

RED COPPER 750WG



Material Safety Data Sheet

June, 2017

SECTION 1: IDENTIFICATION OF PRODUCT

- | | |
|--|---|
| ➤ Common name: | ORANGE CUPROUS OXIDE 75 WG |
| ➤ Alternative names: | dicopper oxide orange wettable powder 75% copper content. |
| ➤ IUPAC name active substance: | copper (I) oxide. |
| ➤ CAS name active substance: | cuprous oxide. |
| ➤ EC name active substance: | dicopper oxide. |
| ➤ Molecular formula active substance: | Cu ₂ O |
| ➤ Structural formula active substance: | Cu ₂ O |
| ➤ CAS number active substance: | 1317-39-1 |
| ➤ EC number active substance: | 215-270-7 |
| ➤ Molecular weight range active substance: | 143.09 g/mol |
| ➤ RTECS number active substance: | GL8050000 |

Fungicide and bactericide of contact and preventive action with ample activity field and excellent persistence, with very fine particles that guarantee a greater adhesion and uniform covering on the different vegetal organs, offering a high resistance to the rain, exerting a residual and protective action during a long period of time generating greater efficiency in the control of the diseases.

SECTION 2: HAZARDS IDENTIFICATION

A) CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

- The active substance is listed in Regulation (EC) No. 1272/2008 in index number 029-002-00-X. Not listed in Regulation (EU) No. 758/2013.
- Classification of the active substance according to Regulation (EC) No 1272/2008:
 - Acute toxicity - Oral (category 4): Harmful if swallowed.
 - Aquatic environment short term: Aquatic acute (category 1): Very toxic to aquatic life.
 - Aquatic environment long term: Aquatic chronic (category 1): Very toxic to aquatic life with long lasting effects.

Phone: (08) 9312 3200
Mobile: 0402 310 854

Facsimile: (08) 9312 3233
Email: melpat@melpat.com.au
Website: www.melpat.com.au

4/22 Parry Avenue
Bateman
Western Australia
6150

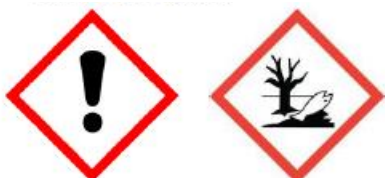


- Classification of the active substance according to Directive 67/548/EEC:
 - Acute toxicity: Harmful if swallowed.
 - Environment: Dangerous for the environment; Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

B) LABEL ELEMENTS

- According to Regulation (EC) No 1272/2008:

- Signal word: WARNING
- Hazard pictogram:



- Hazard statements:
 - H302: Harmful if swallowed.
 - H400: Very toxic to aquatic life.
 - H410: Very toxic to aquatic life with long lasting effects
- Precautionary statements:
 - P264: Wash... thoroughly after handling.
 - P270: Do not eat, drink or smoke when using this product.
 - P301 + P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
 - P330: Rinse mouth.
 - P273: Avoid release to the environment.
 - P391: Collect spillage.
 - P501: Dispose of contents/container to... (in accordance with local / regional / national / international regulations.)

- According to Directive 67/548/EEC:

- Indication of danger:



XN HARMFUL



N DANGEROUS TO THE ENVIRONMENT

- Risk phrases:
 - R22: Harmful if swallowed.
 - R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- Safety phrases:
 - S2: Keep out of reach of children.
 - S22: Do not breathe dust.
 - S60: This material and its container must be disposed of as hazardous waste.
 - S61: Avoid release to the environment. Refer to special instructions/ Safety data sheets.

C) OTHER HAZARDS:

None.



SECTION 3: COMPOSITION/ INFORMATION ON INGREDIENTS

SUBSTANCE:

IUPAC substance name	CAS Number	EC Number	Concentration
Dicopper oxide	1317-39-1	215-270-7	minimum 84%

Notes:

1. This product contains minimum 84.44% w/w dicopper oxide equivalent to 75% w/w elemental copper (Cu).
2. Individual impurities are present at concentrations that do not affect the classification of the substances.

SECTION 4: FIRST AID MEASURES

A) DESCRIPTION OF FIRST AID MEASURES:

- If swallowed:
Drink promptly a large quantity of milk, egg white, gelatine solution. If these are not available, large quantities of water. Never give anything by mouth to an unconscious person. Do not induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Get medical attention immediately.
- If inhaled:
Remove victim to fresh air. Lay patient down. Keep warm and rested. If possible remove prostheses such as false teeth, which may block air. Supply fresh air. If breathing is difficult, give oxygen. If not breathing, provide artificial respiration, mouth-to-mouth or by any device available (valve resuscitator, bag-valve mask device). Perform CPR if necessary. Get medical attention immediately.
- If skin contact:
Remove contaminated clothing and shoes. Wash with plenty of soap and gently lukewarm running water until no evidence of chemical remains (approximately 10 minutes). Make sure the water is clean. Launder contaminated clothing before reuse. Consult doctor if some irritation persist.
- If eye contact:
Hold eyelids open and flush with gently running lukewarm water, until no evidence of chemical remains (at least 20 minutes). Make sure the water is clean. If the affected person wears a contact lens, do not hesitate removing it. For precaution, get medical attention if some pain persist.

B) MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED:

- Inhalation:
Metallic taste. Irritation of nose and throat.
- Ingestion:
Metallic taste, nausea, vomiting, diarrhoea, headache, sweating. Discontinued urination followed by a yellowing of the skin. Over exposure: abdominal pain, diarrhoea, change in the blood composition, change in the urine composition, disturbances of consciousness.
- Skin contact:
Redness, pain, mild dermatitis, allergic skin rash, irritation.
- Eye contact:
Redness, pain, irritation.



- Symptoms of systemic copper poisoning may include: capillary damage, headache, cold sweat, weak pulse, and kidney and liver damage, central nervous system excitation followed by depression, jaundice, convulsions, paralysis, and coma. Death may occur from shock or renal failure.
- Chronic copper poisoning is typified by hepatic cirrhosis, brain damage, demyelination, kidney defects. It has also been reported that copper poisoning has led to haemolytic anaemia and accelerates arteriosclerosis.

C) INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED:

- If swallowed:
 - Get medical attention immediately.
 - Proceed to clean stomach as soon as possible.
 - Monitor and treat, were necessary for shock.
 - Treat symptomatically.

SECTION 5: FIRE FIGHTING MEASURES

A) EXTINGUISHING MEDIA:

- Suitable extinguishing media:
Use extinguishing media suitable to the environment. Use dry extinguishing resource, carbon dioxide, foam.
- Unsuitable extinguishing media:
Use direct water jet with caution in order to avoid discharge into drains or aquatic environment.

B) SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

Thermal decomposition products include highly toxic gases. Copper oxides. Carbon dioxide. Carbon monoxide. Sulphurous gases.

C) ADVICE FOR FIREFIGHTERS:

- Firefighters should use eye and face protection with breathing apparatus and protective boots, overalls and gloves to prevent inhalation and contact with eyes and skin.
- Prevent by any means possible spillage from entering drain systems or water courses.

GENERAL HAZARD:

Negligible fire and explosion hazard when exposed to heat or flame. Not expected to be sensitive to mechanical impact or static discharge.

ADDITIONAL INFORMATION:

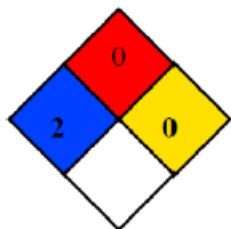
- Hazardous Material Information System (HMIS)

HEALTH	2	
FLAMMABILITY	0	
REACTIVITY	0	
PROTECTIVE EQUIPMENT	E	

HAZARD RATINGS: 4 = severe, 3 = serious, 2 = moderate, 1 = slight, 0 = minimal
E= Safety glasses, gloves, dust respirator



National Fire Protection Association (NFPA) 704 standard



- ◆ Flammability 0: will not burn.
- ◆ Health 2: intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury.
- ◆ Reactivity 0: normally stable, even under fire exposure conditions, and is not reactive with water.

SECTION 6: ACCIDENTAL RELEASE MEASURES

A) PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES:

- For non-emergency personnel:
 - Evacuate the danger area.
 - Use eye and face protection with breathing apparatus and protective boots, overalls and gloves to prevent inhalation and contact with eyes and skin.
 - Ensure adequate ventilation.
 - Avoid formation of dust.
 - Prevent by any means possible spillage from entering drain systems or water courses.
- For emergency responders:
 - Use eye and face protection with breathing apparatus and protective boots, overalls and gloves to prevent inhalation and contact with eyes and skin.
 - Evacuate the affected area.
 - Ensure adequate ventilation.
 - Avoid formation of dust.
 - Prevent by any means possible spillage from entering drain systems or water courses.

B) ENVIRONMENTAL PRECAUTIONS:

Pollution may be caused by runoff from fire control or dilution water. Prevent the material from entering drain systems or water courses. High concentrations of copper on lakes, rivers and streams are toxic to aquatic ecosystems.

C) METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP:

- Spill on ground:
 - Small spills:
 - Isolate the spill area to prevent people from entering.
 - Avoid dust formation.
 - Recover product wherever possible. May be mopped and wiped off.
 - Always wash area with large amounts of water and prevent runoff into drains.



- Large spills:
 - Isolate the spill area to prevent people from entering.
 - Avoid dust formation.
 - Withdraw all workers against the direction of the wind.
 - Recover the material and deposit in a polypropylene bag.
 - Wash ground with large amounts of water. Prevent possible spillage from entering drain systems or water courses. If contamination of drains or waterways occurs, advise emergency services.
 - Properly dispose the waste materials after and according with the local regulations.

- Spill on water:
 - Isolate the spill area.
 - Recover the material as soon as possible.
 - Deposit in a suitable container and according with the local regulations.
 - Do not drink the contaminated water.
 - High concentrations of copper on lakes, rivers and streams are toxic to aquatic ecosystems. If contamination of drains or waterways occurs, advise emergency services.

SECTION 7: HANDLING & STORAGE

GENERAL INFORMATION:

Store above 0°C and below 35°C (95°F). Average shelf life under proper storage conditions is at least two (2) years.

A) PRECAUTIONS FOR SAFE HANDLING:

- Working areas must be well aerated. Provide suction extractors if dust is formed. Avoid eye contact and inhalation of dust.
- Use safety goggles, protective clothing, gloves and dust respirator covering nose and mouth.
- Keep container tightly closed and dry.
- Remove contaminated clothing and protective equipment before entering eating areas. Carefully wash hands after using the compound and most especially before eating or drinking.
- Prevent handling with incompatible substances (see point 10.5).
- Prevent by any means possible spillage from entering drain systems or water courses.

B) CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES:

- It should not be stored in metal containers. May be corrosive to metal after a long period of time.
- Store in a clean, cool, dry, and well-ventilated area and out of direct sunlight. Do not store near feed, food or within the reach of children. Protect from rain, moisture and excessive heat.
- Keep container tightly closed and dry. Substance is highly hygroscopic.
- Do not store in a unlabelled container.
- Prevent storage with incompatible substances (see point 10.5).

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

A) CONTROL PARAMETERS:

Control enclosed spaces with adequate ventilation to prevent exceeding of ACGIH Threshold Limit Value (TLV) (1mg/m³ for copper dusts and mists as Cu) and EU OSHA Permissible Exposure Limit (PEL) (1mg/m³ for copper dusts and mists as Cu).

B)



EXPOSURE CONTROLS:

- Appropriate engineering controls:
Use local ventilation if dusting is a problem, to maintain air levels below the recommended exposure limit.
- Individual protection measures, such as personal protective equipment:
 - Eye/ face protection:
 - Wear splash-proof of dust resistant safety goggles to prevent eyes contact with this substance. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
 - Skin protection:
 - Hand protection:
 - Wear any PVC, PE or neoprene gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product.
 - Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
 - Other:
 - Employees must wear appropriate protective (impervious) clothing to prevent repeated or prolonged skin contact with this substance.
 - Wash contaminated clothing and other protective equipment before storing or re-using.
 - Respiratory protection:
 - In enclosed spaces where the TLV or PEL may be exceeded, wear approved dust or mist respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
- Thermal hazards:
This substance do not represent a thermal hazard, therefore no special considerations are necessary in the construction of the personal protective equipment.

SECTION 9: PHYSICAL & CHEMICAL PROPERTIES**A) INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES:**

Appearance:	solid, fine homogeneous brown red orange granule.
Odour:	odourless.
Odour threshold:	not applicable as odourless.
pH:	7,5 to 10,5 (water suspension 1%)
Melting / freezing point:	near 1232°C.
Initial boiling point:	near 1800°C.
Flash point:	not applicable to an inorganic solid.
Evaporation rate:	not applicable to an inorganic solid.
Flammability:	not flammable. Wholly inorganic salts are not combustible or flammable.
Upper / lower flammability:	not applicable. Not flammable. Wholly inorganic salts are not combustible or flammable.
Vapor pressure:	the substance is an inorganic salt and as such has negligible vapour pressure at environmentally relevant temperatures.
Vapour density:	negligible at environmentally relevant temperatures.
Relative density:	5.7 – 6.2 g/cm ³ at 20°C.
Solubility(ies):	pH 6.5: 0.000639 g/L Soluble in dilute acids. Soluble in ammonium hydroxide.



Portion coefficient:	Insoluble in organic solvents. Soluble in cold water.
Auto-ignition temperature:	not applicable.
Decomposition temperature:	not auto-ignition.
Viscosity:	above 1230°C.
Explosive properties:	not applicable to an inorganic solid.
Oxidising properties:	not explosive.
	no oxidising properties.

B) OTHER INFORMATION:

Surface tension: not required for substances with a water solubility of < 1 mg/L.

SECTION 10: STABILITY AND REACTIVITY**A) REACTIVITY:**

Not normally reactive.

B) CHEMICAL STABILITY:

This substance is stable under normal ambient temperature and pressure. It is not a self-heating substance. Experience of use indicates that it does not ignite on contact with water or involve gases.

C) POSSIBILITY OF HAZARDOUS REACTIONS:

There are no dangerous reactions.

D) CONDITIONS TO AVOID:

Moisture (substance is highly hygroscopic), incompatible materials.

E) INCOMPATIBLE MATERIALS:

Oxidizing agents, air and moisture. Aluminium (exothermic reaction), lithium nitride, peroxyformic acid (potentially explosive reaction), acetylene + caustic solution.

F) HAZARDOUS DECOMPOSITION PRODUCTS:

Decomposes in case of fire, giving off highly toxic gases. Copper oxides. Carbon dioxide. Carbon monoxide. Sulphurous gases.



SECTION 11: TOXICOLOGICAL INFORMATION (ACTIVE SUBSTANCE)

A) INFORMATION ON TOXICOLOGICAL EFFECTS:

- Acute toxicity:
 - Oral: Classified.

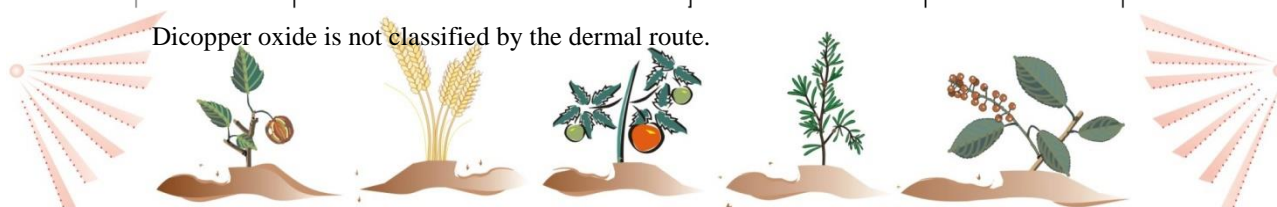
Method	Results	Remarks	Reference
OECD 401 (Acute Oral Toxicity). Test Animals: Rat, Sprague-Dawley, male / female (5 per sex per group). Dose Levels and Duration of Exposure: 200, 431, 928, 2000 mg/kg bw. Post exposure period: 14 days.	Male LD ₅₀ : 1625 mg/kg bw. Female LD ₅₀ : 928-2000 mg/kg bw. Male/female LD ₅₀ : 1340 mg/kg bw. 0/10, 0/10, 3/10 and 7/10 animals died at 200, 431, 928 and 2000 mg/kg bw. respectively. Clinical signs observed at all levels consisted of piloerection, hunched posture, lethargy, a decreased respiratory rate and diarrhoea.	Reliability: 1 (reliable without restriction). Test substance: Dicopper oxide. Standard acute method. Key study.	Collier, 1984. OECD Acute oral toxicity test: Determination of the acute oral median Lethal Dose (LD ₅₀) of cuprous oxide in the rat. SafePharm Laboratories, Report No. 296/8404.

Classification according to Directive 67/548/EEC: Harmful (Xn). R22, Harmful if swallowed.
Classification according to CLP/GHS: Acute Tox. 4, H302: Harmful if swallowed.

- Dermal: Not classified.

Method	Results	Remarks	Reference
EPA OPP 81-2 (Acute Dermal Toxicity). Equivalent to OECD 402. Test Animals: Rabbit, New Zealand White, 5 males and 5 females. Dose Levels and Duration of Exposure: Test material applied moistened at 2000 mg/kg bw. Post exposure period: 14 days.	Male / female LD ₅₀ : > 2000 mg/kg bw. There were no mortalities or clinical signs of systemic toxicity. A few animals showed slightly reddened skin on the test site. One animal showed dry, reddened and swollen skin on the test site. All but one animal gained weight during the study. One animal was found to have a liver lesion at necropsy. No other abnormalities were noted at necropsy.	Reliability: 1 (reliable without restriction). Test substance: Dicopper oxide. Limit test. Supporting study.	Nitka, 1991. Acute Dermal Toxicity in Rabbits (FIFRA). Consumer Products Testing. Experimental Reference No: 91048-1.
OECD 402 (Acute Dermal Toxicity). Test Animals: Rat, Wistar, 5 males and 5 females. Dose Levels and Duration of Exposure: 2000 mg/kg bw. Post exposure period: 14 days.	Male / female LD ₅₀ : > 2000 mg/kg bw. There were no deaths, clinical signs of systemic toxicity, or dermal findings in this study. All animals gained weight during the study. No abnormalities were noted at necropsy.	Reliability: 1 (reliable without restriction). Test substance: Dicopper oxide. Limit test. Key study.	Sternier & Chibanguza, 1988. Acute dermal toxicity in rats with Copper-I-Oxide. International Bio Research, Project No: 1-4-1602-88.

Dicopper oxide is not classified by the dermal route.



- Inhalation: Not classified.
- Skin corrosion / irritation: Not classified.

Method	Results	Remarks	Reference
<p>OECD 404 (Acute Dermal Irritation / Corrosion).</p> <p>Test Animals: Rabbit, New Zealand White (10 animals used, 5 in each test).</p> <p>Dose Levels and Duration of Exposure: 0.5 ml of test substance applied. Test 1 (5 animals): substance applied as powder and wetted with water 1:1. Test 2 (5 animals): substance tested as 10% suspension in Tylose. Duration of exposure: 4 hours. Post exposure period: 7 days.</p>	<p>Erythema: 0 (mean at 24 and 72 hours across 5 animals).</p> <p>Oedema: 0 (mean at 24 and 72 hours across 5 animals).</p> <p>No dermal irritation was seen on the intact test sites of any of the ten rabbits tested, at any time-point.</p> <p>Slight erythema was observed in the abraded skin of 2/5 animals receiving 0.5g of cuprous oxide moistened with water at the 24 hour reading only.</p>	<p>Reliability: 2 (reliable with restrictions).</p> <p>Test substance: Dicopper oxide.</p> <p>In vivo test.</p> <p>Key study.</p>	<p>Dickhaus and Heisler, 1988.</p> <p>Irritant effects of Kupfer-I-Oxide on rabbit skin acc. to draize (OECD-Guideline 404).</p> <p>Pharmatox GmbH, Report No. E.H./B. 1-3-42-88.</p>

Dicopper oxide is not classified as a skin irritant.

- Serious eye damage / irritation: Not classified.
- Respiratory or skin sensitisation: Not classified.
- Skin: Not classified.

Method	Results	Remarks	Reference
<p>OECD 406 (Skin Sensitisation).</p> <p>Test Animals: Guinea pig, Pirbright-Hartley, male/female (20 control and 20 treated).</p> <p>Dose Levels and Duration of Exposure: Test group: 0.1 ml FCA 50% (w/w) diluted in aqua ad inject, 0.1 ml test article diluted in CMC (final concentration 0.25%), 0.1 ml test article diluted in FCA/CMC (final concentration: 0.25%). Control group: 0.1 ml FCA 50% (w/w) diluted in aqua ad inject, 0.1 ml undiluted, 0.1 ml CMC 50% (w/w) diluted in FCA. Challenge took place two weeks after epidermal induction.</p>	<p>Number of animals sensitized: 0/19.</p> <p>Some control and test animals showed reduced body weight gains or decreased body weight. There were no signs of irritation in any control or test animal at 24 or 48 hours following dermal challenge treatment.</p>	<p>Reliability: 1 (reliable without restriction).</p> <p>Test substance: Dicopper oxide.</p> <p>In vivo test.</p> <p>Key study.</p>	<p>Bien, 1993.</p> <p>Guinea Pig Maximization Test of Skin Sensitisation with "URA 17030".</p> <p>International Bio Research, Report No. 10-05-1961/00-92.</p>

Dicopper oxide does not meet the criteria for classification skin sensitiser.



- Respiratory: Not classified.
There are no applicable data available on the sensitisation of copper dioxide in the respiratory track.
- Germ cell mutagenicity: Not classified.
There was no evidence of mutagenic activity in *Salmonella typhimurium* strains in the presence or absence of the metabolic activation system when tested with copper sulphate pentahydrate. In vivo studies conducted with copper sulphate pentahydrate did not induce micronuclei in the polychromatic erythrocytes of the bone marrow of mice treated with 447 mg/kg (x2). Copper sulphate pentahydrate did not induce DNA damage according to rat hepatocyte UDS assay. Consideration of the weight of evidence from *in vitro* and *in vivo* tests, with greatest emphasis being placed on those *in vivo* tests which had the highest study rating, leads to the conclusion that copper and copper compounds are not genotoxic.
- Carcinogenicity: Not classified.
Although the available animal and human data on the carcinogenicity of copper and its compounds are deficient in several respects, the findings do not raise concerns with respect to carcinogenic activity. Consequently, further tests investigating this end-point are not recommended.
The studies on carcinogenicity also give information on the chronic effects of copper on rats and mice. The studies, although limited, indicate that at the doses tested, the pivotal endpoint was a reduction in weight gain at the highest dose rates tested. These results indicate that the NOAEL values derived from the sub-chronic effects observed in the NTP study, 1993 could be regarded as worst case for the risk assessment of copper and copper compounds.
- Reproductive toxicity: Not classified.
The two-generation study in the rat indicates that that under the conditions of this study, the no-observed-adverse-effect level (NOAEL) for reproductive toxicity was 1500 ppm, the highest concentration tested. The NOAEL for P1 and F1 rats and F1 and F2 offspring during lactation was 1000 ppm, based on reduced spleen weight in P1 adult females, and F1 and F2 male and female weanlings at 1500 ppm however the transient reduced spleen weights are not considered a reproductive endpoint as it did not affect growth or fertility. In compliance with the definition of reproductive toxicity', OECD document ENV / JM / MONO (2001) the spleen effect cannot be considered a reproductive effect as this must include:
 - Adverse effects on sexual function and fertility in adult males and females.
 - Developmental toxicity in the offspring.

For a compound to be considered to be a reproductive toxin “data for animal studies ideally should provide clear evidence of specific reproductive toxicity in the absence of other, systemic, toxic effects”. Therefore as the results of this study do not indicate specific reproductive toxicity at the highest dose level tested, it is proposed that copper sulphate and, after read across, copper (copper coated flakes, and copper in powder and massive forms) are not classified as reproductive compounds. In addition, the existing data base is now sufficient to adequately evaluate the developmental toxicity of copper with particular reference to the newly available two-generation study in the rat. It is therefore considered inappropriate to consider copper and copper compounds as potential teratogenic compounds due to the complex role of copper in regulating normal foetus development in humans at levels considered higher than would be expected to occur through the normal production and use of any copper compound.
- Specific Target Organ Toxicity – single exposure (STOT SE): Not classified.
There was no evidence of any specific toxic effects on a target organ or tissue following single exposures to the test substance.
- Specific Target Organ Toxicity – repeated exposure (STOT RE): Not classified.
 - Oral: Not classified.
The liver is the critical organ for copper. The high quality repeated dose study in rats (Hebert (1993) - rat) is retained for assessing classification according to regulation (EC) 1272/2008 as specific target organ toxicant (STOT-RE) –, oral. Classification criteria are not met since no severe adverse effects were



observed at the guidance value, oral for a Category 1 classification of 10 mg/kg bw/day and at the guidance value for a Category 2 classification of 100 mg/kg bw.day. No classification required.

- Inhalation: Not classified.
In the 4-weeks study by inhalation in rat (Kirkpatrick 2010), no serious adverse effects were observed at the maximum tested concentration (2 mg/m³). Therefore, no STOT-RE classification is warranted.
- Aspiration hazard: refer to acute toxicity by inhalation.

SECTION 12: ECOLOGICAL INFORMATION

A) TOXICITY:

Acute; Category 1. Chronic; Category 1.

Based on the “Joint Chemical Safety Report” for the REACH, the conclusions are the followings:

- Conclusions on Acute classification for the environment: Classified in the aquatic Acute; Category 1. An M factor of 10 is applied.
- Conclusions on Chronic classification for the environment: Classified in the aquatic Chronic; Category 1.

B) PERSISTENCE AND DEGRADABILITY:

- **STABILITY, ABIOTIC DEGRADATION:** stable.
Copper is not degraded in classic terms, therefore information on hydrolysis and photo-transformation are not relevant. Copper needs to be transformed to become bio-available.
- **DEGRADABILITY:** not biodegradable.
Biodegradation as used for organic substances does not apply to inorganic substances such as copper but attenuation of the toxicity is observed for copper. Metals are not degraded in classic terms. This was recognized in the Guidance to Regulation (EC) No 1272/2008 Classification, Labelling and Packaging of substances and mixtures (metal annex): “Environmental transformation of one species of a metal to another species of the same does not constitute degradation as applied to organic compounds and may increase or decrease the availability and bioavailability of the toxic species. However as a result of naturally occurring geochemical processes metal ions can partition from the water column. Data on water column residence time, the processes involved at the water – sediment interface (i.e. deposition and re-mobilisation) are fairly extensive, but have not been integrated into a meaningful database. Nevertheless, it may be possible to incorporate this approach into classification.

C) BIOACCUMULATIVE POTENCIAL: not bioaccumulative.

