  
**Phone number:** +56 (57) 528 100 (Center and reception Iquique office).  
**Electronic address:** emergencia.hds@teck.com
- 1.4 Emergency phone number** : Communications center (CENCO): +56 57 2528400.  
Emergency Brigade: +56 57 2528671 - +56 57 2528121.

### Section 2: Hazard identification

- 2.1 Classification of the substance or mixture** : Hazardous to the aquatic environment (acute toxicity). Category 3.
- 2.2 GHS label elements, including precautionary statements.**
- Hazard pictograms** : Not applicable.
- Signal word** : No applicable.
- Hazards statements** : H402 Harmful to aquatic life.
- Precautionary statements** : P273 Avoid release to the environment.  
P501 Dispose of contents/container in accordance with national regulation.
- 2.3 Other hazards which do not result in classification** : Under normal transport and storage conditions, copper concentrate has low toxicity, since the metals are present as sulfides, insoluble in water with very low bioavailability. Exposure of the concentrate to fire or very high temperatures produces smoke and fine dust, which when inhaled can cause flu-like symptoms; the clinical picture is known as "metal fume fever". Effects may include cough, runny nose, chills, fever, malaise, and sore throat. In severe cases it can cause ulceration and perforation of the nasal septum.

**Section 3: Composition/information on ingredients****3.1 Substances:**

Substance of variable composition (UVCB).

Chemical identity	Common chemical name	CAS number	EC number	Concentration range	GHS hazard classification
Chalcopyrite (CuFeS <sub>2</sub> )	Chalcopyrite	1308-56-1	Not available	72,99%	Not classified
Pyrite (FeS <sub>2</sub> )	Pyrite	12068-85-8	235-106-8	11,15%	Not classified
Quartz (SiO <sub>2</sub> )	Quartz	14808-60-7	215-684-8	2,70%	Not classified
Muscovite (K Al <sub>2</sub> (Si, Al) <sub>4</sub> O <sub>10</sub> (OH) <sub>2</sub> )	Muscovite	1318-94-1	603-531-1	2,51%	Not classified
Potassium feldspar (K Al Si <sub>3</sub> O <sub>8</sub> )	Potassium feldspar	68476-25-5	270-666-7	2,04%	H319, Eye Irrit. 2 H335, STOT SE. 3
Bornite (Cu <sub>5</sub> FeS <sub>4</sub> )	Bornite	1308-82-3	Not available	1,27%	H412, Chronic aq. tox. 3
Molybdenite (MoS <sub>2</sub> )	Molybdenite	1317-33-5	215-263-9	1,25%	Not classified
Biotite K(Mg,Fe) <sub>3</sub> AlSi <sub>3</sub> O <sub>10</sub> (OH) <sub>2</sub>	Biotite	Not available	Not available	0,86%	Not available
Albite Na (AlSi <sub>3</sub> O <sub>8</sub> )	Albite	12244-10-9	Not available	0,73%	Not available
Chalcocite (Cu <sub>2</sub> S)	Chalcocite	21112-20-9	Not available	2,26%	H400, Ac. aq. tox. 1 H412, Chr. aq. tox. 3
Chlorite (Mg,Fe) <sub>3</sub> (Si,Al) <sub>4</sub> O <sub>10</sub> ; (OH) <sub>2</sub> ·(Mg,Fe) <sub>3</sub> (OH) <sub>6</sub>	Chlorite	1318-59-8	215-285-9	0,28%	Not classified
Covellite (CuS)	Covellite	1317-40-4	215-271-2	0,24%	Not classified
Rutile (TiO <sub>2</sub> )	Rutile	1317-80-2	215-282-2	0,20%	Not classified
Kaolinite Al <sub>2</sub> Si <sub>2</sub> O <sub>5</sub> (OH) <sub>4</sub>	Kaolinite	1332-58-7	310-194-1	0,10%	Not classified
Hematite (Fe <sub>2</sub> O <sub>3</sub> )/magnetite Fe <sub>3</sub> O <sub>4</sub>	Hematite/magnetite	1317-60-8/ 1317-61-9	215-275-4/ 215-277-5	0,10%	Not classified
Apatite Ca <sub>5</sub> (PO <sub>4</sub> ) <sub>3</sub> (Cl/F/OH)	Apatite	64476-38-6	Not available	0,12%	Not available
Other components	Other components	Not available	Not available	1,21%	Not available

\*\* The hazard classification is based on acute and chronic aquatic toxicity studies (Annex 9 and 10), carried out on 119 samples of copper concentrates by the European Copper Institute.

