

# MM KEMBLA PHOSPHORUS DEOXIDIZED COPPER

Chemwatch Independent Material Safety Data Sheet

Issue Date: 15-Apr-2011

NC317TCP

CHEMWATCH 5072-83

Version No:4

CD 2011/3 Page 1 of 12

## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT NAME

MM KEMBLA PHOSPHORUS DEOXIDIZED COPPER

### PRODUCT USE

Hardened, toughened copper for non electrical uses.

### SUPPLIER

Company: Metal Manufactures

Address:

Gloucester Boulevard

Port Kembla

NSW, 2505

Australia

Telephone: +61 2 4223 5300

Fax: +61 2 4223 5288

Email: [hzotter@kembla.com.au](mailto:hzotter@kembla.com.au)

Website: <http://www.kembla.com.au/>

## Section 2 - HAZARDS IDENTIFICATION

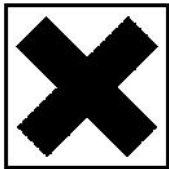
### STATEMENT OF HAZARDOUS NATURE

HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to NOHSC Criteria, and ADG Code.

### CHEMWATCH HAZARD RATINGS



SCALE: Min/Nil=0 Low=1 Moderate=2 High=3 Extreme=4



### RISK

- Harmful: danger of serious damage to health by prolonged exposure through inhalation.
- Harmful to aquatic organisms.
- Inhalation and/or ingestion may produce health damage\*.
- Cumulative effects may result following exposure\*.

### SAFETY

- Avoid contact with skin.
- Avoid contact with eyes.
- Wear suitable protective clothing.
- Wear suitable gloves.

continued...

# MM KEMBLA PHOSPHORUS DEOXIDIZED COPPER

Chemwatch Independent Material Safety Data Sheet

Issue Date: 15-Apr-2011

NC317TCP

CHEMWATCH 5072-83

Version No:4

CD 2011/3 Page 2 of 12

## Section 2 - HAZARDS IDENTIFICATION

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

\* (limited evidence).

• Wear eye/ face protection.

• Use only in well ventilated areas.

• Keep container in a well ventilated place.

• To clean the floor and all objects contaminated by this material, use water and detergent.

• Keep away from food, drink and animal feeding stuffs.

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

• If swallowed, IMMEDIATELY contact Doctor or Poisons Information Centre (show this container or label).

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
copper	7440-50-8	99
phosphorus, white	12185-10-3	0.05 max <sup>^</sup>

Composition is generic for all phosphorised copper

## 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:
- Wash out immediately with fresh 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.
- Seek medical attention without delay; if pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

### SKIN

- 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 passage of breathing.
- If irritation or discomfort persists seek medical attention.

continued...

# MM KEMBLA PHOSPHORUS DEOXIDIZED COPPER

Chemwatch Independent Material Safety Data Sheet

Issue Date: 15-Apr-2011

NC317TCP

CHEMWATCH 5072-83

Version No:4

CD 2011/3 Page 3 of 12

Section 4 - FIRST AID MEASURES

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor, without delay.

## NOTES TO PHYSICIAN

- Copper, magnesium, aluminium, antimony, iron, manganese, nickel, zinc (and their compounds) in welding, brazing, galvanising or smelting operations all give rise to thermally produced particulates of smaller dimension than may be produced if the metals are divided mechanically. Where insufficient ventilation or respiratory protection is available these particulates may produce "metal fume fever" in workers from an acute or long term exposure.
  - Onset occurs in 4-6 hours generally on the evening following exposure. Tolerance develops in workers but may be lost over the weekend. (Monday Morning Fever)
  - Pulmonary function tests may indicate reduced lung volumes, small airway obstruction and decreased carbon monoxide diffusing capacity but these abnormalities resolve after several months.
  - Although mildly elevated urinary levels of heavy metal may occur they do not correlate with clinical effects.
  - The general approach to treatment is recognition of the disease, supportive care and prevention of exposure.
  - Seriously symptomatic patients should receive chest x-rays, have arterial blood gases determined and be observed for the development of tracheobronchitis and pulmonary edema.
- [Ellenhorn and Barceloux: Medical Toxicology].

## Section 5 - FIRE FIGHTING MEASURES

### EXTINGUISHING MEDIA

- Metal dust fires need to be smothered with sand, inert dry powders.
- DO NOT USE WATER, CO<sub>2</sub> or FOAM.
- Use DRY sand, graphite powder, dry sodium chloride based extinguishers, G-1 or Met L-X to smother fire.
  - Confining or smothering material is preferable to applying water as chemical reaction may produce flammable and explosive hydrogen gas.
  - Chemical reaction with CO<sub>2</sub> may produce flammable and explosive methane.
  - If impossible to extinguish, withdraw, protect surroundings and allow fire to burn itself out.

### FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves for fire only.
- Prevent, by any means available, spillage from entering drains or water courses.
- Use fire fighting procedures suitable for surrounding area.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

### FIRE/EXPLOSION HAZARD

- Does not burn.
- 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.

continued...

# MM KEMBLA PHOSPHORUS DEOXIDIZED COPPER

Chemwatch Independent Material Safety Data Sheet

Issue Date: 15-Apr-2011

NC317TCP

CHEMWATCH 5072-83

Version No:4

CD 2011/3 Page 4 of 12

Section 5 - FIRE FIGHTING MEASURES

---

- 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.

## HAZCHEM

None

## Personal Protective Equipment

Gloves, boots (chemical resistant).

Breathing apparatus.

---

## Section 6 - ACCIDENTAL RELEASE MEASURES

---

### MINOR SPILLS

- Clean up all spills immediately.
- Secure load if safe to do so.
- Bundle/collect recoverable product.
- Collect remaining material in containers with covers for disposal.

### MAJOR SPILLS

- Clean up all spills immediately.
- Secure load if safe to do so.
- Bundle/collect recoverable product.
- Collect remaining material in containers with covers for disposal.

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

---

## Section 7 - HANDLING AND STORAGE

---

### PROCEDURE FOR HANDLING

- Limit all unnecessary personal contact.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- When handling DO NOT eat, drink or smoke.
- Always wash hands with soap and water after handling.
- Avoid physical damage to containers.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.

### SUITABLE CONTAINER

- Packaging as recommended by manufacturer.
  - Check that containers are clearly labelled.
- Store flat in load designed racking.
- Heavy gauge metal packages / Heavy gauge metal drums.

### STORAGE INCOMPATIBILITY

- Segregate from strong acids, ammonia.
- Avoid contact with acids as toxic phosphine gas may result.

### STORAGE REQUIREMENTS

- Keep dry.
- Store under cover.
- Protect containers against physical damage.
- Observe manufacturer's storing and handling recommendations.

continued...

# MM KEMBLA PHOSPHORUS DEOXIDIZED COPPER

Chemwatch Independent Material Safety Data Sheet

Issue Date: 15-Apr-2011

NC317TCP

CHEMWATCH 5072-83

Version No:4

CD 2011/3 Page 5 of 12

Section 7 - HANDLING AND STORAGE

## SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



+: May be stored together

O: May be stored together with specific precautions

X: Must not be stored together

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

Source	Material	TWA mg/m <sup>3</sup>
Australia Exposure Standards	copper (Copper, dusts & mists (as Cu))	1
Australia Exposure Standards	copper (Copper (fume))	0.2
Australia Exposure Standards	copper (Inspirable dust (not otherwise classified))	10
Australia Exposure Standards	phosphorus, white (Phosphorus (yellow))	0.1

### EMERGENCY EXPOSURE LIMITS

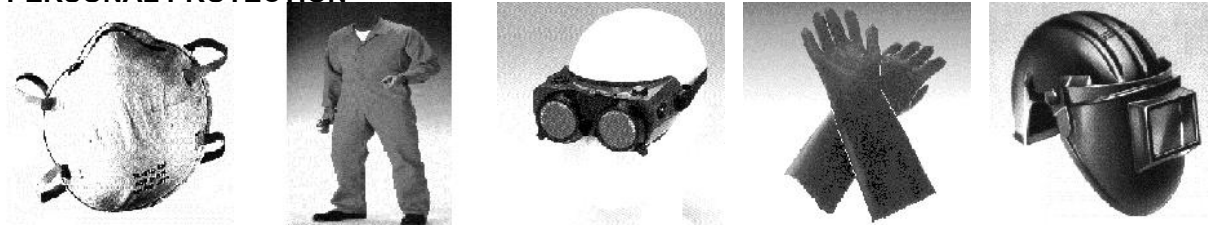
Material	Revised	IDLH
copper 10072	100	
copper 10072	100	

### MATERIAL DATA

MM KEMBLA PHOSPHORUS DEOXIDIZED COPPER:

- None assigned. Refer to individual constituents.

### PERSONAL PROTECTION



### EYE

- Safety glasses with side shields; or as required,
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national

continued...

# MM KEMBLA PHOSPHORUS DEOXIDIZED COPPER

Chemwatch Independent Material Safety Data Sheet

Issue Date: 15-Apr-2011

NC317TCP

CHEMWATCH 5072-83

Version No:4

CD 2011/3 Page 6 of 12

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

equivalent].

For most open welding/brazing operations, goggles, even with appropriate filters, will not afford sufficient facial protection for operators. Where possible use welding helmets or handshields corresponding to AS 1336 and AS 1338 which provide the maximum possible facial protection from flying particles and fragments. [WRIA-WTIA Technical Note 7].

## HANDS/FEET

• Cotton gloves or • Heavy gloves, eg. leather or Welding Gloves

Safety footwear.

• When handling hot or molten liquids, wear trousers or overalls outside of boots, to avoid spills entering boots.

## OTHER

■ No special equipment needed when handling small quantities.

OTHERWISE:

• Overalls.

• Barrier cream.

• Eyewash unit.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

## ENGINEERING CONTROLS

■ Use in a well-ventilated area.

• Hazard relates to dust released by cutting, grinding, trimming or other shaping operations.

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:

Process controls which involve changing the way a job activity or process is done to reduce the risk.

Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.

Employers may need to use multiple types of controls to prevent employee overexposure.

For brazing or soldering the nature of ventilation is determined by the location of the work.

• For outdoor work, natural ventilation is generally sufficient.

• For indoor work, conducted in either open or limited spaces, use mechanical (general exhaust or plenum) ventilation. (Open work spaces exceed 300 cubic meters per welder)

For work conducted in confined spaces, mechanical ventilation, using local exhaust systems, is required. (In confined spaces always check that oxygen has not been depleted by excessive rusting of steel or snowflake corrosion of aluminium) Mechanical or local exhaust ventilation may not be required where the process working time does not exceed 24 mins. (in an 8 hr. shift) provided the work is intermittent (a maximum of 5 mins. every hour). Local exhaust systems must be designed to provide a minimum capture velocity at the fume source, away from the worker, of 0.5 metre/sec. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:

welding, brazing fumes (released at relatively low velocity into moderately still air)

Air Speed:

0.5- 1, 0 m/s (100- 200 f/min.)

Within each range the appropriate value depends on:

continued...

# MM KEMBLA PHOSPHORUS DEOXIDIZED COPPER

Chemwatch Independent Material Safety Data Sheet

Issue Date: 15-Apr-2011

NC317TCP

CHEMWATCH 5072-83

Version No:4

CD 2011/3 Page 7 of 12

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

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 1-2 m/s (200-400 f/min.) for extraction of welding or brazing fumes generated 2 meters 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

Coppery red / yellow to gold metal; no odour. Insoluble in water.

Copper which has been deoxidised with phosphor copper.

Available as billets, rod, tube, shapes.

### PHYSICAL PROPERTIES

Does not mix with water.

Sinks in water.

State	Manufactured	Molecular Weight	Not applicable.
Melting Range (°C)	1050- 1100	Viscosity	Not Applicable
Boiling Range (°C)	2300- 2350	Solubility in water (g/L)	Immiscible
Flash Point (°C)	Non Flammable	pH (1% solution)	Not applicable.
Decomposition Temp (°C)	Not available.	pH (as supplied)	Not applicable
Autoignition Temp (°C)	Not available	Vapour Pressure (kPa)	Not applicable.
Upper Explosive Limit (%)	Not applicable	Specific Gravity (water=1)	8.7- 9.0
Lower Explosive Limit (%)	Not applicable	Relative Vapour Density (air=1)	Not applicable.
Volatile Component (%vol)	Negligible	Evaporation Rate	Non Volatile

## Section 10 - STABILITY AND REACTIVITY

### CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

*For incompatible materials - refer to Section 7 - Handling and Storage.*

continued...

# MM KEMBLA PHOSPHORUS DEOXIDIZED COPPER

Chemwatch Independent Material Safety Data Sheet

Issue Date: 15-Apr-2011

NC317TCP

CHEMWATCH 5072-83

Version No:4

CD 2011/3 Page 8 of 12

---

## Section 11 - TOXICOLOGICAL INFORMATION

---

### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

##### SWALLOWED

■ Considered an unlikely route of entry in commercial/industrial environments.

Not normally a hazard due to the physical form of product. The material is a physical irritant to the gastrointestinal tract and may be harmful if swallowed.

A metallic taste, nausea, vomiting and burning feeling in the upper stomach region occur after ingestion of copper and its derivatives. The vomitus is usually green/blue and discolours contaminated skin. Acute poisonings from ingestion are rare due to their prompt removal by vomiting. Should vomiting not occur or is delayed, systemic poisoning may occur producing kidney and liver damage, wide-spread capillary damage, and be fatal; death may occur after relapse from an apparent recovery. Anaemia may occur in acute poisoning.

##### EYE

■ Particulate/dust is regarded as discomforting and abrasive to the eyes.

Fumes from welding/brazing operations may be irritating to the eyes.

##### SKIN

■ The material may be abrasive and may cause laceration by sharp edges.

Irritation and skin reactions are possible with sensitive skin.

Exposure to copper, by skin, has come from its use in pigments, ointments, ornaments, jewellery, dental amalgams and IUDs (intra-uterine devices), and in killing fungi and algae. Although copper is used in the treatment of water in swimming pools and reservoirs, there are no reports of toxicity from these applications. Reports of allergic contact dermatitis following contact with copper and its salts have appeared in the literature, however the exposure concentrations leading to any effect have been poorly characterized. In studies, the possible contamination with nickel (which causes allergies definitely) has been raised as a reason for any reactions observed.

##### INHALED

■ Not normally a hazard due to non-volatile nature of product.

Generated dust may be discomforting to the upper respiratory tract and may be harmful if exposure is prolonged.

Inhalation hazard is increased at higher temperatures.

Inhalation of fumes (as from welding) may cause, coughing, nasal irritation.

Inhalation of fume may aggravate a pre-existing respiratory condition such as asthma, bronchitis, emphysema. Copper poisoning following exposure to copper dusts and fume may result in headache, cold sweat and weak pulse. Capillary, kidney, liver and brain damage are the longer term manifestations of such poisoning.

Inhalation of freshly formed metal oxide particles sized below 1.5 microns and generally between 0.02 to 0.05 microns may result in "metal fume fever". Symptoms may be delayed for up to 12 hours and begin with the sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalised feeling of malaise. Mild to severe headache, nausea, occasional vomiting, fever or chills, exaggerated mental activity, profuse sweating, diarrhoea, excessive urination and prostration may also occur. Tolerance to the fumes develops rapidly, but is quickly lost. All symptoms usually subside within 24-36 hours following removal from exposure.

##### CHRONIC HEALTH EFFECTS

■ Principal routes of exposure are usually by, inhalation of generated dust, inhalation of fumes from the heated material and skin contact with the molten material.

Copper has fairly low toxicity. Some rare hereditary conditions (Wilson disease or hepatolenticular degeneration) can lead to accumulation of copper on exposure, causing irreversible damage to a variety of organs (liver, kidney, CNS, bone, vision) and lead to death. There may be anaemia and cirrhosis of the liver.

continued...



