

SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: RFC: Cu
Other identifier: RFC: Cu
Recommended use: Fertilizer
Restrictions on use: Agriculture
Supplier **Rolfes Agri (Pty) Ltd**
 288 Mundt Street
 Waltloo
 Pretoria, South Africa

Telephone: +27(0)12 803 0145
E-mail Address: info@rolfesagri.co.za

Emergency Phone Numbers:
Office hour poisoning helpline
 Rolfes Agri (Pty) Ltd +27 (12) 803 0145

Spill Response and Transport Incidents
 Spill Tech, 086 100 0366, www.spilltech.co.za
 Oil and chemical pollution control 083 253 6618

2. HAZARDS IDENTIFICATION

GHS classification and labelling of chemicals and the Regulations for Hazardous Chemical Agents - 2021.		
Hazard class	Hazard category	H-statement
Health		
Acute Toxicity Oral	Acute Tox. 4	H302
Skin Corrosion	Skin Corr. 1B	H314
Specific Target Organ Toxicity Single Exposure 3	STOT SE 3	H335
Environment		
Hazardous to the aquatic environment, short-term	Aquatic Acute 1	H400

The most important adverse effects:
Physiochemical effects: None known.

Human health effects:
 Harmful if swallowed (Acute Tox. 4)
 Causes severe skin burns and eye damage (Skin Corr. 1B)
 May cause respiratory irritation (STOT SE 3)

Pictograms:



Signal word: Danger.

Hazard statements:

H302: Harmful if swallowed.
 H314: Causes severe skin burns and eye damage.
 H335: May cause respiratory irritation.
 H400: Very toxic to aquatic life.

Precautionary statements:

P101: If medical advice is needed, have product container or label at hand.
 P102: Keep out of reach of children.
 P103: Read carefully and follow all instructions.
 P261: Avoid breathing dust/fumes/gas/mist/vapours/spray.
 P264: Wash hands and affected area thoroughly after handling.
 P270: Do not eat, drink or smoke when using this product.
 P271: Use only outdoors or in a well-ventilated area.
 P273: Avoid release to the environment.
 P280: Wear protective gloves/protective clothing/eye protection/face protection.
 P301 + P317: IF SWALLOWED: Get medical help.
 P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
 P302+P361+P354: IF ON SKIN: Take off immediately all contaminated clothing. Immediately rinse with water for several minutes.
 P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 P305+P354+P338: IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P316: Get emergency medical help immediately.
 P319: Get medical help if you feel unwell.
 P321: Specific treatment (see first aid on this SDS).
 P330: Rinse mouth.
 P363: Wash contaminated clothing before reuse.
 P391: Collect spillage.
 P403 + P233: Store in a well-ventilated place. Keep container tightly closed.
 P405: Store locked up.

P501: Empty all pesticides from the container by placing it upside down over the spray tank and holding it there for at least 30 seconds. Puncture the rinsed container to render it useless and send to a recycler.

Special labelling of certain mixtures:

None known.

Other hazards:

None known.

Toxicity:

Classification according to GHS: Category 4.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients with Hazard Concerns (GHS): According to UN GHS criteria

Hazardous Component	CAS Number	Conc. (m/v) %	GHS Classification
Ammonium Hydroxide	1336-21-6	<30%	Skin Corr. 1B (H314) STOT SE 3 (H335) C ≥ 5 % Aquatic Acute 1 (H400) M=10
Proprietary blend	-	<50%	Acute Tox. 4 (H302) Eye Irrit. 2 (H319)

4. FIRST AID MEASURES

General Advice: The symptoms resulting from direct exposure to the product could appear a while after exposure. If there is persistent discomfort, seek medical attention. Provide this SDS to medical personnel for treatment. Immediately remove contaminated clothing and remove the affected person from the contamination area. Keep the person warm, calm, and covered up. First Aid personnel should pay attention to their own safety.

Eye contact: Flush eyes immediately with large amounts of flowing cold water for 15-20 minutes, until no evidence of chemical remains. If irritation persists, get medical help.

Skin contact: Remove all contaminated clothing and shoes immediately. Gently wipe off residual chemical and wash skin thoroughly with non-abrasive soap. If irritation or rash persists, get medical help.

Inhalation: Remove the affected victim from exposure to an area with fresh air. If breathing has stopped, administer artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Ingestion: Seek medical attention or call a poison control centre for treatment advice. Do not induce vomiting unless instructed to do so by a poison control centre or doctor. Do not give anything by mouth to an unconscious person. If the person is alert, rinse mouth thoroughly with water.

Most important symptoms/effects, acute and delayed:
Harmful if swallowed.

Notes to physician: Treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use carbon dioxide, dry chemical for small fires and alcohol resistant foam or water fog for large fires. Do not use water jets.

Specific hazards arising from the chemical including thermal decomposition products: Fires involving the product may produce irritating or poisonous ammonia vapours, mists or other products of combustion like metal oxides (e.g. zinc oxide), carbon monoxide and nitrogen. Closed containers may explode from vapour expansion in high heat.

Special protective equipment and precautions for fire-fighters: Firefighters must wear emergency equipment including positive pressure self-contained breathing apparatus with a full-face mask. Remove unaffected containers from fire area if possible.

Additional provisions: Act in accordance with the site's Internal Emergency Plan and the Workplace Specific Procedures for actions to be taken after an accident or other emergencies.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:

Ventilate the area of the spill or leak, especially when in confined areas. Do not touch or walk through spilled material as slippery when spilt. Contain spills if it can be done without risk and clean-up immediately.

Wear appropriate protective clothing recommended in Section 8 of the SDS.

Environmental Precautions:

Prevent spillage or further leakage if safe to do so.

Do not allow the spilt product to enter water courses and drains and avoid contact with soil. Do not allow the spilt product to spread to other areas - keep the spilt material contained and isolated. Report spills and releases as required to appropriate authorities if the spilt product has caused environmental pollution (sewers, water ways, soil or air).

Methods for cleaning up:

For small spills, soak up with damp earth or sand, or other non-Combustible absorbent material. Place into a labelled waste container subsequent reclamation or disposal. Keep the wash water out of drains, sewers and waterways.

For large spills, contain the spillage with absorbent material (non-combustible for flammable products). Sweep up with absorbent material, contain and collect spilt product in suitable containers for proper disposal. Keep the wash water out of drains, sewers, and waterways.

Reference to other sections:

See Section 1 for emergency contact information.
 See Section 8 for information on appropriate personal protective equipment.
 See Section 13 for additional waste treatment information.

7. HANDLING AND STORAGE REQUIREMENTS

Precautions for safe handling

Always provide good ventilation in the work area. Prevent contact with eyes, skin and clothing. Do not breathe in dust. Wear protective clothing and equipment during handling as described in Section 8 of the SDS.

Do not eat or drink during use. Wash the hands and face thoroughly with soap after handling. Keep containers closed when not in use. Do not permit smoking in use or storage areas. Locate emergency showers and eye-rinsing facility near the work/handling area. Maintain good normal industrial hygiene and housekeeping practices in areas where the product is used/handled.

Conditions for safe storage, including any incompatibilities

Always store locked up and keep containers tightly closed when not in use. Store in a cool, dry and well-ventilated place, out of direct sunlight. Check storage containers regularly for leaks and protect containers from physical damage. Store in the original container, avoid cross contamination with other agricultural products. Keep out of reach of children, uninformed persons, and animals. Do not contaminate water, food, or feed by storage or disposal.

It is recommended to have appropriate spill control kits equipped with absorbent material in close proximity to storage areas (see Section 6).

Specific end use(s)

Use as directed. Use original container.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

National Occupational Exposure Limits – Restricted limits for hazardous chemical agents.

Component	Type	Control Parameter	Update	Reference
Ammonia (anhydrous)	OEL-eight hour TWA	50 ppm	2021	South African RELs*
	OEL-STEL/C	70 ppm	2021	South African RELs*

Appropriate engineering controls: Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

PERSONAL PROTECTIVE EQUIPMENT:

Respiratory protection: Respiratory protection selection must be based on known or anticipated exposure levels,

the hazards of the product and the safe working limits of the selected respirator. Use a properly fitted and well-maintained particulate filter respirator, complying with an approved standard. Respirator selection and use should be based on contaminant type, form and concentration. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.

Skin and Hand Protection: Select skin and hand protection based on the task being performed and the risks involved with the task. The gloves should be replaced immediately in case of damage or signs of wear. The personal protective clothing must be properly fitted and well maintained.

Eye/Face Protection: Select safety eye/face protection based on the task being performed and the risks involved with the task. Wear tightly fitted and well-maintained safety eyewear compliant with an approved standard.

Hygiene Measures: Wash the hands and/or face before breaks, eating, smoking, or using the lavatory and at the end of the shift/working period. Eye wash fountains and safety showers should be available and easily accessible. Wash contaminated clothing before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance/physical state: Clear Solution, Soluble Liquid.

Odour: Slight ammonical.

Colour: Blue

Boiling Point: Not available.

Vapour Pressure (mm Hg): Not available.

Evaporation Rate: Not available.

Relative Vapour Density: Not available.

Solubility in water: Soluble in water.

Decomposition temperature: Not available.

Melting point/freezing point: Not available.

pH: 6.5 – 7.5

Density/relative density(g/cm³): 1.20 – 1.22

Flammability: Not flammable.

Flash Point: Not applicable.

Flammable limits-LEL: Not applicable.

Auto-ignition temperature: Not applicable.

Viscosity: Not available.

10. STABILITY AND REACTIVITY

Reactivity: The product is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure. No specific test data related to reactivity available for this product. Due to the presence of ammonium hydroxide, the product could react exothermically with acids.

Chemical Stability: This product is stable for 2 years at ambient temperature and pressure, under normal storage and handling conditions. Avoid storage under extreme temperatures and conditions. Store below 50°C,

preferably below 30°C, and not for prolonged periods in direct sunlight.

Possibility of Hazardous Reactions: None known under conditions of normal use. Can react vigorously with incompatible materials mentioned below. Due to the presence of ammonium hydroxide, the product could release ammonia when mixed with a strong base.

Conditions to Avoid: Avoid extreme temperatures (>50°C), prolonged periods in direct sunlight and moisture conditions during storage.

Incompatible Materials: Avoid strong oxidizing agents and metals.

Hazardous Decomposition Products: Does not decompose when used for intended uses. Can decompose under fire or during burning and at high temperatures releasing toxic fumes of ammonia and nitrogen oxides. No known hazardous decomposition products.

		(Draft) p.86 (1983)
Fish (Lepomis macrochirus-bluegill)	96h	Acute LC50: 0.024 - 0.093 mg/L USEPA; Ambient Water Quality Criteria Doc: Ammonia p.151 (1984) EPA 440/5-85-001
Algae and aquatic plants	72 or 96 h	No data available

ENVIRONMENTAL EFFECTS:

Plants: Not determined.

Persistence and degradability: Cu salts (with a stability constant >1014) does not significantly degrade according to OECD criteria. Although Cu salts are slow to degrade under normal environmental conditions, based on experimental data with bluegill sunfish and its intrinsic physicochemical properties, it is not expected to bio-concentrate.

Bio-accumulative Potential: Based on the estimated log K_{ow} (<3) and available BCF study in fish with radiolabelled Cu salt, (BCF range 1.1-1.8), it can be concluded there is low potential for bioaccumulation for this salt.

Mobility in soil: The estimated log K_{oc} value for Cu salt is 1 (worst case). This is less than the threshold value of 3 indicating no adsorbing potential for this compound.

Cu salts are expected to leach readily through soil. It would not be expected to sorb appreciably to sediments or suspended solids in water. Based on physicochemical properties and collateral experimental results, Cu salts are not expected to volatilize from soil or water.

Other adverse effects: No other adverse effects resulting from the product are known.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY: Calculated.

Acute Toxicity Oral LD₅₀ >1000 mg/kg.

Acute Toxicity Dermal LD₅₀ >4500 mg/kg.

Acute Toxicity Inhalation: Not Classified.

Skin Corrosion/Irritation/: Causes severe skin burns and eye damage.

Eye Damage/Irritation: Not classified.

Skin Sensitization: Not classified.

Respiratory Sensitization: Not classified.

Germ cell mutagenicity: Not classified.

Carcinogenicity: Not classified.

Reproductive toxicity: Not classified.

Specific target organ toxicity – single exposure: May cause respiratory irritation.

Specific target organ toxicity – repeated exposure: Not classified.

Aspiration hazard: Not classified.

Symptoms related to the physical, chemical, and toxicological characteristics.

No information available.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA: Active ingredient.









Species	Exposure	Results
Crustacea (Daphnia magna)	48h	Acute LC ₅₀ : 0.66 mg/L Environment Canada; Tech Info for Problem Spills: Ammonia

13. DISPOSAL CONSIDERATIONS

Waste handling and disposal: Dispose product related waste in accordance with all local regulations and prevent the contamination of water, food, or feed by storage or disposal of the waste. The product container/bags may be taken to a registered waste disposal site or incineration plant.

General container handling: Empty all pesticides from the container by placing it upside down over the spray tank and holding it there for at least 30 seconds. Puncture the rinsed container to render it useless and send to a recycler.

14. TRANSPORT INFORMATION

	Land Transport (ADR/RID)	Inland Waterways (AND/ADNR)	Sea Transport (IMDG)	Air Transport (ICAO-TI / IATA-DGR)	16. OTHER INFORMATION
UN Number	1760	1760	1760	1760	Packaging: Packed in 1, 5, 20, 200, 1000 L plastic containers or plastic bags; and labelled according to South African regulations and guidelines. Relevant classification and H-Statements: Acute Toxicity; Oral - Category 4 H302: Harmful if swallowed. Skin Corrosion – Category 1B H314: Causes severe skin burns and eye damage. Specific target organ toxicity single exposure – Category 3 H335: May cause respiratory irritation. Hazardous to the Aquatic Environment, Acute Hazard-Category 1 H400: Very toxic to aquatic life.
UN Proper Shipping Name	CORROSIVE LIQUID, N.O.S.	CORROSIVE LIQUID, N.O.S.	CORROSIVE LIQUID, N.O.S.	CORROSIVE LIQUID, N.O.S.	
Transport Hazard Class	8	8	8	8	
Transport Hazard Class Pictogram					
Packing Group	III	III	III	III	
Environmental Hazard					

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation for the mixture. South Africa

Regulations for Hazardous Chemical Agents – 2021 – SA Occupational Health and Safety Act. - Handling, labelling and Safety Data Sheets for hazardous and GHS classified substances and mixtures. Occupational Exposure Limits. Hazardous Substances Act, 1973 (Act No.15 of 1973) - Requirements on the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of hazardous substances. Occupational Health and Safety Act No. 85 of 1993.- Occupational Health and Safety Standards for employers and users working with and around hazardous chemical substances. National Road Traffic Act, 1996 (ACT NO. 93 of 1996). - The identification and classification of dangerous goods for transport by road and rail modes.

Botswana

Pesticides and Toxic Substances Regulations. 1994 (2006) - Control and management of pesticides and other toxic substances. Environmental and Pollution Control Act. 1990 - Hazardous waste disposal, hazardous substances, pesticides, and effluent wastewater/discharge.

Namibia

Labour Act 11 of 2007 - Hazardous substances classification, labelling, Chemical Safety Data Sheets and Occupational Exposure Limits. Notification of the use of carcinogens and other controlled substances. Regulations relating to the Health and Safety of Employees at Work Government Notice 156 of 1997. Labour Act 11 of 2007 schedule, item 2(2). - Occupational Health and Safety Standards for employers and users working with and around hazardous chemical substances.

Key to Abbreviations

AND	European Provisions concerning the International Carriage of Dangerous Goods by inland Waterways
ADR	The European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
COD	Chemical Oxygen Demand
GHS	Globally Harmonised System of Classification and Labelling of Chemicals
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IMDG	International Maritime Dangerous Goods
Log_{Pow}	Logarithm of the octanol/water partition coefficient
LD₅₀	Lethal Dose 50
LC₅₀	Lethal Concentration 50
RID	The Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
UN	United Nations

Notice to Reader

The information contained in this Safety Data Sheet relate only to the specific product and do not relate to the use of the product in combination with any other product or process. Information in the SDS is supplied to the best of **ROLFES AGRI (PTY) LTD's** knowledge and are believed to be current and correct as of the date on this SDS. All reasonable efforts were exercised to compile this SDS in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

The SDS only provides information applicable to the health, safety and environmental hazards of this product at the date of issue in order to facilitate the safe use, handling, storage and transport of this product and does

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END OF SAFETY DATA SHEET