- **Aquatic bioaccumulation:**
There is a considerable amount of copper accumulation data available. At low metal concentrations organisms are actively accumulating metals in order to meet their metabolic requirements while at high ambient metal concentration, organisms are able to excrete excess metals or limit uptake. The information demonstrates that copper is well regulated in all living organisms and that BCF and BAF values have no meaning for a hazard assessment. The data also demonstrate that waterborne exposure is most the critical exposure route and that copper is not biomagnified in aquatic ecosystems.
- **Terrestrial bioaccumulation:**
There is a considerable amount of copper accumulation data available. The data demonstrate an inverse relation between the copper bioaccumulation from soil and the copper concentrations in the soil. The information demonstrates that copper is well regulated in all living organisms and that the BCF and BAF values have no meaning for a hazard assessment. The data also demonstrate that copper is not biomagnified in the terrestrial ecosystems and that there is no issue for secondary poisoning of copper.
- **Secondary poisoning:**



Based on the available information, there is no indication of a bioaccumulation potential and, hence, secondary poisoning is not considered relevant

D) MOBILITY IN SOIL:

Must be used in a manner that minimizes accumulation of copper in the soil. The degree of mobility of copper in the environment depends upon the pH of ambient soils and waters. The higher the acidity, the more soluble copper salts are and, hence, the more mobile. The distance that it can travel in soil is limited by its strong adsorption to many types of surfaces. Partitioning of copper into air is negligible due to the low vapor pressure of copper salts.

E) RESULTS OF PBT AND vPvB ASSESSMENT: Not PBT or vPvB.

Copper is a natural, essential element, which is needed for the optimal growth and development of all living organisms, including man. All living organisms have homeostasis mechanisms that actively regulate copper uptake and absorption/excretion from the body; due to this regulation, the bio-accumulation criterion does not apply.

Copper is an element, and as such the criterion "persistence" is not relevant for the metal and its inorganic compounds in a way as it is applied to organic substances. The removal of inorganic substances from the water column has been discussed as a surrogate for persistence. The rapid removal of copper from the water column documented that for copper this criterion does not apply. Considering the above, copper is not a PBT or vPvB.

F) OTHER ADVERSE EFFECTS: None.

This substance does not contribute to ozone depletion, global warming, ozone formation or acidification.

SECTION 13: DISPOSAL

WASTE TREATMENT METHODS:

- Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional and local authority requirements.
- The generation of waste should be avoided or minimized wherever possible.
- Avoid dispersal of spilled material, runoff and contact soil, waterways, drains and sewers.
- Disposal of copper wastes into waterways is not allowed.
- Do not contaminate water, food or feed by disposal.
- Avoid excessive heat and incompatible materials.
- Use registered transporters.

SECTION 14: TRANSPORT

UN NUMBER:

UN 3077

UN PROPER SHIPPING NAME:

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (84% dicopper oxide)

TRANSPORT HAZARD CLASS:

9

PACKING GROUP:

III



ENVIRONMENTAL HAZARDS:

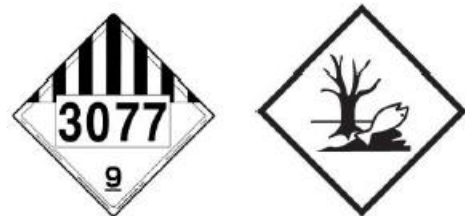
ROAD/RAILWAY TRANSPORT (ADR/RID Code)



MARITIME TRANSPORT (IMDG Code)



AIR TRANSPORT (IATA-DGR Code):



SPECIAL PRECAUTIONS FOR USER:

- Tunnel restriction code: (E)
- EmS code:
 - Fire : F-A
 - Spill : S-F
- Secondary risk: Marine pollutant.
- Classification code (ADR) : M7
- Avoid release to the environment. Do not breath the dust.

TRANSPORT IN BULK ACCORDING TO ANNEX II OF MARPOL73/78 AND THE IBC CODE:

Not applicable.

SECTION 16: OTHER INFORMATION

All information, recommendations and suggestions herein related to our product are based on reliable testing and data; however, it is the responsibility of the user to determine that the product described herein is compatible with his/her needs from the point of view of toxicity and safety. Given the fact that the effect of the product on the part of third parties is out of our control, we do not provide express or implicit warranty with regard to product use effects; also, we do not assume any responsibility regarding the use given by third parties to the product described herein.