The hazard classification of the sample is made based on the mineralogical composition and not elemental. These latest data are provided for reference in the following table.

Chemical identity	Concentration range
Copper	24-29%
Sulfur	24-34%
Iron	24 – 29%
Molybdenum	0,1 - 1,2%
Silicon (Yes, Amorphous and/or Crystalline)	1,8 - 5,5%
Aluminum	0,6 - 2,3%

## Section 4: First-aid measures

### 4.1 Description of necessary first-aid measures

- Inhalation** : Move to fresh air. Give water to drink to clear throat and nose (breathe through mouth and exhale through nose to remove dust) If breathing is difficult, provide oxygen (trained personnel only). Keep at rest and calm. Obtain medical attention if symptoms persist.
- Skin route** : Remove contaminated clothing/shoes in a ventilated place. Wash the affected area with plenty of water and neutral soap for at least 15 minutes. If the skin does not show cracks or wounds, apply a moisturizing cream. If discomfort persists, consult a dermatologist for final evaluation. Decontaminate clothes and shoes before reuse.
- Eye router** : Immediately wash with plenty of water. If contact lenses are worn, carefully remove and continue flushing for at least 15 minutes, keeping the eyelids wide open. Do not rub your eyes with your hand to avoid physical damage, just wash carefully with water. For final evaluation request medical attention with an ophthalmologist.
- Ingestion** : Rinse mouth with plenty of water. Do not induce vomiting without medical advice. Keep in calm and at rest. Immediately request medical attention for final evaluation. If vomiting spontaneously, prevent pulmonary aspiration. Never give liquids or medication orally to an unconscious or convulsed person.

- 4.2 Most important symptoms /effects, acute and delayed** : Direct contact can produce an abrasive effect on the dermis and cause irritation. The mechanical action of fine particles on the eye can cause mechanical irritation, which effects may include inflammation, conjunctivitis, corneal clouding, and possible ulceration; In addition, their penetration into the eye tissues, causing severe eye damage. Prolonged exposures to fumes from copper concentrate produced at high temperatures (as in foundry) can cause pulmonary edema (fluid in the lungs); other symptoms may include cough, chest pain, shortness of breath, nausea, and flu-like symptoms; the clinical picture is known as “metal fume fever”. Effects may include cough, runny nose, chills, fever, malaise, and sore throat. In severe cases it can cause ulceration and perforation of the nasal septum. Ingestion is not a normal route of exposure, but if a person is exposed to a high

concentration of dust, ingestion will occur indirectly through the process of breathing and speaking. Expected symptoms include gastrointestinal irritation, metallic taste, severe nausea, vomiting, salivary discharge, and colic.

Ingestion of large quantities is dangerous, since this product can react with "gastric juice" causing epigastric burn, hemolysis, gastrointestinal bleeding with hemorrhagic gastritis, hematemesis, anemia, hypotension, jaundice, coma, shock and death.

- 4.3 Indication of immediate medical attention and special treatment needed, if necessary** : Inform the physician about the characteristics of the product and the type of contact. Present this Safety Data Sheet at the time of attention. For copper salts in general, the ingestion of a large amount is dangerous, since they can react with the "gastric juice" causing epigastric burn, hemolysis, gastrointestinal bleeding with hemorrhagic gastritis, hematemesis, anemia, hypotension, jaundice, coma, shock and death.

**Note:** *Renal and hepatic failure may develop after several days of acute ingestion.*

## Section 5: Fire-fighting measures

- 5.1 Suitable Extinguishing Media** : Use appropriate extinguishing media such as water fog, foam, or ABC dry chemical.  
If the product is melted, do not apply water or foam (risk of explosion. Dry sand or other similar material can be used to suffocate, or those for Class D fires.
- 5.2 Specific hazards arising from the chemical** : The product is not considered a flammable substance. Exposure of the product to intense fire can cause combustion, decomposition and may generate harmful/toxic gases. Given the presence of sulfides in the concentrates, when they reach high temperatures (as in foundry processes), they can produce sulfur dioxide (SO<sub>2</sub>), a toxic gas and a strong respiratory irritant; hydrogen sulfide (H<sub>2</sub>S), flammable and highly toxic gas and metal oxide fumes.
- 5.3 Special protective actions for fire-fighters** : In the event of a fire, quickly isolate the area by evacuating all persons from the vicinity of the incident site. No action shall be taken involving any personal risk or without adequate training. Fight the fire from a maximum distance or use fixed supports for hoses or nozzles-monitors. Firefighting water contaminated with this material should be prevented from entering waterways, drains, or sewers.  
This product is not easy to ignite; otherwise, flame protective clothing and self-contained breathing apparatus (SCBA) are recommended.

**Section 6: Accidental release measures.**

**6.1 Personal precautions, protective equipment and emergency procedures**

: **For non-emergency personnel:** Ensure adequate ventilation. Avoid inhalation of dust and contact with skin and eyes. Avoid dispersion and accumulation of dust. Wear suitable personal protective equipment (see section 8).

**For emergency responders:** Isolate spill area. Evacuate personnel from the area to a previously established sector. Ventilate and restrict access to area until cleanup is complete. Control heat sources and keep away from incompatible materials. If the spill occurred due to a pipe break, then activate the emergency plan for this event. Use TYVEK™ Suit; kid or leather gloves; respirator with a filter for high-efficiency particulate matter (P100), tight-fitting goggles and PVC boots or similar.

**Note:** To prevent the material from coming into direct contact with hands skin, it is recommended to wear under the leather gloves, vinyl or nitrile gloves.

**6.2 Environmental precautions**

: Avoid entering natural watercourses, water wells and the sewage network. If this is not possible, then notify specialized personnel. If soil contamination occurs, it is recommended to dig and remove all the material with product. Subsequently, transfer to trucks for treatment and disposal. In case the spill is large and enters watercourses, it is recommended to notify the competent authority to apply measures to protect the population.

**6.3 Methods and materials for containment and cleaning up**

: Clean up the spilled material immediately, taking into account the use of personal protection equipment indicated in section 8. Try to surround the perimeter of the spill with hoses or other elements to prevent it from draining. Cover the entire surface with plastic cover or other materials to prevent the suspension of particulate matter in the air.

**Appropriate materials:** Plastic covers; damp cloths or similar. Large sheets of paper can also be used if the spill is small.

Use a vacuum cleaning method to recover remaining material. Sweep moistened with a shovel and deposit in a suitable and safe container for chemical waste. Close well and label. Decontaminate the affected area by washing with plenty of water.

