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Safety Data Sheet

1. IDENTIFICATION OF THE PRODUCT AND THE SUPPLIER

1.1 Product identifiers

Product name : COPPER ALGAECIDE

1.2 Other means of identification

Chelated copper sulfate solution

1.3 Recommended use of the product and restrictions on use

Agriculture (soil additive, pesticides, Bordeaux mixture), feed additive, germicides, textile mordant, leather industry, pigments, electric batteries, electroplated coatings, copper salts, reagent in analytical chemistry, medicine, wood preservative, preservation of pulp wood and ground pulp, process engraving and lithography, ore flotation, petroleum industry, synthetic rubber, steel manufacture, treatment of natural asphalts.

1.4 Details of supplier of the safety data sheet

Company	: AGent Sales & Services Pty Ltd
Street address	: 38 May Holman Drive, Bassendean, Western Australia 6054
Telephone	: (+61 8) 6270 4500
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1.5 Emergency telephone number

Telephone : 1300 883 844

2. HAZARDS IDENTIFICATION

2.1 GHS Classification

Skin corrosion / irritation (Category 2)
Serious Eye Damage/Eye irritation (Category 2A)
Acute aquatic toxicity (Category 4)

2.2 GHS Label elements, including precautionary statements

Pictogram :

Signal word : Warning

Hazard statement(s)

H302+H312+H332	Harmful if swallowed, in contact with skin or if inhaled
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H400	Very toxic to aquatic life.

Precautionary statement(s)

Prevention

P261	Avoid breathing mist/ vapours/ spray.
P273	Avoid release to the environment.
P280	Wear protective gloves / protective clothing / eye protection / face protection.

P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well ventilated area.

Response

P301+P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P362+P364	Take off contaminated clothing and wash it before re-use.
P330	Rinse mouth.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P337+P313	If eye irritation persists: Get medical advice/attention.
P391	Collect spillage.

P405	Store locked up.
P403+P233	Store in a well ventilated place. Keep container tightly closed.

Disposal

P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Other hazards

None.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS Number	Classification	Concentration (g/L)
Ammonium copper sulphate	13587-26-3	H302+H312+H332, H315, H319, H335, H400	32
Water	7732-18-5	Not listed	Balance

For the full text of the H-Statements mentioned in this section, see Section 16

4. FIRST AID MEASURES

4.1 Description of First Aid measures

General advice

Contact the Poisons Information Centre (Phone: Australia 131 126; New Zealand 0800 764 766) or consult a doctor/physician. Show this safety data sheet to the doctor in attendance.

If inhaled

Remove victim from exposure to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do NOT use mouth to mouth method. Induce artificial respiration with the aid of a pocket mask equipped with a one way valve or other proper respiratory medical device. Seek immediate medical attention.

In case of skin contact

Remove contaminated clothing and wash affected areas with soap and running water. Consult a doctor/physician. Launder clothing before reuse. If irritation develops or persists, seek medical attention.

In case of eye contact

Flush 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.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Seek immediate medical assistance.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in Section 2.2 and/or Section 11.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically based on judgement of doctor and individual reactions of patient.

4.4 First Aid facilities
Eye wash facilities and safety shower should be available.

5. FIRE FIGHTING MEASURES

5.1 Suitable extinguishing media
Use any means of extinction appropriate for surrounding fire conditions such as water spray, carbon dioxide, dry chemical, or foam. Do not release runoff from fire control methods to sewers or waterways.

5.2 Special hazards arising from the chemical
If heated, corrosive and toxic vapours/gases may be formed. Decomposition produces sulphur oxides, strong oxidizing agents, which may add to combustion. May yield oxides of copper.

5.3 Special protective equipment and precautions for fire fighters
Wear self-contained breathing apparatus and suitable protective clothing.

5.4 Hazchem code
No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.
For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided. If contamination of sewers or waterways has occurred, advise local emergency services. Observe all local and national regulations.

6.3 Methods and materials for containment and cleaning up
Soak up spilled product using absorbent non-combustible material such as sand or soil. Avoid using sawdust or cellulose. Recover as much pure product as possible. When saturated, collect material into suitable, labelled, dry, sealable containers and hold for safe disposal. Incineration is not recommended as sulphur oxides may be produced. Wash spillage site with water and detergent.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Ensure an eye bath and safety shower are available and ready for use. Observe good personal hygiene practices and recommended procedures. Wash thoroughly after handling. Avoid contact with eyes, skin and clothing. Do not inhale product vapours. Do NOT allow clothing wet with material to stay in contact with skin.
For precautions see Section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Store in a cool, dry well-ventilated place. Store away from foodstuffs. Store away from incompatible materials described in Section 10. Keep containers closed when not in use – check regularly for leaks. Store upright to prevent leakage.

This material is a Scheduled Poison S6 and must be stored, maintained and used in accordance with the relevant regulations.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

8.1 Control parameters
Not value assigned for this specific material by SWA. However, Workplace Exposure Standard(s) for constituents(s) provided below:

Occupational Exposure Limits

Chemical Name	Reference	TWA – Peak Limitation		STEL		Carcinogen Category	Notices
		ppm	mg/m^3	ppm	mg/m^3		
Copper (fume) (7440-50-8)	SWA	-	0.2	-	-	-	-

Copper, dusts & mists (as Cu) (7440-50-8)	SWA	-	1	-	-	-	-

As published in "*Workplace Exposure Standards for Airborne Contaminants, December 2011"* by SWA.

These Workplace 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 workplace 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.

Biological Limits
None allocated for this product.

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
Ensure ventilation is adequate to maintain air concentrations below Exposure Standards. If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements

Personal protective equipment (PPE)

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods and environmental factors.

Eye/face protection
Safety glasses with side shields or chemical goggles. Face shield is splashing hazard exists. See Australian Standards (AS 1336/1337).

Skin protection
Wear chemical protective gloves, and protective clothing (splash apron or equivalent chemical impervious outer garment and rubber boots) appropriate for the risk of exposure. See Australian Standards (AS 2161/2919 and AS 3765/2210). 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. Wash and dry hands.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full face chemical respirator with inorganic vapour/dust and mist cartridge is recommended. See Australian Standards (AS 1715/1716).

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Form : Liquid Ammoniacal
Odour Threshold:	No data available
pH:	~ 9
Freezing Point:	- 2^{o}C
Initial Boiling Point:	100^{o}C
Decomposition Temperature:	No data available
Evaporation Rate:	No data available
Flash Point:	Not applicable
Flammability Limits:	No data available
Specific Gravity:	No data available
Vapour Density (air=1):	No data available
Vapour Pressure:	No data available

% Volatiles: No data available

Solubility in water: Miscible in water

10. STABILITY AND REACTIVITY

10.1 Reactivity
Product is stable under normal conditions of use, storage and temperature.

10.2 Chemical stability
Product is stable under normal conditions of use, storage and temperature. May evolve ammonia gas when heated.

10.3 Possibility of hazardous reactions
Hazardous polymerization will not occur. Reacts violently with strong bases, hydroxylamine (with ignition), magnesium (producing hydrogen gas)

10.4 Conditions to avoid
Avoid heat, especially heating to dryness, which increases the probability and the hazard of oxidizing reactions.

10.5 Incompatible materials
Strong bases, hydroxylamine, magnesium, potassium chlorate, powdered metals. Corrosive to most ferrous based materials.

10.6 Hazardous decomposition products
Oxides of copper; oxides of sulphur, oxides of nitrogen.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
No LD_{50} data available for the product. However, for anhydrous copper sulphate:
LD_{50} Oral, rat is 300 mg/kg
LD_{50} Oral, mouse is 43 mg/kg
LD_{50} Dermal, rat is > 2000 mg/kg
LD_{50} Intraperitoneal, mouse is 33 mg/kg

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitisation
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity
No data available

Specific target organ toxicity (STOT) - single exposure
No data available

Specific target organ toxicity (STOT) - repeated exposure
No data available

Aspiration hazard
No data available

Health Effects
No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Eye contact : Irritating to eyes. Concentrated solutions cause eye irritation. Overexposure may cause severe corneal damage with loss of vision.

Skin contact : Irritating to skin. Causes moderate irritation to severe burns of the skin and mucous membranes. Repeated contact may cause skin allergies and thickening of the skin. Prolonged exposure may cause eczema. May be harmful if absorbed through the skin. Repeated absorption can cause liver damage.

Ingestion : Harmful if swallowed. Causes oral and gastrointestinal irritation. Local tissue damage, nausea, vomiting, diarrhoea, and gastrointestinal bleeding may occur. Large amount may cause serious injury and could possibly be fatal.

Inhalation : Should not present a significant inhalation hazard when used under ambient conditions. However, mist from heated solutions can cause irritation of the nose, throat, and mucous membranes. Exposure to fumes from heated Copper Sulphate may cause "metal fume fever"; a flu-like illness with symptoms of metallic taste, fever, chills, aches, chest tightness and cough. Ulceration of the nasal septum is possible.

11.2 Information on possible routes of exposure
The major routes of exposure in the industrial setting are skin, eyes, and inhalation of mist.

11.3 Additional Information
RTECS: Not available

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 and demyelination, kidney defects, and copper deposition in the cornea as exemplified by humans with Wilson's disease. It has also been reported that copper poisoning has led to haemolytic anemia and accelerates arteriosclerosis., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

12. ECOGICAL INFORMATION

12.1 Ecotoxicity
Avoid contaminating waterways. Very toxic to aquatic organisms; may cause long-term adverse effects in the aquatic environment. Product is a marine pollutant.

Toxicity to fish:
LC_{50} (Oncorhynchus mykiss) = 0.1 mg/L cupric sulphate/ 96h

Toxicity to daphnia & other aquatic invertebrates
EC_{50} (Daphnia magna) = 0.024 mg/L, 48h

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Other adverse effects
Very toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

13.1 Disposal methods and containers
Ensure waste disposal conforms to relevant local, state and federal authority waste disposal regulations. All empty packaging should be disposed of as unused product. Empty containers can contain vapour; do not drill cut, grind or weld.

13.3 Special precautions for landfill or incineration
Contact a specialist disposal company or the local waste regulator for advice. Processing, use or contamination of this product may change the waste management options.

14. TRANSPORT INFORMATION

Not a Dangerous Goods by the criteria of the ADG Code for transport by road or rail.

14.1	**UN number**	No data available
14.2	**Proper shipping name**	AMMONIUM COPPER SULPHATE SOLUTION 32 g/L
14.3	**Transport hazard class**	No data available
14.4	**Packing group**	No data available
14.5	**Environmental hazards**	No data available
14.6	**Special precautions for users**	No data available
14.7	**Hazchem code**	No data available
14.8	**Dangerous goods initial emergency response guide (SAA/SNZ HB76:2010)**	No data available

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations

Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP)
Poisons Schedule : 6

Carcinogen classification under WHS Regulations 2011, Schedule 10
Not listed

Notification status
AICS On the inventory, or in compliance with the inventory.

16. OTHER INFORMATION

Key / legend to abbreviations and acronyms used in the MSDS

ADG	Australian Dangerous Goods
ASCC	Australian Safety and Compensation Council
DEC	Department of Environment and Conservation
GHS	Globally Harmonised System of Classification & Labelling of Chemicals
NOHSC	National Occupational Health and Safety Commission
RTECS	Registry of Toxic Effects of Chemical Substances.
SUSDP	Standard for the Uniform Scheduling of Drugs and Poisons
Acute Tox.	Acute toxicity
Aquatic Acute	Acute aquatic toxicity
Aquatic Chronic	Chronic aquatic toxicity
Eye Dam.	Serious eye damage
STOT SE3	Specific target organ toxicity (single exposure) - Category 3
Skin Corr.	Skin corrosion
H302	Harmful if swallowed
H315	Cause skin irritation
H319	Causes serious eye irritation
H410	Very toxic to aquatic life with long lasting effects
TWA	Time weighted average
STEL	Short term exposure level
SWA	Safe Work Australia
Peak Limitations	A ceiling concentration that should not be exceeded over a measurement period, which should be as short as possible, but not exceeding 15 minutes
EC_{50}	Effective concentration that induces a response halfway between the baseline and maximum after a specified exposure time
LD_{50}	Lethal dose 50. The single dose of a substance that causes the death of 50% of an animal population from exposure to the substance by any route other than inhalation
LC_{50}	Lethal concentration that kills 50% of an animal population within a specified time
TD Lo	The lowest dose of a substance known to have produced signs of toxicity
RTECS	Registry of Toxic Effects of Chemical Substances
g/L	Grams per litre
g/cm^3	Grams per cubic centimetre
mg/m^3	Milligrams per cubic metre
mg/kg	Milligrams per kilogram
pH	Relates to hydrogen ion concentration - this value will relate to a scale of 0 - 14, where 0 is highly acidic and 14 is highly alkaline
WHS	Work Health and Safety

Literature references

"Workplace Exposure Standards for Airborne Contaminants, December 2011" by SWA Work Health and Safety Regulations 2011

“Registry of Toxic Effects of Chemical Substances”. Ed. D. Sweet, US Dept. of Health & Human Services: Cincinatti, 2012.

Reason(s) for Issue:
Revised primary SDS - Alignment to GHS requirements

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