

Safety Data Sheet

According to the International Organization for Standardization, ISO 11014:2009

www.kimleigh.com

TEL: | +27 18 293 1028: | +27 18 285 1014



Reg. No. 1974/000531/07

PO Box 1097 | Potchefstroom | 2520 | South Africa

11 Jasper vd Westhuizen Str | Potchindustria | Potchefstroom | 2531

Trade name: *AqCua*[®] CS22-SOL

Product range: *AqCua*[®]

SECTION 1: Chemical Product and Company Identification

1.1 Product identifier:

Product name : *AqCua*[®] CS22-SOL

Substance name : *AqCua*[®] Copper Sulphate Pentahydrate Solution

1.2 Relevant identified uses of the substance or mixture and uses advised against:

Relevant identified uses

Used as a fungicide, algacide, fertilizer and herbicide. Also used to kill slugs and snails in irrigation and municipal water treatment systems. Non-agricultural uses include germicide, textile mordant, leather industry, pigments, electric batteries, electroplating coatings, copper salts, reagent in analytical chemistry, medicine, wood preservation, process engraving and lithography, ore floatation, petroleum industry, synthetic rubber, steel manufacture, and treatment of natural asphalts.

Uses advised against:

Avoid release to the environment.

Reasons:

Harmful to both plant and aquatic life. Potential bioaccumulation may lead to ecological disturbances.

1.3 Details of the supplier of the safety data sheet:

Supplier:

Kimleigh Chemicals SA (Pty) Ltd

11 Jasper van der Westhuizen Street, Potchindustria, Potchefstroom, North West Province, 2531, South Africa

Tel no: +27 (18) 293-1028

Fax no: +27 (18) 294-4079

Web : www.kimleigh.com

E-mail : sheq@kimleigh.co.za

1.4 Emergency telephone number:

Kimleigh Chemicals SA (Pty) Ltd: Tel: +27 (18) 293-1028

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SECTION 2: Hazards Identification

2.1. Classification of the substance:

Classification according to the Global Harmonized System (GHS):	Code:	Pictogram:	Signal word:
Health hazards: Harmful if swallowed. Causes skin irritation. Causes serious eye irritation.	H302 H315 H319	GHS07 	Warning
Environmental hazards: Very toxic to aquatic life with long lasting effects.	H410	GHS09 	Warning

Precautionary statements:

P273	Avoid release to the environment.
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.
P501	Dispose of contents / container in accordance with local / regional / national / international regulations.

2.2 Potential health effects:

Routes of entry: Eye contact, inhalation, ingestion, absorbed through skin.

Eyes: Can cause eye irritation and local inflammation, tissue destruction, corneal opacity and adhesion of eyelid to the eye. May also cause conjunctivitis and ulcerations. Traces of impurities and sulphuric acid may contribute to these effects.

Skin: May cause skin irritation and discolouration of skin.

Inhalation: Mists may cause irritation of nasal passages and throat. Ulceration and perforation of the nasal septum is possible if inhaled in excessive quantities. Traces of sulphuric acid may contribute to these effects.

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Ingestion: It can cause a burning sensation in the throat and cause vomiting. More severe poisoning can cause abdominal pain, nausea, diarrhea and ulceration of the gastrointestinal tract. May cause hemorrhaging of the digestive tract. Metallic taste may occur. Can be fatal.

2.3 Medical conditions aggravated by overexposure:

Skin: Repeated exposure can cause skin allergy or dermatitis. If allergy develops, even low future exposures may trigger a rash. It can cause discoloration of skin and hair to green color.

Inhalation: Repeated exposure may cause lung damage. It can cause shrinking of the inner lining of the nose, with watery discharge, or thickening of the skin.

Ingestion: Repeated exposure to dust and mists can cause liver damage. Metallic taste may occur.

This substance has adverse reproductive and fetal effects in animals. Copper is an essential element and its level in the body is strictly controlled. Under most conditions, excess copper is excreted in the urine and faeces.

SECTION 3: Composition / Information on Ingredients

3.1 Substance:

Substance name:	Copper Sulphate Pentahydrate Solution
Chemical notation:	Aqueous solution of $\text{CuSO}_4 \bullet 5\text{H}_2\text{O}$
% by Volume:	22% Cu minimum (m/m) as $\text{CuSO}_4 \bullet 5\text{H}_2\text{O}$
Synonyms:	Cupric sulphate, blue vitriol, blue stone, or blue copperas
Appearance:	Light blue aqueous solution

SECTION 4: First Aid Measures

4.1 Description of first aid measures

General information

Consult a physician. Show this safety data sheet to the doctor in attendance.