**Neutralization:** Copper concentrate does not require neutralization, since it is stable in aqueous media.

## Section 7: Handling and storage

- 7.1 Precautions for safe handling** :
- Have good ventilation when handling the product. Avoid inhalation of dust and direct or prolonged contact with the skin and eyes by using personal protective equipment (see section 8). Minimize the generation and accumulation of dust. Some metal sulfides can slowly oxidize on storage, generating sulfur dioxide and/or carbon dioxide, as well as reducing the oxygen level of a confined space. The level of gases in confined spaces must be analyzed before entering and the area must be well ventilated or use respiratory equipment if conditions warrant. Do not smoke, eat or drink when handling the product. Wash hands and face before breaks and immediately after handling the product. Remove and wash contaminated clothing before reuse. In concentrate smelting processes, avoid contact with water. Respect and follow work procedures. The belt system used to transport the concentrate to and from the ship must be subjected to periodic maintenance to avoid failures that affect this process. Carry out periodic inspections in order to identify weaknesses that cause accidental releases. All necessary operational measures must be taken to prevent accidental release while being transported to the ship's holds. Maintain negative pressure throughout the unloading and loading process. Respect and follow established operating procedures. Always maintain surveillance through cameras of critical collection and transportation points. Avoid the accumulation of dust outside the storage areas, recover it. Any minor situation that seems to affect the proper performance of the loading and unloading systems must be reported immediately to the supervisor in charge or to the operation manager.
- 7.2 Conditions for safe storage, including any incompatibilities** :
- Storage conditions:** Store in a safe, cool, dry place away from heat and with good ventilation. Avoid the generation and spread of dust. (Use hoods above melting furnaces and suitable dust filters, and sprinklers around storage areas).  
**Warehouses:** Store in ventilated areas under roof. Segregate from incompatible substances. Have the proper firefighting equipment. Have a shower/eyewash in the storage areas, but outside of them. Maintain negative pressure.  
**Bulk ships:** It must be ensured that the holds of ships are not filled with liquid waste of any kind. Check that the closing mechanisms of the hatches of these holds work correctly.  
 If you store in bulk, it is necessary to control the emission of dust into the environment. In addition, if the warehouse is closed, it may be necessary to have sulfur gas detectors to identify possible combustion of the material. Maintain control of product moisture. Ground/bond the means of transport when unloading bulk product into warehouses. The place must have waterproof and compatible soil. It must also have mechanical resistance and have signs indicating the dangers present.  
**Incompatibilities:** Incompatible with strong oxidizing agents, hydrochloric acid, cadmium chlorate, zinc, magnesium and hydrogen peroxide.

**Section 8: Exposure controls/personal protection****8.1 Control parameters**

Components	Limit values (international regulations)		
Copper fumes (as Cu)	ACGIH (TLV-TWA)		: 0,2 mg/m <sup>3</sup> .
	NIOSH (REL-TWA)		: 0,1 mg/m <sup>3</sup> .
	OSHA (PEL-TWA)		: 0,1 mg/m <sup>3</sup> .
Copper – dust and mists (as Cu)	ACGIH (TLV-TWA)		: 1 mg/m <sup>3</sup> .
	NIOSH (REL-TWA)		: 1 mg/m <sup>3</sup> .
	OSHA (PEL-TWA)		: 1 mg/m <sup>3</sup> .
Respirable mixed crystalline silica (quartz, cristobalite, tridymite)	ACGIH (TLV-TWA)		: 0,025 mg/m <sup>3</sup> (respirable particles).
	NIOSH (REL-TWA)		: 0,05 mg/m <sup>3</sup> .
	OSHA (PEL-TWA)		: 50 µg/m <sup>3</sup> [Nivel de acción de 25 µg/m <sup>3</sup> ].
Molybdenum, dust and insoluble compounds (as Mo)	ACGIH (TLV-TWA)		: 10 mg/m <sup>3</sup> (inhalable particles), 3 mg/m <sup>3</sup> (respirable particles).
	NIOSH (REL-TWA)		: Not established.
	OSHA (PEL-TWA)		: 15 mg/m <sup>3</sup> (total dust).
Molybdenum, soluble compounds	ACGIH (TLV-TWA)		: 0,5 mg/m <sup>3</sup> (respirable particulate material).
	NIOSH (REL-TWA)		: Not established.
	OSHA (PEL-TWA)		: 5 mg/m <sup>3</sup> .
Hydrogen sulfide	ACGIH (TLV-TWA)		: 1 ppm.
	ACGIH (TLV-STEL)		: 5 ppm.
	NIOSH (REL-C)		: 10 ppm (15 mg/m <sup>3</sup> ).
Aluminium, metal as (Al)	OSHA (PEL-C)		: 20 ppm (C), 50 ppm (Pick).
	ACGIH (TLV-TWA)		: 1 mg/m <sup>3</sup> (respirable particles).
	NIOSH (REL-TWA)		: 10 mg/m <sup>3</sup> (total dust), 5 mg/m <sup>3</sup> (respirable fraction).
Sulfur dioxide	OSHA (PEL-TWA)		: 15 mg/m <sup>3</sup> (polvo total), 5 mg/m <sup>3</sup> (respirable fraction).
	ACGIH (TLV-TWA)		: Not established.
	ACGIH (TLV-STEL)		: 0,25 ppm.
	NIOSH (REL-TWA)		: 2 ppm (5 mg/m <sup>3</sup> ).
	NIOSH (REL-STEL)		: 5 ppm (13 mg/m <sup>3</sup> ).
	OSHA (PEL-TWA)		: 5 ppm (13 mg/m <sup>3</sup> ).

