

# Salobo Copper Concentrate

## Section 1. Identification of the Substance and Company

### **1.1 Product Identification:**

*Product Name:* Salobo Copper Concentrate

*Synonyms:* Copper Concentrate

*EC no.* Not available

*CAS no.* Not available

### **1.2 Uses**

Identified Uses:

Copper concentrate is an intermediate product; used in recovery of metal contents.

### **1.3 Company Identification**

*Manufactured by:*

Salobo Metais S.A

Rua Flona Do Tapirape-Aquiri S/N

Acampamento 3 Afla

68816-000 Maraba-Para Brazil

*Distributed by:*

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**For Fire, Spill, or chemical emergency call CHEMTREC: +1 703-527-3887**

**For Europe Call CHEMTREC: + 44 870 8200418**

## Section 2. Hazards Identification

### 2.1 Classification of the Substance:

Hazardous to the aquatic environment - Acute Category 1, Chronic – Category 1

Hazard Pictograms: GHS09 - Environment

Signal Word: Warning

Hazard Statements: H400 – Very toxic to aquatic life  
H410 – Very toxic to aquatic life with long lasting effects

Precautionary Statements: P273, P391, P501

## 2.2 Label elements

Product identifier: Copper Concentrate

Symbols:

GHS09 – Environment



Signal Word: Warning

Hazard Statements: H410 – Very toxic to aquatic life with long lasting effects

Precautionary Statements: P273 – Avoid release to the environment  
 P391 – Collect spillage  
 P501 – Dispose of contents/container in accordance to local; regional; national and international regulations

## Section 3. Composition

Substance

Mixture

Component	Concentration range (%)	CAS Number	EINECS
Bornite	12-30	1308-82-3	Not Available
Chalcocite	14-38	22205-45-4	244-842-9
Chalcopyrite	2-20	1308-56-1	603-441-2
Covellite	0-5	19138-68-2	Not Available
Graphite	1.5-4.5	7782-42-5	231-955-3
Magnetite	2-8	1309-38-2	215-169-8
Chlorite+Stilpnomelane	5-19	1318-59-8 + 12174-61-7	215-285-9 + Not Available
Biotite+Greenalite	2-12	12001-26-2+ Not Available	Not Available + Not Available
Other silicates	7-20	Not Available	Not Available

## Section 4. First Aid Measures

<i>Ingestion:</i>	Get immediate medical attention.
<i>Inhalation:</i>	For respiratory tract irritation, remove to fresh air. If symptoms persist, seek medical attention.
<i>Skin:</i>	For skin irritation, flush with plenty of water. For skin rashes seek medical attention..
<i>Eyes:</i>	Irrigate eyeball thoroughly with water for at least 15 minutes. If discomfort persists, seek medical attention.
<i>Most important symptoms &amp; affects, both acute/delayed</i>	Skin contact: Rash Eye contact: Redness
<i>Indication of immediate medical attention and special treatment needed</i>	No special requirements

### Section 5. Fire Fighting Measures

<i>Suitable extinguishing media:</i>	Any type to be selected according to materials stored in the immediate vicinity.
<i>Special risks:</i>	Non-flammable. May evolve toxic sulphur containing gases if involved in a fire. Extinguish surrounding fires with appropriate methods.
<i>Special protective equipment for fire fighting:</i>	None needed. Wear protective equipment if required for other materials within the immediate vicinity. Dike fire control water for later disposal. Do not allow to enter drains, sewers or watercourses.

### Section 6. Accidental Release Measures

<i>Person related precautionary measures:</i>	Wear waterproof gloves and suitable protective clothing. Avoid generation of dusty atmospheres. Do not inhale dusts. Wear appropriate nationally approved respirators if collection and disposal is likely to cause the concentration limits of airborne particulate to exceed the locally prescribed exposure limits.
<i>Environmental Protection measures:</i>	Do not allow spills to enter watercourses. Dispose of spills in accordance with local regulations.
<i>Procedures for</i>	Collect spills by sweeping or vacuuming with the vacuum exhaust

*cleaning/absorption:*

passing through a high efficiency particulate arresting (HEPA) filter if exhaust is discharged into the workplace. Copper-containing material is normally collected to recover copper.