# MM KEMBLA PHOSPHORUS DEOXIDIZED COPPER

Chemwatch Independent Material Safety Data Sheet

Issue Date: 15-Apr-2011

NC317TCP

CHEMWATCH 5072-83

Version No:4

CD 2011/3 Page 9 of 12

Section 11 - TOXICOLOGICAL INFORMATION

## TOXICITY AND IRRITATION

MM KEMBLA PHOSPHORUS DEOXIDIZED COPPER:

- Not available. Refer to individual constituents.

COPPER:

- unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY

Oral (human) TDLo: 0.12 mg/kg

Oral (rat) LD50: 5800 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

## Section 12 - ECOLOGICAL INFORMATION

COPPER:

- Harmful to aquatic organisms.

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

continued...

# MM KEMBLA PHOSPHORUS DEOXIDIZED COPPER

Chemwatch Independent Material Safety Data Sheet

Issue Date: 15-Apr-2011

NC317TCP

CHEMWATCH 5072-83

Version No:4

CD 2011/3 Page 10 of 12

Section 12 - ECOLOGICAL INFORMATION

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:

Responses expected for high concentration ranges of copper \*

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.

DO NOT discharge into sewer or waterways.

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

continued...

# MM KEMBLA PHOSPHORUS DEOXIDIZED COPPER

Chemwatch Independent Material Safety Data Sheet

Issue Date: 15-Apr-2011

NC317TCP

CHEMWATCH 5072-83

Version No:4

CD 2011/3 Page 11 of 12

Section 12 - ECOLOGICAL INFORMATION

\* 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.

## Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
MM Kembla Phosphorus Deoxidized Copper	No Data Available	No Data Available		
copper	No Data Available	No Data Available	LOW	

## Section 13 - DISPOSAL CONSIDERATIONS

- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Management Authority for disposal.
- Bury residue in an authorised landfill.

## Section 14 - TRANSPORTATION INFORMATION

### HAZCHEM:

None (ADG7)

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: ADG7, UN, IATA, IMDG

## Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE None

### REGULATIONS

#### Regulations for ingredients

#### copper (CAS: 7440-50-8) is found on the following regulatory lists;

"Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (AQUA/1 to 6 - inorganic chemicals)", "Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (Domestic water supply - inorganic chemicals)", "Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (IRRIG - inorganic chemicals)", "Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (STOCK - inorganic chemicals)", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (Aquatic habitat)", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (Domestic water supply quality)", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (IRRIG)", "Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways - Agricultural uses (Stock)", "Australia ADI list - Acceptable daily intakes for agricultural and veterinary chemicals", "Australia Hazardous Substances", "Australia High Volume Industrial Chemical List (HVICL)", "Australia Inventory of Chemical Substances (AICS)", "International Maritime Dangerous Goods Requirements (IMDG Code) - Marine Pollutants", "International Maritime Dangerous Goods Requirements (IMDG Code) - Substance Index", "WHO Guidelines for Drinking-water Quality - Guideline values for chemicals that are of health significance in drinking-water"

No data for MM Kembla Phosphorus Deoxidized Copper (CW: 5072-83)

## Section 16 - OTHER INFORMATION

### INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
-----------------	-----

continued...

# MM KEMBLA PHOSPHORUS DEOXIDIZED COPPER

Chemwatch Independent Material Safety Data Sheet

Issue Date: 15-Apr-2011

NC317TCP

CHEMWATCH 5072-83

Version No:4

CD 2011/3 Page 12 of 12

Section 16 - OTHER INFORMATION

phosphorus, white

12185- 10- 3, 7723- 14- 0

## MSDS SECTION CHANGES

*The following table displays the version number of and date on which each section was last changed.*

Section Name	Version	Date	Section Name	Version	Date	Section Name	Version	Date
Ingredients	4	21- Sep- 2006	Appearance	4	21- Sep- 2006	Physical Properties	4	21- Sep- 2006

■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:  
[www.chemwatch.net/references](http://www.chemwatch.net/references).

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

*This document is copyright. Apart from any fair dealing for the purposes of private study, research, review or criticism, as permitted under the Copyright Act, no part may be reproduced by any process without written permission from CHEMWATCH. TEL (+61 3) 9572 4700.*

Issue Date: 15-Apr-2011

Print Date: 26-Oct-2011

*This is the end of the MSDS.*