**8.2 Appropriate Engineering Controls** : Study engineering control alternatives to keep airborne levels below recommended exposure limits, especially if the operation generates dust (e.g., natural/forced ventilation). It is recommended to have first-aid items (example: fixed or portable eyewash).

**8.3 Individual protection measures, such as personal protective equipment (PPE)**

**Eye/face protection** : Use goggles adjusted to the contour of the face. You can also replace this with a full face that has the filters (P100).

**Skin protection** : Wear work clothes such as Tyvek suit and safety shoes. If working near smelting operations, wear fire-resistant or fire-retardant clothing.

**Hands protection** : If there is a possibility of direct contact with the concentrate, then use kid gloves, and under this, nitrile gloves or similar.

**Respiratory protection** : Wear a half-face respirator with a high-efficiency filter (P100) for particulate matter, fumes, and acid vapors.

**Thermal hazards** : If working near smelting operations, wear fire resistant or flame retardant clothing.

## Section 9: Physical and chemical properties

### 9.1 Basic physical and chemical properties

<b>Physical state</b>	: Solid, granular powder.
<b>Color</b>	: Dark gray.
<b>Odor</b>	: Odorless.
<b>Melting point/freezing point</b>	: Not available.
<b>Boiling point or initial boiling point and boiling range</b>	: Not available.
<b>Flammability</b>	: Not flammable.
<b>Lower and upper explosion limit/flammability limit</b>	: No applicable.
<b>Flash point</b>	: Not applicable.
<b>Auto-ignition temperature</b>	: Not available.
<b>Decomposition temperature</b>	: Decomposition and/or melting starts above 900°C.
<b>pH</b>	: Not available.
<b>Kinematic viscosity</b>	: Not available.
<b>Solubility</b>	: Not available.
<b>Partition coefficient n- octanol/ water (log value)</b>	: Not applicable.
<b>Vapor pressure</b>	: Not applicable.
<b>Density and/or relative density</b>	: Not available.
<b>Relative vapor density</b>	: Not applicable.
<b>Particle characteristics</b>	: Not applicable.

## Section 10: Stability and reactivity

<b>10.1 Reactivity</b>	: See section 10.3.
<b>10.2 Chemical stability</b>	: Stable under normal storage and handling conditions. In presence of moist air, it oxidizes to sulfate. Unstable at temperatures above 400 °C.
<b>10.3 Possibility of hazardous reactions</b>	: Hazardous reactions are not identified under normal conditions of storage, pressure and temperature. Reaction with oxidizing/reducing agents may change speciation and may induce release of soluble metal compounds. May explode on contact with concentrated solutions of hydrochloric acid or metal chlorides (cadmium, magnesium or zinc).
<b>10.4 Conditions to avoid</b>	: Avoid high temperatures, sparks, open flames and other sources of ignition, contact with incompatible materials, excessive humidity and dispersion of dust into the environment.
<b>10.5 Incompatible materials</b>	: Incompatible with strong oxidizing agents, hydrochloric acid, cadmium chlorate, zinc, magnesium and hydrogen peroxide.
<b>10.6 Hazardous decomposition products</b>	: When heated to decomposition due to the presence of sulfides, toxic and/or corrosive gases could be generated (sulfur compounds, sulfur dioxide, hydrogen sulfide and silicon and copper oxides).