## Section 7. Handling and Storage

*Precautions for Safe Handling:*

Prevent the generation of inhalable dusts e.g. by the use of suitable ventilation. Do not inhale dust. Keep in a moist condition if possible to avoid drying and to minimize dust generation. Wear appropriate nationally approved respirators if handling is likely to cause the concentration limits of airborne particulate to exceed the locally prescribed exposure limits. Wear suitable protective clothing and gloves. Contaminated work clothing should not be allowed out of the workplace

*Conditions for Safe Storage:*

Local regulations should be followed regarding the storage of this product.

## Section 8. Exposure Controls / Personal Protection

### 8.1.1 Exposure Limits:

Components	Exposure Limit (TLV) <sup>1,2</sup> mg/m <sup>3</sup>
Copper substances	1.0 (as Copper)
Graphite	2*

\* - as respirable fraction

#### DNEL's

	Unit	DNEL
Inhalation		
Acute local	mgCu/m <sup>3</sup>	1.0
Long-term local	mgCu/m <sup>3</sup>	1.0

### 8.1.2 Environmental limits:

#### PNEC's

Compartment	Unit	PNEC
Freshwater	µg Cu/L	7.8
Marine	µg Cu/L	5.2

### 8.2.1 Occupational exposure controls:

Do not inhale dust. Mechanical extraction ventilation may be required if user operations change it to other physical or chemical forms, whether as end products, intermediates or fugitive emissions, which are inhalable. Maintain airborne copper levels as low as possible. Avoid repeated skin contact.

**PPE**

*Respiratory protection:* If required, use an approved respirator with particulate filters.

*Eye protection:* Avoid eye contact. Wear goggles or face shield.

*Hand & Skin Protection:* Avoid skin contact. Wear suitable protective clothing and waterproof gloves. Wash skin thoroughly after handling and before eating, drinking or smoking. Change contaminated clothing frequently. Launder clothing and gloves as needed. Use of skin-protective barrier cream advised.

**Section 9. Physical and Chemical Properties**

Odourless, blackish-grey, slurry or moist powder.

Physical state at 20°C and 101.3 kPa	solid
Melting / freezing point	Not available
Boiling point	Not available
Decomposition temperature	Not applicable
Relative density	Not available
Vapour pressure	Not applicable
Vapour density	Not applicable
Surface tension	Not applicable
Water solubility	Sparingly soluble
pH	Not applicable
Evaporation rate	Not applicable
Partition coefficient n-octanol/water (log	Not applicable
Flash point	Not applicable
Flammability	Non-flammable
Explosive properties	Non-explosive
Self-ignition temperature	Not self-igniting
Oxidising properties	Non-oxidising
Granulometry	P80 between 25-45um
Stability in organic solvents and identity of relevant degradation products	Not applicable
Dissociation constant	Not applicable
Viscosity	Not applicable
Bulk density	1.4-2.0 g/mL

## Section 10. Stability and Reactivity

<i>Reactivity</i>	Stable under normal conditions.
<i>Chemical stability</i>	Stable under normal conditions.
<i>Possibility of hazardous reactions</i>	Stable under normal conditions.
<i>Conditions to avoid</i>	Heat, ignition sources.
<i>Incompatible materials</i>	Many sulphides react violently and explosively with powerful oxidizers, evolving SO <sub>2</sub> .
<i>Hazardous Decomposition Product(s)</i>	At high temperatures toxic sulphur-containing gases may be evolved

## Section 11. Toxicological Information<sup>3</sup>

As a mixture the toxicological properties of the product are unknown. The toxicology of copper is reported below:

### **Copper**

LD50 Oral Rat:	481 mg/kg (CuSO <sub>4</sub> ); >2500 mg/kg (CuO). The oral toxicity of the concentrate would be expected to be intermediate between these values.
Skin Contact:	A few instances of allergic skin rashes have been reported in workers exposed to metallic copper.
Ingestion:	The lowest observed toxic oral dose of copper (TD <sub>Lo</sub> ) is 120 µg/kg in humans. This dose caused gastrointestinal effects.
Pre-existing Conditions:	Wilson's disease can occur in certain individuals with a rare inherited metabolic disorder characterized by retention of excessive amounts of copper in the liver, brain, kidneys, and corneas. These deposits eventually lead to tissue necrosis and fibrosis, causing a variety of clinical effects, especially liver, (i.e. hepatic) disease and neurologic changes.