Following inhalation

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Following skin contact

In case of contact, immediately flush skin with plenty of water for at least 15 minutes, while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Following eye contact

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

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Following ingestion

If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

SECTION 5: Firefighting Measures

Products of combustion:

Oxides of sulphur and copper.

Auto-ignition temperature:

Not applicable.

Flash points:

Not applicable.

Flammable limits:

Not applicable.

Explosion hazards in presence of various substances:

Risk of explosion of the product in the presence of static discharge: NO

Risk of explosion of the product in presence of mechanical impact: NO

Fire hazards in presence of various substances:

Not applicable.

Firefighting media and instructions:

Small fire: Use dry chemicals, CO₂, alcohol-resistant foam or water spray.

Large fire: Use alcohol foam, water spray or fog.

Protective clothing (Fire):

Wear NIOSH approved self-contained breathing apparatus or equivalent and full protective gear.

Special remarks on fire hazards:

Not available.

Special remarks on explosion hazards:

Not available.

SECTION 6: Accidental Release Measures

Personal Protection:

Respiratory: Dust respirator. Be sure to use a MSHA/NIOSH approved respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Hands: Nitrile rubber gloves.

Eyes: Splash goggles.

Body: Full acid resistant suit.

Feet: Safety boots.

Small spill and leak:

Use appropriate tools to put the spilled liquid into a convenient waste disposal container.

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Large spill and leak: Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dyke if needed. Call for assistance on disposal. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the SDS and with local authorities.

SECTION 7: Handling and Storage

7.1 Precautions for safe handling

Protective measures

Advice on safe handling

Handle with care. Do not swallow or inhale dust, spray, mist or vapours. Avoid contact with eyes and skin and any form of ingestion. Wear suitable protective clothing such as overalls, boots, rubber gloves, goggles, nose and mouth protection and wash contaminated clothing daily. Use dust mask or respirator with dust cartridge. Wash thoroughly with soap and water after use or accidental skin contact. Do not eat, drink or smoke during use. Avoid contamination of food, foodstuffs, eating utensils and drinking water. Do not discharge residues or any of the product into rivers, dams and canals.

Advice on safe storage

Store in a cool, dry place away from food and foodstuffs and incompatible substances, and away from steel structures or steel components. Store under lock and key and keep out of reach of children, uninformed persons and animals. Store only in sealed polypropylene or stainless-steel containers. Store away from direct sunlight and heat in original containers.

SECTION 8: Exposure Controls/Personal Protection

8.1 Control parameters

Engineering controls: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Respiratory: Dust respirator. Be sure to use a MSHA / NIOSH approved respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Hands: Nitrile rubber gloves.

Eyes: Splash goggles.

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Body: Full acid resistant suit.

Feet: Safety boots.

Hygiene measures: Wash hands, forearms, and face thoroughly after handling compounds and before eating, smoking, and using the lavatory and at the end of the day. Follow good industrial hygiene practice.

Occupational exposure limits

Limit value type (country of origin)	Substance name	CAS-No.	PEAK	MAK	TWA	NGV
Germany, 1997	Copper Sulphate Pentahydrate	7758-99-8	4 mg Cu/m ³ dust	1 mg Cu/m ³		
Finland, 1998	Copper Sulphate Pentahydrate	7758-99-8			1 mg Cu/m ³	
Sweden, 1996	Copper Sulphate Pentahydrate	7758-99-8				1 mg Cu/m ³

SECTION 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Appearance:

Physical state: Solution
Form: Solution
Colour: Light blue aqueous solution
Odour: Odourless

9.2 Other information:

pH (0.05 mole sol.): 3.7 (acidic)
Melting point: Not available
Boiling point: Not available
Flash point: Not available
Vapour density: Not available
Flammability/explosive limits: Not available
Molecular weight: 249.7 g/mole
Molecular formula: Aqueous solution of CuSO₄•5H₂O
Density (20°C): 1.15 (water = 1)
Dispersion properties: Mixes easily with water

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SECTION 10: Stability and Reactivity

10.1 Reactivity and stability

The product is stable.

10.2 Hazardous decomposition products

Toxic sulphur dioxide fumes.

