



Material Safety Data Sheet

Copper Slag Concentrate

SUPPLIER DETAILS

Supplier Name:	Palabora Copper (Pty) Ltd	Emergency Telephone Number:	+27 (0)15 780 2666
Address:	PO Box 65 1 Copper Road Phalaborwa, 1390 South Africa	E-Mail Address:	palabora.msds@palabora.co.za
Person Responsible for Updating MSDS:	Manager: Environment & SHEQ MS	Telephone Number:	+27 (0)15 780 2911
		URL / WebPages:	http://www.palabora.com/

1. PRODUCT IDENTIFICATION

Chemical Names and Synonyms: Concentrated Smelted Copper slag Copper concentrate (Smelting by-product)	UN Number: 3077
CAS Number: 7440-50-8	NIOSH Number: NA

2. COMPOSITION

Inorganic ore containing up to 40% copper. The remaining constituents are mainly iron, sulphur and silica.
 Copper & Copper Compounds: 20 - 50%
 Iron and Iron Compounds: 15 - 30%
 Sulphur Compounds: 10 - 22%
 Silicon and Silica Compounds: 3 - 25%

3. HAZARDOUS IDENTIFICATION

Exposure guidelines:
Copper & Copper Compounds: 1.0 mg/M3 OSHA PEL and ACGIH TLV as copper dusts; 0.1 mg/M3 OSHA PEL as Copper fumes.
 Iron and Iron Compounds: OSHA PEL TWA: 10 mg/m³ for iron oxide dust and fumes.
 Sulphur Compounds: OSHA PEL TWA: 10 mg/m³
 Silicon and Silica Compounds:
 OSHA PEL TWA: 0.1 mg/M3 for respirable quartz.
 ACGIH TLV TWA: 0.1 mg/M3 for respirable quartz.
 Remaining components not determined hazardous and/or hazardous components present at less than 1.0% (0.1% for carcinogens).

4. FIRST AID MEASURES

Eye Contact:
 Flush immediately with large amounts of water. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get medical attention if irritation persists.

Skin Contact:
 Wash area of contact thoroughly with soap and water. Get immediate medical attention if irritation persists.

Inhalation:
 Remove affected person from source of dust and fume exposure. If not breathing, institute cardiopulmonary resuscitation (CPR). If breathing is difficult, give oxygen. Get immediate medical attention.

Ingestion:
 If victim is conscious, give 1-3 glasses of water and induce vomiting. Do not make an unconscious person vomit. Keep affected person warm and at rest. Get immediate medical attention.

5. FIRE FIGHTING MEASURES

The product is not flammable under normal conditions.

6. ACCIDENTAL RELEASE MEASURES

Contain spill, sweep area using broom & shovel. Prevent release into aquatic environment.

Applies to All Ingredients:

Potential Health Effects:

Eye Contact:
Contact with powdered material may cause irritation. Abrasive action may cause damage to the outer surface of the eye.

Skin Contact:
Abrasive action may cause reddening, itching and inflammation. Laceration may occur from handling sharp edged material. May cause allergic reactions in some individuals. Exposure to copper fumes has been associated with discoloration of skin and hair.

Inhalation:
Exposure to dust may cause respiratory tract irritation. Repeated or prolonged inhalation of copper fume may cause metal fume fever characterized by a sweet or metallic taste in the mouth, accompanied by dryness and irritation of the throat, cough, shortness of breath, general malaise, weakness, fatigue, muscle and joint pains, blurred vision and fever and chills. Repeated or prolonged breathing of particles of respirable size may cause respiratory disease. Pre-existing respiratory tract medical conditions may be aggravated by exposure.

Ingestion:
Not a normal route of entry. However, if powdered material is ingested, it may be slightly toxic. Symptoms of dust ingestion may include metallic taste, thirst, abdominal pain, vomiting, and diarrhea.
SPECIAL TOXIC EFFECTS: Persons with Wilson's disease (a rare hereditary abnormality) may suffer adverse health effects when exposed to soluble copper compounds.

7. HANDLING AND STORAGE

Environmental Precautions:
No special procedures are required for cleanup of spills or leaks of this material. Spills to be cleaned by sweeping and disposed according to local regulations. Avoid methods that result in airborne dispersal or water pollution. Caution should be exercised regarding personnel safety and exposure to the spilled material.

Handling:
Avoid dust generation during handling and contact or inhalation of fumes from the heated material. Empty containers may contain product residue. Do not reuse without adequate precautions.

Storage:
Do not store in unlabeled containers. Do not eat, drink or smoke in areas of use or storage.

Waste Disposal:
This substance, when discarded or disposed of, is not specifically listed as a hazardous waste in National, State, Provincial or Federal regulations; however, it could be hazardous if it is considered toxic, corrosive, ignitable, or reactive according to legislative definitions. Additionally, it could be designated as hazardous according to promulgated regulations. This substance could also become a hazardous waste if it is mixed with or comes in contact with a hazardous waste. The transportation, storage, treatment, and disposal of waste material must be conducted in compliance with all applicable National, Provincial, Federal or State and local regulations.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Avoid contact with the eyes. When dust generation potential exists, safety glasses and dust respirator are recommended.

Skin Protection Description:

Wear heavy gloves and safety shoes. Wear regularly cleaned work clothing. Showering and changing into street clothes after work is desirable.

Eye/Face Protection:

When generating particles or dusts, wear safety glasses or chemical goggles to prevent eye contact. Do not wear contact lenses. Have eye baths readily available where eye contact can occur.

Respiratory Protection:

Use NIOSH approved respirator when airborne exposure limits are exceeded. NIOSH approved breathing equipment may be required for nonroutine and emergency use. Ventilation may be used to control or reduce airborne concentrations.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State/Appearance: Solid or fine granules.

Color: Gray/black, lustrous, metallic

pH: Not Applicable

Vapor Pressure: Not Applicable

Vapor Density: (AIR = 1): Not Applicable

Boiling Point: Not Determined

Melting Point: Approximately 1080 degrees Celsius

Solubility: % IN WATER: Insoluble

Specific Gravity: Not Determined

Evaporation Point: (BUTYL ACETATE = 1): Not Applicable

Percent Volatile: Not Applicable

Viscosity: SUS: Not Applicable

Pour Point: Not Applicable

FlashPoint: Not Applicable

Auto Ignition Temp: Not Applicable

Upper Flammable Explosive Limit: IN AIR (% BY VOL): Not Applicable

Lower Flammable Explosive Limit: IN AIR (% BY VOL): Not Applicable

10. STABILITY AND REACTIVITY

The product is stable under normal conditions. The product may react with strong acids and alkaline substances.

11. TOXICOLOGICAL INFORMATION

Copper slag concentrate is highly toxic for aquatic organisms. Inhalation and ingestion should be avoided.

Enzyme activity:

Urease digestion inhibition EC₅₀ 1 806.88mg/l (75min)

12. ECOLOGICAL INFORMATION

Fish toxicity:	<i>Danio rerio</i> embryogenicity LC ₅₀ 13 260.45 mg/l (0h-hatching)
	<i>Danio rerio</i> fry LC ₅₀ 18 485 mg/l (10 day)
Crustacean toxicity:	<i>Daphnia pulex</i> LC ₅₀ 681.34 mg/l (48h)
Bacterial toxicity:	<i>Vibrio fischeri</i> bioluminescence inhibition EC ₅₀ 1 467.37mg/l (30min)
Algal toxicity:	<i>Selenastrum capricornutum</i> growth inhibition EC ₅₀ 1 225.58 mg/l (72h)

13. DISPOSAL CONSIDERATIONS

Dispose according to local regulations. Contact local waste disposal company for advice. Disposal options must consider approximately 30-50% copper content.

14. TRANSPORT INFORMATION

DOT: PLACARDS REQUIRED: Miscellaneous Hazardous Materials
 DOT Shipping Name: (49 CFR 172.101): Environmentally hazardous substance, solid, n.o.s.
 DOT Hazard Class: (49 CFR 172.101):9
 DOT Subpart E Labeling Requirement: 49 CFR 172.101 : Miscellaneous Hazardous Materials
 UN Number : UN 3077
 BILL OF LADING DESCRIPTION: Environmentally hazardous substance, solid, n.o.s., 9, UN3077, PG III, RQ

15. REGULATORY INFORMATION

No specific Environmental South African regulations are applicable to Copper slag concentrate.
 This material is subjected to the requirements of the South African National Nuclear Regulatory Act, No 29/1996.

16. OTHER INFORMATION

None.

DISCLAIMER

All information is given in good faith but without guarantee in respect of accuracy, and no responsibility is accepted for errors or omissions or the consequences thereof. It is the user's obligation to determine the conditions of safe use of the material, all risks of use of the product are therefore assumed by the user and we expressly disclaim all warranties of every kind and nature, including warranties of merchantability and fitness for a particular purpose in respect to the use or suitability of the product.