

UNCONTROLLED

BRONZE POWDERS

ChemWatch Material Safety Data Sheet
Issue Date: Thu 18-Jul-2002

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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

BRONZE POWDERS

SYNONYMS

laquers solvent based
metallic paint ink coating pigment

acrylics
Cobblestone Paving

PRODUCT USE

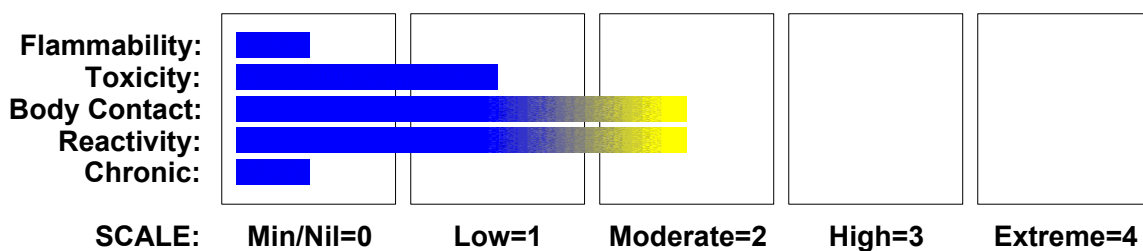
Recommended for uses in laquers solvent based and acrylics.

SUPPLIER

Company: Cobblestone Paving Australia P/L
Address:
PO Box 2057
Burleigh Mdc, Gold Coast
QLD, 4220
AUS

Company: Cobblestone Paving Australia P/L
Address:
45 Alex Fisher Drive
Burleigh Gardens
QLD, 4220
AUS
Telephone: +61 7 5593 7766
Fax: 07 5593 7777

HAZARD RATINGS



Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE

HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

According to the Criteria of NOHSC, and the ADG Code.



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Section 2 - HAZARDS IDENTIFICATION ...

POISONS SCHEDULE

None

RISK

Harmful: danger of serious damage to health by prolonged exposure through inhalation.

Inhalation and/or ingestion may produce health damage*.

Cumulative effects may result following exposure*.

May produce discomfort of the eyes, respiratory tract and skin*.

* (limited evidence)

SAFETY

Do not breathe dust.

Wear eye/face protection.

Use only in well ventilated areas.

Keep container in a well ventilated place.

Take off immediately all contaminated clothing.

In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre.

If you feel unwell contact Doctor or Poisons Information Centre. (Show the label if possible).

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
copper	7440-50-8	70-90
zinc	7440-66-6	10-30
fatty acid		2max.

Section 4 - FIRST AID MEASURES

SWALLOWED

Rinse mouth out with plenty of water.

For advice, contact a Poisons Information Centre or a doctor.

- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Seek medical advice.

EYE

If this product comes in contact with the eyes:

- Immediately hold eyelids apart and flush the eye continuously with running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.

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Section 4 - FIRST AID MEASURES ...

- Transport to hospital or doctor without delay.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

Brush off dust. If skin contact occurs:

- Immediately remove all contaminated clothing, including footwear
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

INHALED

- If dust is inhaled, remove from contaminated area.
- Encourage patient to blow nose to ensure clear breathing passages.
- Ask patient to rinse mouth with water but to not drink water.
- Seek immediate medical attention.

NOTES TO PHYSICIAN

for copper intoxication:

- Unless extensive vomiting has occurred empty the stomach by lavage with water, milk, sodium bicarbonate solution or a 0.1% solution of potassium ferrocyanide (the resulting copper ferrocyanide is insoluble).
 - Administer egg white and other demulcents.
 - Maintain electrolyte and fluid balances.
 - Morphine or meperidine (Demerol) may be necessary for control of pain.
 - If symptoms persist or intensify (especially circulatory collapse or cerebral disturbances, try BAL intramuscularly or penicillamine in accordance with the supplier's recommendations.
 - Treat shock vigorously with blood transfusions and perhaps vasopressor amines.
 - If intravascular haemolysis becomes evident protect the kidneys by maintaining a diuresis with mannitol and perhaps by alkalinising the urine with sodium bicarbonate.
 - It is unlikely that methylene blue would be effective against the occasional methaemoglobinemia and it might exacerbate the subsequent haemolytic episode.
 - Institute measures for impending renal and hepatic failure.
- [GOSSELIN, SMITH & HODGE: Commercial Toxicology of Commercial Products]
- A role for activated charcoals or emesis is, as yet, unproven.
 - In severe poisoning CaNa₂EDTA has been proposed.
- [ELLENHORN & BARCELOUX: Medical Toxicology]

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Water spray or fog.
Foam.
Dry chemical powder.
Carbon dioxide.

FIRE FIGHTING

Alert Fire Brigade and tell them location and nature of hazard.

- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water courses.

Cool fire exposed containers with water spray from a protected location.

DO NOT approach containers suspected to be hot.

If safe to do so, remove containers from path of fire.

Equipment should be thoroughly decontaminated after use.

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Section 5 - FIRE FIGHTING MEASURES ...

FIRE/EXPLOSION HAZARD

Combustible solid.

Moderate fire and explosion hazard, in the form of dust, when exposed to heat or flame.

- Metal powders, while generally regarded as non-combustible, may burn when metal is finely divided and energy input is high.
- DO NOT use water or foam as generation of explosive hydrogen may result.
- May be ignited by friction, heat, sparks or flame.
- Metal dust fires are slow moving but intense and difficult to extinguish.
- Will burn with intense heat.
- DO NOT disturb burning dust. Explosion may result if dust is stirred into a cloud, by providing oxygen to a large surface of hot metal.
- Containers may explode on heating.
- Dusts or fumes may form explosive mixtures with air.
- May REIGNITE after fire is extinguished.
- Gases generated in fire may be poisonous, corrosive or irritating.

FIRE INCOMPATIBILITY

Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous.

Reacts slowly with water.

CAUTION contamination with moisture will liberate explosive hydrogen gas, causing pressure build up in sealed containers.

Reacts violently with caustic soda, other alkalies - generating heat, highly flammable hydrogen gas. If alkali is dry, heat generated may ignite hydrogen - if alkali is in solution may cause violent foaming.

Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

HAZCHEM

None

Personal Protective Equipment

Glasses:
Chemical goggles.

Gloves:
General purpose rubber glove.
PVC chemical resistant type.

Respirator:
Particulate

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

Clean up all spills immediately. Avoid contact with skin and eyes.

Wear impervious gloves and safety glasses.

Remove all ignition sources.

Use dry clean up procedures and avoid generating dust.

Place spilled material in clean, dry, sealable, labelled container.

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Section 6 - ACCIDENTAL RELEASE MEASURES ...

MAJOR SPILLS

Clear area of personnel and move upwind.

Alert Fire Brigade and tell them location and nature of hazard.

- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water courses.

No smoking, naked lights or ignition sources. Increase ventilation.

Stop leak if safe to do so.

Avoid generating dust.

Collect recoverable product into labelled containers for recycling.

Collect residues and seal in labelled drums for disposal.

Wash area down with large quantity of water and prevent runoff into drains.

After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.

If contamination of drains or waterways occurs, advise emergency services.

EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)

The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:

other than mild, transient adverse effects without perceiving a clearly defined odour is:

American Industrial Hygiene Association (AIHA)

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

Handle and open container with care.

Use good occupational work practice. Observe manufacturer's storing and handling recommendations. Keep dry.

Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Avoid contact with skin and eyes.

Avoid generating and breathing dust.

Wear personal protective equipment when handling.

Avoid smoking, naked lights, heat or ignition sources.

Use in a well-ventilated area.

Avoid contact with incompatible materials.

When handling, DO NOT eat, drink or smoke.

Avoid physical damage to containers.

Always wash hands with soap and water after handling. Work clothes should be laundered separately.

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Section 7 - HANDLING AND STORAGE ...

SUITABLE CONTAINER

Heavy gauge metal packages / Heavy gauge metal drums.

- Metal can or drum
- Packaging as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

STORAGE INCOMPATIBILITY

Avoid storage with acetylene, ammonium nitrate, bromates, chlorates, chlorine, chlorine plus oxygen difluoride, chlorine trifluoride, ethylene oxide, fluorine, hydrazine, mononitrate, hydrozoic acid, hydrogen peroxide, hydrogen sulfide, iodates, lead azide, phosphorus, nitric acid, potassium peroxide, sodium azide, sodium peroxide, sulfur plus chlorates,

STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- No smoking, naked lights or ignition sources.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

None assigned. Refer to individual constituents.

EXPOSURE STANDARDS FOR MIXTURE

"Worst Case" computer-aided prediction of spray/ mist or fume/ dust components and concentration:

Composite Exposure Standard for Mixture (TWA) :1 mg/m³.

Operations which produce a spray/mist or fume/dust, introduce particulates to the breathing zone.

If the breathing zone concentration of ANY of the components listed below is exceeded, "Worst Case" considerations deem the individual to be overexposed.

Component Breathing Zone ppm Breathing Zone mg/m³ Mixture Conc (%)

Component	Breathing Zone (mg/m ³)	Mixture Conc (%)
copper	1.0000	90.0

INGREDIENT DATA

COPPER:

TLV TWA: 1 mg/m³ Dusts and mists as Cu [ACGIH]

TLV TWA: 0.2 mg/m³ Fume [ACGIH]

PEL TWA: 1 mg/m³ [OSHA Z1]

copper dusts and mists, as Cu (A.Wt: 63.54)

ES TWA: 1 mg/m³

TLV TWA: 1 mg/m³

OES TWA: 1 mg/m³; STEL: 2 mg/m³

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION ...

copper fume, as Cu
ES-TWA: 0.2 mg/m³
TLV-TWA: 0.2 mg/m³
OES-TWA: 0.2 mg/m³
IDLH Level: 100 mg/m³ (fume)

ZINC:
#3300

PERSONAL PROTECTION

EYE

- Safety glasses with side shields; or as required,
- Chemical goggles.
- Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

HANDS/FEET

- Barrier cream with polyethylene gloves PVC gloves or Rubber Gloves.
Safety footwear

OTHER

- Overalls.
- Ensure that there is ready access to eye wash unit

ENGINEERING CONTROLS

Use in a well-ventilated area.

- Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
- Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.
- If in spite of local exhaust an adverse concentration of the substance in air could occur, respiratory protection should be considered. Such protection might consist of:
 - (a): particle dust respirators, if necessary, combined with an absorption cartridge;
 - (b): filter respirators with absorption cartridge or canister of the right type;
 - (c): fresh-air hoods or masks
- Build-up of electrostatic charge on the dust particle, may be prevented by bonding and grounding.
- Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.

Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to efficiently remove the contaminant.

Type of Contaminant:
direct spray, spray painting in shallow

Air Speed:
1-2.5 m/s (200-500 f/min.)

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION ...

booths, drum filling, conveyer loading,
crusher dusts, gas discharge (active
generation into zone of rapid air
motion)

grinding, abrasive blasting, tumbling,
high speed wheel generated dusts
(released at high initial velocity into
zone of very high rapid air motion).

2.5-10 m/s (500-2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range

- 1: Room air currents minimal or favourable to capture
- 2: Contaminants of low toxicity or of nuisance value only
- 3: Intermittent, low production.
- 4: Large hood or large air mass in motion

Upper end of the range

- 1: Disturbing room air currents
- 2: Contaminants of high toxicity
- 3: High production, heavy use
- 4: Small hood-local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 4-10 m/s (800-2000 f/min) for extraction of crusher dusts generated 2 metres distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Gold or copper coloured powders with no odour; insoluble in water.

PHYSICAL PROPERTIES

Solid.

Does not mix with water.

Sinks in water.

Molecular Weight: Not applicable

Melting Range (°C): Not available

Solubility in water (g/L): Immiscible

pH (1% solution): Not applicable

Volatile Component (%vol): Not applicable

Relative Vapour Density (air=1): Not applicable

Lower Explosive Limit (%): Not applicable

Autoignition Temp (°C): Not available

State: Divided solid

Boiling Range (°C): Not available

Specific Gravity (water=1): 8.6 (approx.)

pH (as supplied): Not applicable

Vapour Pressure (kPa): Not applicable

Evaporation Rate: Not applicable

Flash Point (°C): Not applicable

Upper Explosive Limit (%): Not applicable

Decomposition Temp (°C): Not available

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Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

Presence of water . Storage in unsealed containers.
Product is considered stable under normal handling conditions.
Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Considered an unlikely route of entry in commercial/industrial environments.
The material is discomforting and harmful if swallowed

EYE

Particulate/dust is discomforting and abrasive to the eyes

SKIN

The material may be slightly discomforting and abrasive to the skin.
The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.

INHALED

The dust may be discomforting to the upper respiratory tract and lungs if inhaled.
Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.

CHRONIC HEALTH EFFECTS

Principal routes of exposure are usually by inhalation of generated dust and skin contact with the material. As with any chemical product, contact with unprotected bare skin; inhalation of vapour, mist or dust in work place atmosphere; or ingestion in any form, should be avoided by observing good occupational work practice.

Bronze Powders

Not available. Refer to individual constituents.
unless otherwise specified data extracted from RTECS - Register of Toxic Effects
of Chemical Substances

COPPER: TOXICITY

Oral (human) TDLo : 0.12 mg/kg

WARNING: Inhalation of high concentrations of copper fume
may cause "metal

fume fever", an acute industrial disease of short duration. Symptoms are
tiredness, influenza like respiratory tract irritation with fever.

IRRITATION
Nil Reported

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Section 12 - ECOLOGICAL INFORMATION

No data for Bronze Powders.
Refer to data for ingredients, which follows:

COPPER:

Hazardous Air Pollutant: No

Copper is unlikely to accumulate in the atmosphere due to a short residence time for airborne copper aerosols. Airborne coppers, however, may be transported over large distances. Copper accumulates significantly in the food chain.

Drinking Water Standards:

3000 ug/l (UK max)

2000 ug/l (WHO provisional Guideline)

1000 ug/l (WHO level where individuals complain)

Soil Guidelines: Dutch Criteria

36 mg/kg (target)

190 mg/kg (intervention)

Air Quality Standards: no data available.

The toxic effect of copper in the aquatic biota depends on the bio-availability of copper in water which, in turn, depends on its physico-chemical form (ie.speciation). Bioavailability is decreased by complexation and adsorption of copper by natural organic matter, iron and manganese hydrated oxides, and chelating agents excreted by algae and other aquatic organisms. Toxicity is also affected by pH and hardness. Total copper is rarely useful as a predictor of toxicity. In natural sea water, more than 98% of copper is organically bound and in river waters a high percentage is often organically bound, but the actual percentage depends on the river water and its pH.

Copper exhibits significant toxicity in some aquatic organisms. Some algal species are very sensitive to copper with EC50 (96 hour) values as low as 47 ug/litre dissolved copper whilst for other algal species EC50 values of up to 481 ug/litre have been reported. However many of the reportedly high EC50 values may arise in experiments conducted with a culture media containing copper-complexing agents such as silicate, iron, manganese and EDTA which reduce bioavailability.

Toxic effects arising following exposure by aquatic species to copper are typically:

Algae EC50 (96 h)	Daphnia magna LC50 (48-96 h)	Amphipods LC50 (48-96 h)	Gastropods LC50 (48-96 h)	Crab larvae LC50 (48-96 h)
47-481 *	7-54 *	37-183 *	58-112 *	50-100 *

* ug/litre

Exposure to concentrations ranging from one to a few hundred micrograms per litre has led to sublethal effects and effects on long-term survival. For high bioavailability waters, effect concentrations for several sensitive species may be below 10 ug Cu/litre.

In fish, the acute lethal concentration of copper ranges from a few ug/litre to several mg/litre, depending both on test species and exposure conditions. Where the value is less than 50 ug Cu/litre, test waters generally have a low dissolved organic carbon (DOC) level, low hardness and neutral to slightly acidic pH. Exposure to concentrations ranging from one to a few hundred micrograms per litre has led to sublethal effects and effects on long-term survival. Lower effect concentrations are generally associated with test waters of high bioavailability.

In summary:

continued...

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Section 12 - ECOLOGICAL INFORMATION ...

TABLE BORDER><TD>RESPONSES EXPECTED FOR HIGH CONCENTRATION RANGES OF COPPER

/TABLE

Total dissolved Cu concentration range (ug/litre)	Effects of high availability in water
1-10	Significant effects are expected for diatoms and sensitive invertebrates, notably cladocerans. Effects on fish could be significant in freshwaters with low pH and hardness.
10-100	Significant effects are expected on various species of microalgae, some species of macroalgae, and a range of invertebrates, including crustaceans, gastropods and sea urchins. Survival of sensitive fish will be affected and a variety of fish show sublethal effects.
100-1000	Most taxonomic groups of macroalgae and invertebrates will be severely affected. Lethal levels for most fish species will be reached.
>1000	Lethal concentrations for most tolerant organisms are reached.

* Sites chosen have moderate to high bioavailability similar to water used in most toxicity tests.

In soil, copper levels are raised by application of fertiliser, fungicides, from deposition of highway dusts and from urban, mining and industrial sources. Generally, vegetation rooted in soils reflects the soil copper levels in its foliage. This is dependent upon the bioavailability of copper and the physiological requirements of species concerned.

Typical foliar levels of copper are:

Uncontaminated soils (0.3-250 mg/kg)	Contaminated soils (150-450 mg/kg)	Mining/smelting soils
6.1-25 mg/kg	80 mg/kg	300 mg/kg

Plants rarely show symptoms of toxicity or of adverse growth effects at normal soil concentrations of copper. Crops are often more sensitive to copper than the native flora, so protection levels for agricultural crops range from 25 mg Cu/kg to several hundred mg/kg, depending on country. Chronic and or acute effects on sensitive species occur at copper levels occurring in some soils as a result of human activities such as copper fertiliser addition, and addition of sludge. When soil levels exceed 150 mg Cu/kg, native and agricultural species show chronic effects. Soils in the range 500-1000 mg Cu/kg act in a strongly selective fashion allowing the survival of only copper-tolerant species and strains. At 2000 Cu mg/kg most species cannot survive. By 3500 mg Cu/kg areas are largely devoid of vegetation cover. The organic content of the soil appears to be a key factor affecting the bioavailability of copper.

On normal forest soils, non-rooted plants such as mosses and lichens show higher copper concentrations. The fruiting bodies and mycorrhizal sheaths of soil fungi associated with higher plants in forests often accumulate copper to much higher levels than plants at the same site. International Programme on Chemical Safety (IPCS): Environmental Health Criteria 200

ZINC:

Hazardous Air Pollutant: No

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Section 12 - ECOLOGICAL INFORMATION ...

The material is classified as an ecotoxin* because the Fish LC50 (96 hours) is less than or equal to 0.1 mg/l

* Classification of Substances as Ecotoxic (Dangerous to the Environment)

Appendix 8, Table 1

Compiler's Guide for the Preparation of International Chemical Safety Cards:
1993 Commission of the European Communities

The product has no effect on the environment unless in finely divided form. In this form it can be harmful to aquatic life. Acute toxicity data in the form of 96 hour LC50s for Australian freshwater animals are:
fish - 0.14 to 38 mg Zn/L; and crustaceans - 0.43 to 32 mg Zn/L.

Section 13 - DISPOSAL CONSIDERATIONS

Recycle wherever possible. Consult manufacturer for recycling options.

- Material from spill may be contaminated with water resulting in generation of highly flammable hydrogen gas with pressurising of closed containers.
- Hold spill material in vented containers only and plan for prompt disposal.

Consult State Land Waste Management Authority for disposal.

Bury residue in an authorised landfill.

Puncture containers to prevent re-use.

Section 14 - TRANSPORTATION INFORMATION

Shipping Name:

NONE

Dangerous Goods Class: None

UN/NA Number: None

ADR Number:

Packing Group: None

Labels Required:

Additional Shipping Information:

International Transport Regulations:

IMO: None

HAZCHEM

None

Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE

None

REGULATIONS

No data available for zinc (CAS: 7440-66-6).

No data available for zinc (CAS: None). applies to the following ingredients:

No data available for zinc (CAS: 7440-66-6).

No data available for copper (CAS: 7440-50-8).

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Section 16 - OTHER INFORMATION

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