SAFETY DATA SHEET

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

1.1 Product Identifier

Trade Name Defense-CuZn

SDS Date April 15, 2024

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Product Use: Soil Amendment

Uses Advised Against: To be used only where there is a recognized need. Do not exceed the appropriate dose rates.

1.3 Details of the Supplier of the Substance or Mixture

Manufacturer:
Floratine Products Group, Inc.
355 East South Street
Collierville, TN 38017
+1 901-853-2898

Importer:
Turfcare Australia
Shane Summerhayes
115 PITTOWN RD. MCGRATHS HILL
SYDNEY NSW Australia 6400
+61 (425) 280300
shane@turfcareaus.com.au

1.4 Emergency Telephone Number

Emergency Spill Information 1(800) 535-5053 for US and Canada (INFOTRAC)
+1(352) 323-3500 for International Calls (call INFOTRAC collect)

Other Product Information: cs@floratine.com

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the Substance or Mixture

CLP/GHS Classification (1272/2008):
Acute Toxicity Category 4 (H302)
Skin Irritation Category 2 (H315)
Eye Damage Category 1 (H318)

2.2 Label Elements

Danger!

Contains Zinc compound, Copper salt

Hazard Phrases
H302 Harmful if swallowed.

H315 Causes skin irritation.
H318 Causes serious eye damage.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Phrases:
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves, eye protection and face protection.
P301 + P312 IF SWALLOWED: Call a POISON CENTER if you feel unwell.
P330 Rinse mouth.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P332 + P313 If skin irritation occurs: Get medical attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER.
P273 Avoid release to the environment.
P391 Collect spillage.
P501 Dispose of contents and container in accordance with local and national regulations.

2.3 Other Hazards: None

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Chemical Name	**CAS Number / EINECS Number / REACH Reg. Number**	**% (w/w)**	**EU Classification (67/548/EEC)**	**CLP/GHS Classification (1272/2008)**
Copper Salt	7758-98-7 231-847-6	20-40	Xn, Xi, N R22, R36/38, R50/53	Acute Tox. 4 (H302) Skin Irrit. 2 (H315) Eye Irrit.2 (H319) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)
Zinc Compound	7733-02-0 231-793-3	60-80	Xn, Xi, N R22, R41, R50/53	Acute Tox. 4 (H302) Eye Dam 1(H318) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)

See Section 16 for full text of GHS and EU Classifications.

SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid Measures

First Aid

Eye contact: In case of contact with eyes, flush immediately with water for at least 15 minutes while lifting the upper and lower lids. Get immediate medical attention.

Skin contact: Wash with soap and water. Get medical attention if irritation develops or persists.

Inhalation: Remove victim to fresh air. Get medical attention if irritation develops or persists.

Ingestion: Do not induce vomiting unless directed to do so by medical personnel. If the person is alert, have them rinse their mouth with water and sip one glass of water. Call a poison center or physician for advice. Never give anything by mouth to an unconscious or drowsy person.

See Section 11 for more detailed information on health effects.

4.2 Most Important symptoms and effects, both acute and delayed: Causes severe eye irritation or damage.

May cause skin irritation. Inhalation of dust may cause upper respiratory tract irritation. Swallowing may cause nausea and diarrhea.

4.3 Indication of any immediate medical attention and special treatment needed: If eye contact occurs, get immediate medical attention.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing Media: Use media appropriate for the surrounding fire. Cool fire exposed containers with water.

5.2 Special Hazards Arising from the Substance or Mixture

Unusual Fire and Explosion Hazards: None

Combustion Products: Oxides of carbon, copper and zinc.

5.3 Advice for Fire-Fighters: Self-contained breathing apparatus and protective clothing should be worn in fighting fires involving chemicals. Determine the need to evacuate or isolate the area according to your local emergency plan. Use water spray to keep fire exposed containers cool.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures:
Wear appropriate protective equipment. Avoid direct contact with spilled material.

6.2 Environmental Precautions:

Prevent entry in storm sewers and waterways. Report spill as required by local and national regulations.

6.3 Methods and Material for Containment and Cleaning Up:

Carefully collect and place in an appropriate container for disposal. Avoid generating dust. Wash spill site with water.

6.4 Reference to Other Sections:
Refer to Section 8 for personal protective equipment and Section 13 for disposal information.

SECTION 7: HANDLING and STORAGE

7.1 Precautions for Safe Handling:
Avoid contact with eye skin and clothing. Use with adequate ventilation. Use reasonable care in handling. Do not eat, drink or smoke while using product. Wash thoroughly with soap and water after handling.

7.2 Conditions for Safe Storage, Including any Incompatibilities:
Protect containers from physical damage. Keep containers closed. Empty containers retain product residues. Follow all SDS precautions in handling empty containers. Store away from food and feed.

7.3 Specific end use(s):
Industrial uses: None identified
Professional uses: Soil Amendment

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters:

Chemical Name	US OEL	EU IOEL	UK OEL	Biological Limit Value
Copper Salt (as copper dust and mists)	1 mg/m3 TWA OSHA PEL 1 mg/m3 TWA ACGIH TLV	None Established	1 mg/m3 TWA 2 mg/m3 STEL	None Established
Zinc Compound	None Established	None Established	None Established	None Established

8.2 Exposure Controls:

Recommended Monitoring Procedures: None established.

Appropriate Engineering Controls: Good outdoor ventilation should be adequate under normal conditions of use.

Personal Protective Measures

Eye/face Protection: Chemical goggles recommended to prevent eye contact.
Skin Protection: Impervious clothing is recommended to avoid skin contact.
Hands: Impervious gloves such as natural rubber, butyl rubber or neoprene are recommended if needed to avoid skin contact.

Respiratory Protection: None needed under normal use conditions with adequate ventilation. If dust is excessive, an approved particulate respirator can be used. Use respirators in accordance with local and national regulations.

Other protection: Suitable washing facilities should be available in the work area.

SECTION 9: PHYSICAL and CHEMICAL PROPERTIES

9.1 Information on basic Physical and Chemical Properties

Appearance: White/Blue powder.
Odor Threshold: Not available
Melting/Freezing Point: Not determined
Flash Point: Not flammable
Lower Flammability Limit: Not applicable
Upper Flammability Limit: Not applicable
Vapor Density(Air=1): Not applicable
Solubility: Completely Soluble in Water
Autoignition Temperature: None
Viscosity: Not applicable
Oxidizing Properties: None
Molecular Formula: Mixture

Odor: sulfur
pH: Not available
Boiling Point: Not applicable
Evaporation Rate: Not applicable
Vapor Pressure: Not applicable

Relative Density: Not available
Octanol/Water Partition Coefficient: Not determined
Decomposition Temperature: Not determined
Explosive Properties: None
Specific Gravity (H_2O= 1): Not available
Molecular Weight: Mixture

9.2 Other Information: None available

SECTION 10: STABILITY and REACTIVITY

10.1 Reactivity: Not reactive under normal conditions.
10.2 Chemical Stability: Stable.
10.3 Possibility of Hazardous Reactions: None known.
10.4 Conditions to Avoid: Avoid excessive heat.
10.5 Incompatible Materials: Incompatible with oxidizing agents.
10.6 Hazardous Decomposition Products: Decomposition may produce oxides of carbon, copper and zinc.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects:

Potential Health Effects:
Eye Contact: Causes irritation with redness, tearing and stinging. Possible permanent eye damage may occur.
Skin contact: Causes skin irritation with redness and cracking of the skin.
Inhalation: Excessive inhalation of dust may cause upper respiratory tract irritation.
Ingestion: Swallowing may cause gastrointestinal effects including nausea and diarrhea.
Acute toxicity: No acute toxicity data available for the product. Calculated ATE for the mixture: Oral LD50 1032 mg/kg

Zinc compound: Oral rat LD50 1710 mg/kg; Dermal rabbit >2000 mg/kg; Inhalation rat LC50 8.3 mg/m3 /4 hr
Copper salt: Oral rat LD50 481 mg/kg; Dermal rat LD50 >2000 mg/kg.

Skin corrosion/irritation: Copper salt is not irritating to rabbit skin. Zinc compound is not irritating to rabbit skin.

Eye damage/ irritation: Copper salt is highly irritating to rabbit eyes. Zinc compound has been shown to cause severe ocular irritation in rabbit eyes.

Respiratory Irritation: No data available. Expected to cause only temporary irritation.
Respiratory Sensitization: No data available.
Skin Sensitization: Zinc compound was not sensitizing in a mouse local lymph node assay. Copper salt was not sensitizing based on studies with guinea pigs.

Germ Cell Mutagenicity: Zinc compound was negative in an AMES test, an in vitro gene mutation assay and an in vivo micronucleus assay. Copper salt was negative in the AMES test, an in vivo mammalian erythrocyte micronucleus test and an in vivo unscheduled DNA synthesis test with mammalian liver cells

Carcinogenicity: No data available. None of the components of this product are listed as carcinogens by IARC
Reproductive Toxicity: Zinc compound was orally administered to female mice during gestation. No adverse maternal or fetoxic effects were seen. NOAEL 30 mg/kg. In a two generational studies, rats were orally administered copper salt for 70 days up to 1500 ppm. No reproductive toxicity was seen at any concentration. NOAEL 1500 ppm for parental animals. NOEAL 1000 ppm for offspring.

Specific Target Organ Toxicity:

Single Exposure: No data available.

Repeat Exposure: In a 13 week study, mice were administered up to 30,000 ppm of zinc compound. Adverse effects were seen only in the 30,000 ppm level. NOEL: 3,000 ppm (458 mg/kg). In a 13 week chronic study, rats were fed up to 16000 ppm in their food. Decreased weights of the heart, kidney liver and thymus were found in the high dosed animals. NOEAL 1000 ppm.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity: Copper salt: 96 hr LC50 Rainbow trout 0.0138; 48 hr LC50 daphnia magna 0.0094 mg/L; 72 hr EC50 Chlamydomonas reinhardtii 0.233 mg/L
Zinc compound: 96 hr LC50 Pimephales promelas 300 ug/L (0.3 mg/L); 48 hr LC50 daphnia magna 259 ug/L (0.259 mg/L); 72 hr IC50 Pseudokirchnerella subcapitata 136 ug/kg (0.136 mg/kg).

12.2 Persistence and degradability: Biodegradation is not applicable to inorganic substances such as zinc compound, and copper salt.
12.3 Bioaccumulative Potential: No data available.
12.4 Mobility in Soil: In the soil, product follows natural cycle to provide plant nutrients.
12.5 Results of PBT and vPvB assessment: Not required.
12.6 Other Adverse Effects: No data available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods:

Dispose in accordance with local/ and national regulations.

SECTION 14: TRANSPORTATION INFORMATION

	14.1 UN Number	14.2 UN Proper Shipping Name	14.3 Hazard Class(s)	14.4 Packing Group	14.5 Environmental Hazards
US DOT	None	Environmentally Hazardous Substance, solid n.o.s. (copper salt)			Yes
Canadian TDG	None	Environmentally Hazardous Substance, solid n.o.s. (copper salt)			Yes
EU ADR/RID	None	Environmentally Hazardous Substance, solid, n.o.s. (zinc compound, copper salt)			Yes
IMDG	None	Unregulated Environmentally Hazardous Substance, solid, n.o.s. (zinc compound, copper salt) less than 5kg/L exemption			Yes
IATA/ICAO	None	Environmentally Hazardous Substance, solid, n.o.s. (zinc compound, copper salt)			Yes

Note: This product is classified as a Marine Pollutant (Environmentally Hazardous Substance) in accordance with the IMDG Code and the UN Model Regulations. However, it is packaged in either single packages or inner packaging in combination packages containing net quantities of less than 5 kg/5 L (IMDG Code 2.10.2.7; ICAO Special Instruction A197, 49CFR 171.4(c)(2)) so is shipped unregulated. Shipment may be regulated if contents are removed from inner packaging and combined into containers exceeding 5 L or 5 kg.

14.6 Special Precautions for User: None
14.7 Transport in Bulk According to Annex III MARPOL 73/78 and the IBC Code: Not determined.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

US Regulations
CERCLA Section 103: The normal application of fertilizers is exempt from CERCLA reporting. If an accidental release occurs, contact Floratine Products Group for information.

SARA Hazard Category (311/312): Acute Health Hazard

SARA 313: Products used in routine agricultural operations and fertilizers held for resale by retailers is excluded from SARA 313 reporting. Contact Floratine Products Group for additional information.

California Proposition 65: This product contains the following substances known to the State of California to cause cancer and/or reproductive harm (birth defects): None known

International Chemical Inventories
US EPA Toxic Substances Control Act (TSCA) Status: All of the components of this product are listed on the TSCA inventory or exempt.

Australia: All of the components in this product are listed on the Australian Inventory of Chemical Substances (AICS) or exempt.

Japan: All of the components in this product are listed on the Japanese Existing and New Chemical Substances (ENCS) inventory or exempt.

Korea: All of the components in this product are listed on the Korean Existing Chemicals List (KECL) or exempt**.**

New Zealand: All of the components in this product are listed on the New Zealand Inventory of Chemicals (NZIoC) or exempt**.**

SECTION 16: OTHER INFORMATION

CLP/GHS Classification and H Phrases for Reference (See Section 3)
Acute Tox. 4 Acute Toxicity Category 4
Eye Dam 1 Eye Damage Category 1
Eye Irrit. 2 Eye Irritation Category 2
Skin Irrit. 2 Skin Irritation Category 2
H302 Harmful if swallowed
H315 Causes skin irritation
H318 Causes serious eye damage.
H319 Causes serious eye irritation.

This safety data sheet provides health and safety information. The product is to be used in applications consistent with best farming practice. Individuals handling this product should be informed under COSHH of the recommended safety precautions and should have access to this information. The product information data sheet is to the best of Floratine's knowledge correct as at the date of publication. Neither Floratine, importer or local supplier accepts liability for any loss or damage resulting from reliance on this information. Further information on this product may be obtained from the supplier whose name, address and telephone number will be found on the product container. The information provided herein is offered solely for your consideration, investigation and verification. This information herein is provided by Floratine in good faith as accurate at the time of writing but without guarantee. This information includes information which has been generated by other parties and provided to Floratine and which Floratine has not independently verified. The information provided herein relates only to the specific product designated and may not be valid if the product is used in combination with any other materials or in any process.