SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
US OSHA Hazard Communication Standard (29 CFR 1910.1200)

Issuing Date 08-Apr-2025 **Revision date** 08-Apr-2025 **Revision Number** 1

1. Identification

Product identifier

Product Name Cyto-Red+

Other means of identification

Recommended use of the chemical and restrictions on use

Recommended use Foliar applications for agricultural and horticultural crops.

Restrictions on use No information available

Details of the supplier of the safety data sheet

Manufacturer Address
Verdesian Life Sciences U.S., LLC
1001 Winstead Drive, Suite 480
Cary, NC 27513
United States
Telephone: 1-800-868-6446

E-mail sds@vlsci.com

Emergency telephone number

Emergency Telephone INFOTRAC 1-800-535-5053 (North America)
INFOTRAC +1-352-323-3500 (International)

2. Hazard(s) identification

Classification

Serious eye damage/eye irritation	Category 2
Carcinogenicity	Category 1B
Reproductive toxicity	Category 1B

Hazards not otherwise classified (HNOC)
Not applicable.

Label elements

Danger

Hazard statements
Causes serious eye irritation.
May cause cancer.
May damage fertility or the unborn child.

Precautionary Statements - Prevention
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wear protective gloves/clothing and eye/face protection.
Wash face, hands and any exposed skin thoroughly after handling.

Precautionary Statements - Response
IF exposed or concerned: Get medical advice/attention.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.

Precautionary Statements - Storage
Store locked up.

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant.

Other information
Very toxic to aquatic life with long lasting effects.

3. Composition/information on ingredients

Substance

Not applicable.

Mixture

Chemical name	CAS No.	Weight-%
Zinc sulfate	7733-02-0	1 - <3
Ferrous sulfate	7720-78-7	0.1 - <1
Manganese sulfate	7785-87-7	0.1 - <1
Copper sulfate	7758-98-7	0.1 - <1
Tetrasodium EDTA	64-02-8	0.1 - <1
Boric acid	10043-35-3	0.1 - <1
Cobalt(II) nitrate	10141-05-6	0.01 - <0.1

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. First-aid measures

Description of first aid measures

General advice IF exposed or concerned: Get medical advice/attention. Show this safety data sheet to the doctor in attendance.

Inhalation Remove to fresh air.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get medical attention if irritation develops and persists.

Skin contact Wash skin with soap and water.

Ingestion Rinse mouth. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a physician.

Self-protection of the first aider Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8).

Most important symptoms and effects, both acute and delayed

Symptoms May cause redness and tearing of the eyes. Burning sensation.

Effects of Exposure May cause cancer. May cause adverse reproductive effects - such as birth defect, miscarriages, or infertility.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. Fire-fighting measures

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media Do not scatter spilled material with high pressure water streams.

Specific hazards arising from the chemical No information available.

Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge None.

Special protective equipment and precautions for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with skin, eyes or clothing. Use personal protective equipment as required.

Other information Refer to protective measures listed in Sections 7 and 8.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Pick up and transfer to properly labeled containers.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

7. Handling and storage

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Remove contaminated clothing and shoes.

Conditions for safe storage, including any incompatibilities

Storage Conditions Store locked up. Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls/personal protection

Control parameters

Exposure Limits The following ingredients are the only ingredients of the product above the cut-off level (or level that contributes to the hazard classification of the mixture) which have an exposure limit applicable in the region for which this safety data sheet is intended or other recommended limit. At this time, the other relevant constituents have no known exposure limits from the sources listed here.

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
Ferrous sulfate 7720-78-7	TWA: 1 mg/m³ Fe	(vacated) TWA: 1 mg/m³ Fe	TWA: 1 mg/m³ Fe
Manganese sulfate 7785-87-7	TWA: 0.02 mg/m³ Mn respirable particulate matter TWA: 0.1 mg/m³ Mn inhalable particulate matter	(vacated) Ceiling: 5 mg/m³ Ceiling: 5 mg/m³ Mn	IDLH: 500 mg/m³ Mn TWA: 1 mg/m³ Mn STEL: 3 mg/m³ Mn
Copper sulfate 7758-98-7	TWA: 1 mg/m³ Cu dust and mist	-	IDLH: 100 mg/m³ Cu dust and mist TWA: 1 mg/m³ Cu dust and mist
Boric acid 10043-35-3	TWA: 2 mg/m³ inhalable particulate matter STEL: 6 mg/m³ inhalable particulate matter	-	-
Cobalt(II) nitrate 10141-05-6	TWA: 0.02 mg/m³ Co inhalable particulate matter	-	-

Chemical name	ACGIH
Cobalt(II) nitrate 10141-05-6	15 µg/L - urine (Cobalt) - end of shift at end of workweek

Appropriate engineering controls

Engineering controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection If splashes are likely to occur, wear safety glasses with side-shields.