10.3 Incompatibility with various substances

Avoid contact with acetylene, hydroxylamine and reducing agents. Avoid contact with steel.

SECTION 11: Toxicological Information

11.1 Information on toxicological effects:

	Effect dose / concentration	Value(s)	Species
Acute oral toxicity (calculated)	LD50	1,360 mg/kg	Rat
Acute dermal toxicity	LD50	9,000 mg/kg	Rat
Lowest published oral lethal dose:		4,900 mg/kg	Human

11.2 Other information:

Chronic effects on humans:

Carcinogenic effects:

Not suspected for humans by ACGIH.

Mutagenic effects:

Not available.

Teratogenic effects:

Classified NONE for humans.

Acute effects on humans:

Hazardous in case of eye contact (irritant). Inflammation of the eye is characterized by redness, watering and itching. Hazardous in case of skin contact (irritant). Skin inflammation is characterized by itching, scaling, reddening or, occasionally blistering. Hazardous in case of inhalation (lung irritant). Hazardous in case of ingestion.

Toxicity to reproductive system:

Tests on laboratory animals for reproductive effects are cited in Registry of Toxic Effects on Chemical Substances (RTECS).

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SECTION 12: Ecological Information

Ecotoxicity:	Harmful to both plant and aquatic life. Potential bio-accumulation may lead to ecological disturbances.
Biodegradable/OECD:	Copper sulphate is slowly biodegradable.
Products of biodegradation:	Sulphur oxides. Some metallic oxides.
Mobility:	Copper sulphate is water soluble and will be dispersed in soil and water at a rate which will depend on the amount and concentration of the spill.
Toxicity of the products of biodegradation:	The products of degradation are less toxic than the product itself.

SECTION 13: Disposal Considerations

13.1 Waste disposal:

The generation of waste should be avoided or minimized wherever possible. Material does not have an EPA Waste Number and is not a listed waste, however consultation with a permitted waste disposal site (TSD) should be accomplished. Always contact a permitted waste disposal site (TSD) to assure compliance with all current, local, national, state, Federal and Governmental Regulations.

SECTION 14: Transport Information

	Land transport (ADR/RID)	Inland waterway transport (ADN)	Sea transport (IMDG)	Air transport (ICAO-TI / IATA-DGR)
14.1 UN No.	3082	3082	N/A	N/A
14.2 UN Proper shipping name	Environmentally hazardous substance, liquid, n.o.s. <i>AqCua</i> [®] CS22-SOL	Environmentally hazardous substance, liquid, n.o.s. <i>AqCua</i> [®] CS22-SOL	No material danger according to IMO	No material danger according to ICAO/IATA

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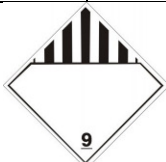
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	Land transport (ADR/RID)	Inland waterway transport (ADN)	Sea transport (IMDG)	Air transport (ICAO-TI / IATA-DGR)
14.3 Transport hazard class(es)	Class 9	Class 9	N/A	N/A
Hazard label(s)	 GHS09 GHS07		N/A	N/A
14.4 Packing group	III	III	N/A	N/A
14.5 Transport label				

Section 15: Regulatory Information

Republic of South Africa Regulations:

National Water Act 36 of 1998.
Occupational Health and Safety Act, 1993.
Environmental Conservation Act 73 of 1989.
Hazardous Substances Act, 1973.
Provincial Ordinances and Local By-laws.

U.S. Federal Regulations:

TSCA 8(b) inventory: Cupric Sulphate Pentahydrate.
SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Cupric Sulphate Pentahydrate.
SARA 311/312 MSDS distribution – chemical inventory – hazard identification: Cupric Sulphate Pentahydrate: Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard.
SARA 313 toxic chemical notification and release reporting: Cupric Sulphate Pentahydrate.
Clean Water Act (CWA) 307: Cupric Sulphate Pentahydrate.
Clean Water Act (CWA) 311: Cupric Sulphate Pentahydrate.
Clean Air Act (CAA) 112 accidental release prevention: No products were found.

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State Regulations:

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

Pennsylvania RTK: Cupric Sulphate Pentahydrate: (environmental hazard, generic environmental hazard).

Massachusetts RTK: Cupric Sulphate Pentahydrate.

New Jersey: Cupric Sulphate Pentahydrate.

California prop. 65: No products were found.

WHMIS (Canada):

Class D-1B: Material causing immediate and serious toxic effects (TOXIC).

Class D-2B: Material causing other toxic effects (TOXIC).

CEPA DSL: Cupric Sulphate Pentahydrate.

International Regulations:

International Lists:

EINECS: Cupric Sulphate Pentahydrate 231-847-63.

Australia (NICNAS): Cupric Sulphate Pentahydrate.

Japan (MITI): Cupric Sulphate Pentahydrate.

Korea (TCCL): Cupric Sulphate Pentahydrate.

Philippines (RA6969): Cupric Sulphate Pentahydrate.

China: No products were found.

SECTION 16: Other Information

16.1 Hazardous Material Identification System

HAZARDOUS MATERIAL IDENTIFICATION GUIDE													
CHEMICAL NAME 2 HEALTH 0 FLAMMABILITY 0 REACTIVITY K PERSONAL PROTECTION	PERSONAL PROTECTION INDEX												
HAZARD INDEX 4 - Extreme Hazard 3 - Serious Hazard 2 - Moderate Hazard 1 - Slight Hazard 0 - Minimal Hazard	<table border="1"> <tr> <td>A </td> <td>G </td> </tr> <tr> <td>B </td> <td>H </td> </tr> <tr> <td>C </td> <td>I </td> </tr> <tr> <td>D </td> <td>J </td> </tr> <tr> <td>E </td> <td>K </td> </tr> <tr> <td>F </td> <td>X Ask your supervisor for special handling instructions.</td> </tr> </table>	A	G	B	H	C	I	D	J	E	K	F	X Ask your supervisor for special handling instructions.
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HAZARD RATING	Health	Flammability	Reactivity
	<p>4 - Extreme- Materials that on very short exposure could cause death or major residual injury.</p> <p>3 - Serious- Materials that on short exposure could cause serious temporary or residual injury.</p> <p>2 - Moderate- Materials that on intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury.</p> <p>1 - Slight- Materials that on exposure would cause irritation but only minor residual injury.</p> <p>0 - Minimal- Materials that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible material.</p>	<p>4 - Extreme- Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature, or that are readily dispersed in air and that will burn readily.</p> <p>3 - Serious- Liquids and solids that can be ignited under almost all ambient temperature conditions.</p> <p>2 - Moderate- Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur</p> <p>1 - Slight- Materials that must be preheated before ignition can occur.</p> <p>0 - Minimal- Materials that will not burn.</p>	<p>4 - Extreme- Materials that in themselves are readily capable of detonation or of explosive decomposition or reaction at normal temperatures and pressures.</p> <p>3 - Serious- Materials that in themselves are capable of detonation or explosive decomposition or reaction but require a strong initiating source or which must be heated under confinement before initiation or which react explosively with water.</p> <p>2 - Moderate- Materials that readily undergo violent chemical change at elevated temperatures and pressures or which react violently with water or which may form explosive mixtures with water.</p> <p>1 - Slight- Materials that in themselves are normally stable, but which can become unstable at elevated temperatures and pressures.</p> <p>0 - Minimal- Materials that in themselves are normally stable, even under fire exposure conditions, and which are not reactive with water.</p>

16.2 Legislation related to safety data sheets:

This safety data sheet has been designed in accordance with the International Organization for Standardization.

16.3 References:

National Institute for Occupational Safety and Health (NIOSH).

The Registry of Toxic Effects of Chemical Substances (RTECS).

LOLI Database: The regulated Chemicals List of Lists.

CHEMINFO: Canadian Centre for Occupational Health and Safety, Issue: 97-3 (August, 1997).

BDH: Hazard Data Disk, Version 3.

CESARS: Chemical Evaluation and Retrieval System, Produced by: Ontario Ministry of Environment and Michigan Department of Natural Resources, Issue: 97-3 (August, 1997).

TOMES Plus System: Toxicology, Occupational Medicine & Environmental Series: incorporating.

MEDITEX, HAZARDTEXT, 1st Medical Response Protocols, INFOTEXT, HSDB, CHRIS, OHM/TADS,

IRIS, NIOSH Pocket Guide, RTECS, NJ Fact Sheets, North American Emergency Response Guides,

REPROTEXT, REPROTOX, TERIS, Shepard's Catalog of Teratogenic Agents.

16.4 Disclaimer:

KIMLEIGH CHEMICALS SA (Pty) Ltd provides the information contained herein in good faith but does not assume any liability whatsoever for its accuracy or completeness. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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