**Section 11: Toxicological information**

**11.1 Information on toxicological effects**

**Acute toxicity** : Toxicological data:

Product	LD <sub>50</sub> Oral	LD <sub>50</sub> Dermal	LC <sub>50</sub> Inhalation
Copper concentrate	Not available	Not available	Not available

- Skin corrosion/ irritation** : The product is not classified as skin irritant or corrosive, according to GHS criteria. However, it can cause mechanical irritation.
- Serious eye damage/irritation** : The product is not classified as causing serious eye damage and eye irritation, according to GHS criteria. However, it can cause mechanical irritation.
- Respiratory or skin sensitization** : The product is not classified as a skin sensitizer, according to GHS criteria.
- Germ cell mutagenicity** : The product is not classified as mutagenic, according to GHS criteria.
- Carcinogenicity** : The product is not classified as carcinogenic, according to GHS criteria. Crystalline silica, quartz is found as "Carcinogenic to humans" (Group 1), according to the list of carcinogenic substances (IARC 2021). However, considering its low concentration and bioavailability in copper concentrate, no specific effects are expected. Nevertheless, it is also recommended to avoid excessive exposure.
- Reproductive toxicity** : The product is not classified as reproductive toxic, according to GHS criteria.
- STOT – single exposure** : The product is not classified as specific toxic in particular organs (single exposure), according to GHS criteria.
- STOT – repeated exposure** : The product is not classified as specific toxic in particular organs (repeated exposures), according to GHS criteria.
- Aspiration hazard** : The product is not dangerous if inhaled, according to GHS criteria.

**11.2 Information on the likely routes of exposure**

- Inhalation** : Dust inhalation may cause irritation of mucous membranes of the respiratory tract due to an abrasive effect; symptoms may include sneezing, possible cough, shortness of breath, and metallic taste. Inhalation of smoke (extreme heating, e.g., smelting process) or fine dust (prolonged exposure) can cause flu-like symptoms, the clinical picture is known as "metal fume fever". Effects include cough, runny nose, chills, fever, malaise, and sore throat. In severe cases, it can cause ulceration and perforation of the nasal septum.
- Skin contact** : Direct contact can produce an abrasive effect on the dermis and cause irritation. Effects may include itching, rash, eczema, stinging, hypersensitivity, and greenish discoloration of skin, hair, and teeth. In addition, there is the potential for some particles to become embedded in the skin and cause more severe irritation, especially if the skin is damaged.
- Eye contact** : The mechanical action of fine particles on the eye can cause mechanical irritation, the effects of which may include inflammation, conjunctivitis, corneal clouding, and possible ulceration; In addition, their penetration into the eye tissues, causing severe eye damage. Discoloration of the cornea, known as Wilson's disease, may also occur.

- Ingestion** : This is not a normal route of exposure, but if a person is exposed to a high concentration of dust, ingestion will occur indirectly through the process of breathing and speaking. Expected symptoms include gastrointestinal irritation, metallic taste, severe nausea, vomiting, salivary discharge, and colic. The ingestion of large amounts is dangerous, since this product can react with the "gastric juice" causing epigastric burn, hemolysis, gastrointestinal bleeding with hemorrhagic gastritis, hematemesis, anemia, hypotension, jaundice, coma, shock and death.
- 11.3 Symptoms related to the physical, chemical and toxicological characteristics** : Not applicable.
- 11.4 Delayed and immediate effects and also chronic effects from short- and long-term exposure** : Not applicable.
- 11.5 Numerical measures of toxicity (such as acute toxicity estimates)** : Not applicable.
- 11.6 Interactive effects** : Not applicable.
- 11.7 Other information** : **Additional Information (IDLH):**  
Quartz: 50 mg/m<sup>3</sup>.  
Copper: 100 mg/m<sup>3</sup>.  
Hydrogen sulfide: 100 ppm.  
Sulfur dioxide: 100 ppm.  
Molybdenum (insoluble compounds): 5000 mg/m<sup>3</sup>.  
Molybdenum (soluble compounds): 1000 mg/m<sup>3</sup>.

## Section 12: Ecological information

- 12.1 Toxicity** : The classification of acute and chronic aquatic toxicity indicated in section 3 of the SDS is based on the study "Copper Concentrates - Environmental and Human Health Hazard Classification" carried out on 119 samples of copper concentrates by the European Copper Institute.
- Acute ecotoxicity: Copper sulfate (salt into which copper sulfide is transformed).
- Fishes, *Oncorhynchus kisutch*, LC<sub>50</sub>: 286 µg/L (96h) [USEPA; Ambient Water Quality Criteria Doc: Copper p.71 (1985) EPA 440/5-84-031].*
- Chronic ecotoxicity: Copper sulfate (salt into which copper sulfide is transformed).
- Algae, *Chlorella stigmatophora*, EC<sub>50</sub>: 70 g/L (21 days) [USEPA; Ambient Water Quality Criteria Doc: Copper p.61 (1985) EPA 440/5-84-031].*
- Acute ecotoxicity: Chalcocite (Cu<sub>2</sub>S).  
LC<sub>50</sub>/EC<sub>50</sub>: ≤ 1 mg/L (Estimated).
- Chronic ecotoxicity: Chalcocite (Cu<sub>2</sub>S).  
CSEO/CE<sub>x</sub>/NOEC: >10-≤ 100 mg/L (Estimated).
- Acute ecotoxicity: Bornite (Cu<sub>5</sub>FeS<sub>4</sub>).  
Not available.

Chronic ecotoxicity: Bornite ( $Cu_5FeS_4$ ).

CSEO/CE<sub>x</sub>/NOEC: >10-≤ 100 mg/L (Estimated).

- 12.2 Persistence and degradability** : Biodegradation does not apply to inorganic substances. However, metals contained in this product persist in the environment. It can be transformed into other compounds depending on the characteristics of the environment in which it is found, but the metal ion does not disappear.
- 12.3 Bioaccumulative potential** : Copper concentrate is insoluble in water and its constituent metals have low bioavailability. However, depending on the characteristics of the environment in which it is found, it can lead to the release of the constituent metals in a more bioavailable form for organisms.
- 12.4 Mobility in soil** : Metallic compounds are strongly retained in the soil and can be immobilized through adsorption processes of mineral particles or by complex formation with humic substances in organic particles.
- 12.5 Other adverse effects** : Copper concentrate is classified as harmful to aquatic organisms (Category 3, H402), according to GHS criteria. Copper concentrate is insoluble in water and its constituent metals have low bioavailability. Can cause environmental contamination when a major spill occurs and can form sediments in waterbeds. However, prolonged exposure of the concentrate to aquatic and terrestrial environments can lead to the release of the constituent metals in more bioavailable forms; these forms have the potential to cause adverse effects on biota. The mobility of the constituent metals in more soluble forms is dependent on the medium; that can bind with inorganic and organic ligands, reducing their mobility and bioavailability in soil and water. Bioavailability is also mediated by other factors (e.g., pH, hardness, total organic carbon), in the aquatic environment.

### Section 13: Disposal considerations

- 13.1 Disposal methods** : Waste disposal practices must comply with current country regulations. Disposal of used, contaminated products and other residual materials may require further evaluation. It is the responsibility of the waste generator to identify its level of danger, handle it and dispose of it properly in compliance with current national legislation.
- Contaminated container and packaging** : If the product is transported packed in containers, the containers and packaging may contain traces of the product, for which the necessary precautions must be taken during handling and disposal in accordance with the regulations of the country.
- Prohibition on discharge in wastewater** : Do not allow product to enter drains. Must avoid release to the environment.
- Other special precautions** : Avoid or minimize the generation of waste whenever possible.

**Section 14: Transport information**

	Transportation modality		
	Road/rail	Sea	Air
14.1 UN number	Not applicable.	Not applicable.	Not applicable.
14.2 UN proper shipping name	Not dangerous substance.	Not dangerous substance.	Not dangerous substance.
14.3 Transport hazard class (es)	Not applicable.	Not applicable.	Not applicable.
14.4 Packing group, if applicable	Not applicable.	Not applicable.	Not applicable.
14.5 Environmental hazards	See section 12.	See section 12, The product is not considered a marine pollutant.	See section 12.
14.6 Special precautions for user	None.		
14.7 Transport in bulk according to IMO instruments	Is not a marine pollutant (HME).		
14.8 Transport in bulk IMSBC code	Metal Sulphide Concentrates, Group A & B. This copper concentrate may cause oxygen depletion in the cargo space.		

**Section 15: Regulatory information**

**NFPA 704, 2017.** Standard system for the identification of the hazards of materials for emergency response.  
**DOT:** US Department of Transportation.  
**OSHA.** Occupational Safety and Health Administration.  
**NIOSH.** The National Institute for Occupational Safety and Health.  
**ACGIH.** American Conference of Governmental Industrial Hygienist  
**GHS.** Globally Harmonized System of Classification and Labelling of Chemicals.  
**REACH.** Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals.  
**CLP.** Regulation (EC) No 1272/2008 - classification, labelling and packaging of substances and mixtures.  
**MARPOL 73/78 ANNEX V.** Prevention of Pollution by Garbage from Ships.  
**IMSBC CODE.** International Maritime Solid Bulk Cargoes Code.  
**IMDG CODE.** International Maritime Dangerous Goods.  
**IATA CODE.** International Air Transport Association.

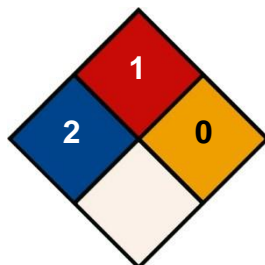
**Section 16: Other information**

**Track changes** : First version.

**Abbreviations and acronyms** :

- LC<sub>50</sub>** : Median Lethal Dose.
- LD<sub>50</sub>** : Median Lethal Concentration.
- EC<sub>50</sub>** : Median Effective Concentration.
- LL<sub>50</sub>** : Lethal loading rate for 50% of the test population.
- TLV** : Threshold Limit Value.
- TWA** : Time Weighted Average.
- IDLH** : Immediately Dangerous to Life or Health.
- ST** : Short Term Exposure Limit.
- CAS** : Chemical Abstracts Service.
- ACGIH** : American Conference of Governmental Industrial Hygienists.
- NIOSH** : National Institute of Occupational Safety and Health.
- OSHA** : Occupational Safety and Health Administration

- References**
- GHS** : Globally Harmonized System of Classification and Labelling of Chemicals.
  - IMDG** : International Maritime Dangerous Goods.
  - IATA** : International Air Transport Association.
  - Last revision**: March 2023.
    - <http://www.ourstolenfuture.org/Basics/chemlist.htm>
    - [http://risctox.istas.net/dn\\_risctox\\_buscador.asp](http://risctox.istas.net/dn_risctox_buscador.asp)
    - <http://echa.europa.eu/information-on-chemicals>
    - <https://www.osha.gov/dsg/annotated-pels/tablez-3.html>
    - Delbeke, K. Rodriguez P. Copper Concentrates Environmental and Human Health hazard classification. 2014. 22 p.

**NFPA 704****Full text of H-statements referred to in sections 2**

H402 : Harmful to aquatic life.

**Full text of P-phrases referred to in sections 2**

P273 : Avoid release to the environment.

P501 : Dispose of contents/container in accordance with national regulation.

**Guidelines** : This Safety Data Sheet (SDS) was elaborated in accordance with the requirements and formats required in annex 4 of the Globally Harmonized System of classification and labeling of chemical products (GHS). The information contained in this SDS is for public use.

**Elaboration and technical translation according to GHS**

: Prepared by: Evelyn Melo.  
Revised by: Katherine Medina.  
Approved by: Minera Teck Quebrada Blanca Company

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