## Section 12. Ecological Information

<i>Toxicity:</i>	N/A
<i>Persistence and degradability:</i>	Aquatic Acute and Chronic 1. Very toxic to aquatic life with long lasting effects

Results of PBT and vPvB  
Assessment:

Not classified as PBT or vPvB.

Other adverse effects:

None anticipated.

### Section 13. Disposal Considerations

Waste treatment methods;

Recover or recycle if possible. Dispose of contents in accordance with local, state or national legislation.

Additional Information:

No information available.

### Section 14. Transport Information

International Maritime Dangerous Goods Code	UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains Chalcocite), 9, PG III, MARINE POLLUTANT
International Civil Aviation Organization Technical Instructions for the Carriage of Dangerous Goods by Air	UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains Chalcocite), 9, PG III
U.S. Dept. of Transportation Regulations	Not Regulated
Canadian Transportation of Dangerous Goods Act	Not Regulated
European Agreement Concerning the International Carriage of Dangerous Goods by Road	UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains Chalcocite), 9, PG III, (E).

International Maritime Solid Bulk Cargoes Code (IMSBC)	COPPER CONCENTRATE (MINERAL CONCENTRATES)
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### MARPOL Annex V

Under the 7 Criteria contained within the MARPOL Annex V, This material is classified as:

<b>X</b>	<b>Harmful to the Marine Environment (HME)</b>
	Not Harmful to the Marine Environment (non-HME)

### Section 15. Regulatory Information

Europe:

Classification according to Part 3 of Annex VI of EU Regulation No. 1272/2008

Hazardous to the aquatic environment - Acute Category 1, Chronic – Category 1

Symbols:

GHS09 – Environment



Signal Word:

Warning

Hazard Statements:

H400 – Very toxic to aquatic life

H410 – Very toxic to aquatic life with long lasting effects

Precautionary Statements:

Prevention:

P273 – Avoid release to the environment

Response:

P391 – Collect spillage

Disposal:

P501 - Dispose of contents/container in accordance to local;

regional;

national and international regulations

Canada:

WHMIS 2015 classification

Not classified

## Section 16. Other Information

Indications of change:

1.0 - Original document

1.1 – Added BSCN for IMSBC code

1.2 – Amendment to addresses, additional transport information, additional physical/chemical parameters

The following acronyms may be found in this document:

ACGIH

American Conference of Governmental Industrial Hygienists



DNEL	Derived No Effect Level
LTEL	Long Term Exposure Limit
OEL	Occupational Exposure Limits
OSHA	Occupational Safety and Health Administration
PBT	PBT: Persistent, Bioaccumulative and Toxic
PNEC	Predicted No Effect Concentration
STEL	Short Term Exposure Limit
TLV-TWA	Threshold Limit Value – Time Weighted Average
vPvB	very Persistent and very Bioaccumulative
WEL	Workplace Exposure Limit (UK HSE EH40)

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**Note:**

***Vale Canada believes that the information in this Safety Data Sheet is accurate. However, Vale Canada makes no express or implied warranty as to the accuracy of such information and expressly disclaims any liability resulting from reliance on such information.***

1. Threshold Limit Values of the American Conference of Governmental Industrial Hygienists. 2016
2. Maximum Exposure Limit of the Health and Safety Executive in the U.K. in EH40/00.
3. Describes possible health hazards of the product supplied. If user operations change it to other chemical forms, whether as end products, intermediates or fugitive emissions, the possible health hazards of such forms must be determined by the user.