Hand protection Wear suitable gloves.

Skin and body protection Wear suitable protective clothing.

Respiratory protection Appropriate respiratory protection should be selected and used according to the chemical nature, hazards and use of this product and safety requirements of the local jurisdiction. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

General hygiene considerations Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection.

9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Dark brown
Color	Dark brown
Odor	Characteristic
Odor threshold	No information available

Property	Values	Remarks • Method
pH	6.0 - 8.0	None known
pH (as aqueous solution)		None known
Melting point / freezing point	No data available	None known
Initial boiling point and boiling range	No data available	None known
Flash point	No data available	None known
Evaporation rate	No data available	None known
Flammability	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Vapor pressure	No data available	None known
Relative vapor density	No data available	None known
Relative density	1.28	None known
Water solubility	No data available	None known
Solubility(ies)	No data available	None known
Partition coefficient	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature		None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known

Other information

Explosive properties	No information available
Oxidizing properties	No information available
Softening point	No information available
Molecular weight	No information available
VOC content	No information available
Liquid Density	No information available
Bulk density	No information available

10. Stability and reactivity

Reactivity No information available.

Chemical stability Stable under normal conditions.

Possibility of hazardous reactions None under normal processing.

Conditions to avoid None known based on information supplied.

Incompatible materials None known based on information supplied.

Hazardous decomposition products None known based on information supplied.

11. Toxicological information

Information on likely routes of exposure

Product Information

Inhalation Specific test data for the substance or mixture is not available. May cause irritation of respiratory tract.

Eye contact Specific test data for the substance or mixture is not available. Causes serious eye irritation. (based on components). May cause redness, itching, and pain.

Skin contact Specific test data for the substance or mixture is not available. May cause irritation. Prolonged contact may cause redness and irritation.

Ingestion Specific test data for the substance or mixture is not available. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms May cause redness and tearing of the eyes.

Acute toxicity .

Numerical measures of toxicity

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral) 9,032.00 mg/kg
ATEmix (dermal) 21,047.50 mg/kg
ATEmix (inhalation-gas) 99,999.00 ppm
ATEmix (inhalation-vapor) 99,999.00 mg/l
ATEmix (inhalation-dust/mist) 99,999.0000 mg/l

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Zinc sulfate 7733-02-0	= 1,710 mg/kg (Rat)	> 2,000 mg/kg (Rat)	-
Ferrous sulfate 7720-78-7	= 319 mg/kg (Rat)	-	-
Manganese sulfate 7785-87-7	= 782 mg/kg (Rat)	-	> 4.45 mg/L (Rat) 4 h
Copper sulfate 7758-98-7	= 300 mg/kg (Rat)	> 2,000 mg/kg (Rat)	-
Tetrasodium EDTA 64-02-8	= 1,658 mg/kg (Rat)	-	-
Boric acid 10043-35-3	= 2,660 mg/kg (Rat)	> 2,000 mg/kg (Rabbit)	> 2.12 mg/L (Rat) 4 h (No deaths)

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation No information available.

Serious eye damage/eye irritation Classification based on data available for ingredients. Causes serious eye irritation.

Respiratory or skin sensitization No information available.

Germ cell mutagenicity No information available.

Carcinogenicity Contains a known or suspected carcinogen. Classification based on data available for ingredients. May cause cancer.

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical name	ACGIH	IARC	NTP	OSHA
Boric acid 10043-35-3	-	Group 2A	-	X
Cobalt(II) nitrate 10141-05-6	A3	Group 2B	Reasonably Anticipated	X

Legend

IARC (International Agency for Research on Cancer)

Group 2A - Probably Carcinogenic to Humans
Occupational Safety and Health Administration of the US Department of Labor
X - Present

Reproductive toxicity Classification based on data available for ingredients. May damage fertility or the unborn child.

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Aspiration hazard No information available.

Other adverse effects No information available.

Interactive effects No information available.

12. Ecological information

Ecotoxicity Very toxic to aquatic life with long lasting effects.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Zinc sulfate 7733-02-0	EC50: =0.056mg/L (72h, Pseudokirchneriella subcapitata)	LC50: =0.162mg/L (96h, Oncorhynchus mykiss) LC50: 0.03 - 0.05mg/L (96h, Oncorhynchus mykiss) LC50: 0.34 - 0.93mg/L (96h, Oncorhynchus mykiss) LC50: 0.218 - 0.42mg/L (96h, Pimephales promelas) LC50: =0.06mg/L (96h, Pimephales promelas) LC50: 0.23 - 0.48mg/L (96h, Pimephales promelas) LC50: 0.168 - 0.25mg/L (96h, Pimephales promelas) LC50: =0.15mg/L (96h, Cyprinus carpio) LC50: 16.85 - 27.18mg/L (96h, Cyprinus carpio) LC50: 3 - 4.6mg/L (96h, Lepomis macrochirus) LC50: 3.55 - 6.32mg/L (96h, Lepomis macrochirus) LC50: =0.63mg/L (96h, Poecilia reticulata) LC50: 49.23 -	-	EC50: =0.75mg/L (48h, Daphnia magna) EC50: 0.538 - 0.908mg/L (48h, Daphnia magna)

		64.16mg/L (96h, Poecilia reticulata) LC50: 0.48 - 1.72mg/L (96h, Poecilia reticulata)		
Ferrous sulfate 7720-78-7	-	LC50: =925mg/L (96h, Poecilia reticulata)	-	EC50: =152mg/L (48h, Daphnia magna)
Copper sulfate 7758-98-7	-	LC50: =0.1mg/L (96h, Oncorhynchus mykiss)	-	EC50: 0.007mg/L (48h, Daphnia magna)
Tetrasodium EDTA 64-02-8	-	LC50: =41mg/L (96h, Lepomis macrochirus) LC50: =59.8mg/L (96h, Pimephales promelas)	-	-
Boric acid 10043-35-3	-	-	-	EC50: 115 - 153mg/L (48h, Daphnia magna)

Persistence and degradability No information available.

Bioaccumulation

Component Information

Chemical name	Partition coefficient
Boric acid 10043-35-3	-1.09

Other adverse effects No information available.

13. Disposal considerations

Disposal methods

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

California Hazardous Waste Status This product contains one or more substances that are listed with the State of California as a hazardous waste.

14. Transport information

DOT

UN number or ID number UN3082
Proper shipping name Environmentally hazardous substance, liquid, n.o.s.
Transport hazard class(es) 9
Packing group III
Reportable quantity (lbs) Copper sulfate: RQ (lb)= 10.00, Zinc sulfate: RQ (lb) = 1000.00
Special Provisions 8, 146, 173, 335, 441, IB3, T4, TP1, TP29
Marine pollutant Copper sulfate
Description UN3082, Environmentally hazardous substance, liquid, n.o.s.(Copper sulfate), 9, III
Emergency Response Guide Number 171
Notes **Only regulated for DOT when RQ limit is exceeded.**

IATA

UN number or ID number UN3082
UN proper shipping name Environmentally hazardous substance, liquid, n.o.s.
Transport hazard class(es) 9

Packing group	III
Technical Name	Zinc sulfate, Copper sulfate
Description	UN3082, Environmentally hazardous substance, liquid, n.o.s. (Zinc sulfate, Copper sulfate), 9, III
Special Provisions	A97, A158, A197, A215
ERG Code	9L
Notes	**May be shipped as not regulated in quantities not more than 5 L / 5 kg in accordance with IATA SP A197.**

IMDG

UN number or ID number	UN3082
UN proper shipping name	Environmentally hazardous substance, liquid, n.o.s.
Transport hazard class(es)	9
Packing group	III
EmS-No.	F-A, S-F
Special Provisions	274, 335, 375, 969
Marine pollutant	P
Marine pollutant	Zinc sulfate, Copper sulfate
Description	UN3082, Environmentally hazardous substance, liquid, n.o.s. (Zinc sulfate, Copper sulfate), 9, III, Marine pollutant
Notes	**May be shipped as not regulated in quantities not more than 5 L / 5 kg in accordance with IMDG Special Provision 375.**

15. Regulatory information

Contact supplier for inventory compliance status

16. Other information

NFPA	**Health hazards** 2	**Flammability** 0	**Instability** 0	**Special hazards** -
HMIS	**Health hazards** 2 *	**Flammability** 0	**Physical hazards** 0	**Personal protection** X

Chronic Hazard Star Legend ** = Chronic Health Hazard*

Key or legend to abbreviations and acronyms used in the safety data sheet

Legend
SVHC: Substances of Very High Concern for Authorization:
PBT: Persistent, Bioaccumulative, and Toxic (PBT) Substances
vPvB: Very Persistent and very Bioaccumulative (vPvB) Substances
STOT: Specific Target Organ Toxicity
ATE: Acute Toxicity Estimate
LC50: 50% Lethal Concentration
LD50: 50% Lethal Dose

Legend Section 8: Exposure controls/personal protection

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	Sk*	Skin designation
+	Sensitizers		

Key literature references and sources for data used to compile the SDS
Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
Environmental Protection Agency
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
National Institute of Technology and Evaluation (NITE)

Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine’s PubMed database (NLM PUBMED)
U.S. National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set
World Health Organization

Issuing Date	08-Apr-2025
Revision date	08-Apr-2025
Revision Note	No information available.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet