

1. IDENTIFICATION

Product Name	Copper Granules 25%
Other Names	COPPER OXIDE (CuO); Mineral Compound
Uses	Agricultural, Fertilizer Ingredients.
Chemical Family	No Data Available
Chemical Formula	Unspecified
Chemical Name	Copper Granules 25%
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Pty Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Pty Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust) 6

Globally Harmonised System

Hazard Classification	Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
Hazard Categories	Acute Toxicity (Oral) - Category 4 Skin Corrosion/Irritation - Category 2 Serious Eye Damage/Irritation - Category 2A Specific Target Organ Toxicity (Repeated Exposure) - Category 2 Acute Hazard To The Aquatic Environment - Category 1 Long-term Hazard To The Aquatic Environment - Category 1

Pictograms



Signal Word Warning

Hazard Statements	H302	Harmful if swallowed.
	H315	Causes skin irritation.
	H319	Causes serious eye irritation.
	H373	May cause damage to organs (state all organs affected, if known) through prolonged or repeated exposure (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard).
	H410	Very toxic to aquatic life with long lasting effects.

Precautionary Statements	Prevention	P260	Do not breathe dust/fume/gas/mist/vapours/spray.	
		P264	Wash face, hands and any exposed skin thoroughly after handling.	
		P270	Do not eat, drink or smoke when using this product.	
		P273	Avoid release to the environment.	
		P280	Wear protective gloves/protective clothing/eye protection/face protection.	
		Response	P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
			P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
	P305 + P351 + P338		IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	
	P314		Get medical advice/attention if you feel unwell.	
	P330		Rinse mouth.	
	P332 + P313		If skin irritation occurs: Get medical advice/attention.	
	P337 + P313		If eye irritation persists: Get medical advice/attention.	
	P362		Take off contaminated clothing and wash before reuse.	
	Disposal	P391	Collect spillage.	
		P501	Dispose of contents/container in accordance with local / regional / national / international regulations.	

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Copper Oxide	No Data Available	1317-38-0	70.0 %
Copper Sulphate Pentahydrate	No Data Available	7758-99-8	30.0 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	Call a Poisons Information Centre or doctor/physician if you feel unwell. Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person.
Eye	Rinse cautiously with water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison centre / doctor.
Skin	Wash with soap and plenty of water. If skin irritation occurs : Get medical advise/attention. Take off contaminated clothing and wash it before reuse.
Inhaled	Remove victim to fresh air and keep at rest in a comfortable position for breathing. Call a Poison centre or doctor/physician if you feel unwell.
Advice to Doctor	Treat symptomatically based on judgement of doctor and individual reactions of patient.
Medical Conditions Aggravated by Exposure	No information available on medical conditions aggravated by exposure to this product. Potential Chronic Health Effects: Chronic copper poisoning due to excessive intake is rarely seen in man. Chronic over dosage of copper salts in normal humans is unlikely to result in liver or kidney damage due to the capability of the body clearance mechanisms. However, a rare hereditary condition known as Wilson's disease makes individuals with this condition susceptible to toxic effects from copper at levels of exposure which cause no symptoms to others in the community. Carcinogenic/Mutagenic/Teratogenic Effects: None by ACGIH, EPA, IARC, NTP, OSHA.

5. FIRE FIGHTING MEASURES

General Measures	Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk.
Flammability Conditions	Product is a non-flammable solid.
Extinguishing Media	In case of fire, use Carbon dioxide, dry powder, foam, dry sand, water spray.
Fire and Explosion Hazard	Non-combustible Solid.
Hazardous Products of Combustion	May evolve toxic gases (copper/ sulphur oxides) when heated to decomposition.
Special Fire Fighting Instructions	Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.
Personal Protective Equipment	Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves). Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk. Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.
Flash Point	No Data Available
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Avoid accidents, clean up immediately. Slippery when spilt. Personnel involved in the clean up should wear full protective clothing as listed in section 8. Evacuate all unnecessary personnel. Eliminate all sources of ignition. Increase ventilation. Avoid generating dust. Stop leak if safe to do so. Isolate the danger area. Do NOT let product reach drains or waterways. If product does enter a
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waterway, advise the Environmental Protection Authority or your local Waste Management. Use clean, non-sparking tools and equipment.

Clean Up Procedures

Fertilisers absorb moisture. If the spill has occurred in an open area and cannot be immediately retrieved, cover it with a water-proof tarpaulin, weighed down to prevent it being blown off by wind. If necessary, construct an earthen bund around the site to prevent storm water moving towards the spill, or contaminated storm water draining from the site. Sandbags and waterproof tarpaulins may also be suitable for blocking drains and preventing run-off. Prevent loss to bores, wells, sewers, storm water drains and watercourses. Copper sulfate is classified as an Environmentally Hazardous Substance. It is potentially toxic to marine or freshwater organisms in aquatic environments. Initiate clean up action immediately to recover spilt fertiliser. Avoid generating and inhaling dust. Refer to Section 8 for details on protective equipment. Fertiliser that has not been degraded or contaminated can be used as intended. That which has should be placed in separate containers (bags) for disposal. See Section 13. Sweep up residual fertiliser from sealed surfaces. In earthen areas, scrape up remaining fertiliser and soil from the affected area. The extent of the recovery will depend on an assessment of the area, its use and proximity to waterways and environmentally sensitive ecosystems. In agricultural fields, spread residual fertiliser out over as wide an area as possible.

Containment

Stop leak if safe to do so. Isolate the danger area.

Environmental Precautionary Measures

Do NOT let product reach drains or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Management.

Evacuation Criteria

Evacuate all unnecessary personnel.

Personal Precautionary Measures

Personnel involved in the clean up should wear full protective clothing as listed in section 8.

7. HANDLING AND STORAGE

Handling

Before use, read the product label, including sections on "Safety Directions" and "Care of Equipment". Use safe work practices. Avoid eye or skin contact and dust inhalation. Observe good personal hygiene, including washing hands before eating. When lifting Flexible Intermediate Bulk Containers, use properly designed and approved equipment that meets Australian Standards AS3668 and AS2359. Refer to the "Guidance for the Safe Handling of Fertiliser Bulk Bags".

Storage

Fertilisers should be stored in a cool, dry, covered and well-ventilated area. Do not allow to get wet. Ensure the store is above known flood heights and protected against flooding, and away from water courses and open storm water channels. Packaged fertiliser should be stored in such a manner that in the event of a spill it cannot escape from the compound. Store away from farm chemicals, e.g. insecticides, fungicides and herbicides; and foodstuffs. Ensure stockpiles of bulk bags are stable. Place the bags as close as reasonably practical to each other without causing undue damage. If stacking more than two high, stack in a pyramidal style. Ensure the third and subsequent layers are placed so as to straddle and bind the bags below them. When walking near, or between rows of stacked bags, maintain a distance equal to the height of the stack from the product. Bagged fertilisers should be stored under cover and out of direct sunlight (which degrades woven polypropylene packs). If stored in the open, do so for short periods only, and cover the bags with a tarpaulin. Avoid high stacking as this promotes caking. The Pallet Capacity Rating (design weight) must not be exceeded on the bottom tier. This product has a UN classification of 3077 and a Dangerous Goods Class 9 (Miscellaneous) according to The Australian Code for the Transport of Dangerous Goods By Road and Rail. NOTE: This product is subject to special provision AU01 according to The ADG7. SP No. AU01 Environmentally Hazardous Substances meeting the descriptions of UN 3077 are not subject to this Code when transported by road or rail in;
(a) packagings that do not incorporate a receptacle exceeding 450 kg(L); or
(b) IBCs.

Container

Store in original packaging as approved by manufacturer.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General

No exposure standard has been established for this product by the Australian Safety and Compensation Council (ASCC). However, the following is available for the constituent: Calcium Oxide CAS 1305-78-8: TWA = 2mg/m³
NOTE: The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.

These exposure standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Exposure Limits

No Data Available

Biological Limits

No information available on biological limit values for this product.

Engineering Measures

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source,

preventing dispersion of it into the general work area.

Personal Protection Equipment	RESPIRATOR: Wear appropriate respiratory protection for dust/mist when ventilation is inadequate. A filtering face piece dust mask is recommended for most applications if respiratory protection is needed (AS1715/1716). EYES: Wear safety glasses with side shields (AS1336/1337). HANDS: Wear chemical resistant gloves (AS2161). CLOTHING: Long-sleeved protective clothing and safety footwear (AS3765/2210).
Work Hygienic Practices	No Data Available

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	Solid
Odour	Odourless
Colour	Grey or brown
pH	No Data Available
Vapour Pressure	No Data Available
Relative Vapour Density	No Data Available
Boiling Point	No Data Available
Melting Point	No Data Available
Freezing Point	No Data Available
Solubility	Insoluble 25°C
Specific Gravity	No Data Available
Flash Point	No Data Available
Auto Ignition Temp	No Data Available
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	No Data Available
Potential for Dust Explosion	No Data Available
Fast or Intensely Burning Characteristics	No Data Available
Flame Propagation or Burning Rate of Solid Materials	No Data Available
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No Data Available
Properties That May Initiate or Contribute to Fire Intensity	No Data Available

Reactions That Release Gases or Vapours No Data Available

Release of Invisible Flammable Vapours and Gases No Data Available

10. STABILITY AND REACTIVITY

General Information	Copper Granules is not fully soluble and therefore is unsuitable for use in solution. It cannot be used to prepare liquid fertilisers.
Chemical Stability	Product is stable under normal conditions of use, storage and temperature.
Conditions to Avoid	Avoid heat, sparks, open flames and other ignition sources.
Materials to Avoid	Incompatible (violently) with oxidising agents (eg. hypochlorites), acids (eg. nitric acid) and hydroxylamine. Corrosive to some metals. Compatibility with Other Fertilisers: This product is compatible in dry blends with most granular phosphorus and potassium fertilisers. Compatibility with nitrogen fertilisers may be restricted. Copper Granules should not be blended with ammonium nitrate, calcium ammonium nitrate, potassium nitrate or NPK compound fertilisers containing nitrate.
Hazardous Decomposition Products	May evolve toxic gases (copper/ sulphur oxides) when heated to decomposition.
Hazardous Polymerisation	Hazardous Polymerisation has not been reported. Slow hydrolysis will produce corrosive acids.

11. TOXICOLOGICAL INFORMATION

General Information	COPPER (II) SULPHATE PENTAHYDRATE (7758-99-8) LD50 (Ingestion): 300 mg/kg (rat) LD50 (Intraperitoneal): 33 mg/kg (mouse) LD50 (Skin): > 2000 mg/kg (rat) LDLo (Ingestion): 50 mg/kg (human) LDLo (Subcutaneous): 62 mg/kg (guinea pig) TDLo (Ingestion): 150 mg/kg (child-kidney/blood)
	May cause damage to organs through prolonged or repeated exposure.
EyeIrritant	Causes serious eye irritation.
Ingestion	Moderate toxicity. Ingestion may result in nausea, vomiting, abdominal pain and diarrhoea. Ingestion of large quantities may result in liver, kidney and blood damage.
Inhalation	Irritant. Over exposure may result in irritation of the nose and throat, coughing, nausea and headache. Chronic exposure may result in nasal perforation with the potential for impaired respiratory function, kidney/ liver/ blood damage.
SkinIrritant	Causes skin irritation.
Carcinogen Category	No Data Available

12. ECOLOGICAL INFORMATION

Ecotoxicity	Copper sulfate is classified as an Environmentally Hazardous Substance and is potentially toxic to marine or freshwater organisms in aquatic environments. Avoid contamination of waterways.
Persistence/Degradability	When released into the soil, this material is not expected to biodegrade. When released into water, this material is not expected to biodegrade. When released into water, this material is not expected to evaporate significantly. Products of Degradation: Possible hazardous short term degradation products are not likely, however, long term degradation products may arise. Some metallic oxides.
Mobility	Copper availability in soils and water is reduced at high pH.
Environmental Fate	The fate of copper in water is dependent on a number of variables, but particularly pH. Low concentrations of copper sulfate are toxic to aquatic life (eg LC50 (prawn) is 0.14 ppm/48 hours). Copper is strongly bioaccumulated but not biomagnified.

Bioaccumulation Potential	No information available on bioaccumulation for this product.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of in accordance with all local, state and federal regulations. All empty packaging should be disposed of in accordance with Local, State, and Federal Regulations or recycled/reconditioned at an approved facility.
Special Precautions for Land Fill	Contact a specialist disposal company or the local waste regulator for advice. Incinerate at an approved site following all local regulations. This material may be suitable for approved landfill.

14. TRANSPORT INFORMATION

Land Transport (Australia)

ADG Code

Proper Shipping Name	COPPER GRANULES 25%
Class	No Data Available
Subsidiary Risk(s)	No Data Available
EPG	47 Low To Moderate Hazard Substances
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	SPAU01
Comments	UN3077

Land Transport (Malaysia)

ADR

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
EPG	47 Low To Moderate Hazard Substances
UN Number	3077
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

Land Transport (New Zealand)

NZS5433

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
EPG	47 Low To Moderate Hazard Substances
UN Number	3077
Hazchem	2Z
Pack Group	III

Special Provision No Data Available

Land Transport (United States of America)

US DOT

Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Class 9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s) No Data Available
ERG 171 Substances (Low to Moderate Hazard)
UN Number 3077
Hazchem 2Z
Pack Group III
Special Provision No Data Available

Sea Transport

IMDG Code

Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Class 9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s) No Data Available
UN Number 3077
Hazchem 2Z
Pack Group III
Special Provision No Data Available
EMS F-A, S-F
Marine Pollutant No

Air Transport

IATA DGR

Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Class 9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s) No Data Available
UN Number 3077
Hazchem 2Z
Pack Group III
Special Provision No Data Available

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

15. REGULATORY INFORMATION

General Information No Data Available

Poisons Schedule (Aust) 6

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code Not Assessed

National/Regional Inventories

Australia (AICS)	Listed
Canada (DSL)	Not Determined
Canada (NDSL)	Not Determined
China (IECSC)	Not Determined
Europe (EINECS)	Not Determined
Europe (REACH)	Not Determined
Japan (ENCS/METI)	Not Determined
Korea (KECI)	Not Determined
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Not Determined
Philippines (PICCS)	Not Determined
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Not Determined
USA (TSCA)	Not Determined

16. OTHER INFORMATION

Related Product Codes	COPGRA2500, COPGRA2501, COPGRA2505, COPGRA2510, COPGRA2515, COPGRA2520, COPGRA2530, COPGRA2540, COPGRA2550, COPGRA2560, COPGRA2600, COPGRA3000, COPGRA3010, COPGRA3020
Revision	3
Revision Date	25 Jun 2016
Reason for Issue	SDS Updated
Key/Legend	< Less Than > Greater Than AICS Australian Inventory of Chemical Substances atm Atmosphere CAS Chemical Abstracts Service (Registry Number) cm² Square Centimetres CO₂ Carbon Dioxide COD Chemical Oxygen Demand deg C (°C) Degrees Celcius EPA (New Zealand) Environmental Protection Authority of New Zealand deg F (°F) Degrees Farenheit g Grams g/cm³ Grams per Cubic Centimetre g/l Grams per Litre HSNO Hazardous Substance and New Organism IDLH Immediately Dangerous to Life and Health immiscible Liquids are insoluable in each other. inHg Inch of Mercury

inH₂O Inch of Water
K Kelvin
kg Kilogram
kg/m³ Kilograms per Cubic Metre
lb Pound
LC₅₀ LC stands for lethal concentration. LC₅₀ is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.
LD₅₀ LD stands for Lethal Dose. LD₅₀ is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.
ltr or **L** Litre
m³ Cubic Metre
mbar Millibar
mg Milligram
mg/24H Milligrams per 24 Hours
mg/kg Milligrams per Kilogram
mg/m³ Milligrams per Cubic Metre
Misc or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.
mm Millimetre
mmH₂O Millimetres of Water
mPa.s Millipascals per Second
N/A Not Applicable
NIOSH National Institute for Occupational Safety and Health
NOHSC National Occupational Health and Safety Commission
OECD Organisation for Economic Co-operation and Development
Oz Ounce
PEL Permissible Exposure Limit
Pa Pascal
ppb Parts per Billion
ppm Parts per Million
ppm/2h Parts per Million per 2 Hours
ppm/6h Parts per Million per 6 Hours
psi Pounds per Square Inch
R Rankine
RCP Reciprocal Calculation Procedure
STEL Short Term Exposure Limit
TLV Threshold Limit Value
tne Tonne
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight