



COPPER SULFATE

Granular Algae Control

ACTIVE INGREDIENT

Copper Sulfate Pentahydrate* : CAS # 7758-99-899.0%

OTHER INGREDIENTS.....1.0%

TOTAL.....100%

*Metallic Copper Equivalent: 25.2%



Certified to ANSI/NSF 6

**KEEP OUT OF REACH
OF CHILDREN
DANGER**

ATTENTION: This product contains chemicals known to the State of California to cause cancer and birth defects.

EPA Reg. No. 46923-4-87370

EPA Est. No. 88802-FL-001

Distributed By: BioNova Corp.
7300 North Kendall Drive, Suite 521
Miami, FL 33456

Net Weight: 15 pounds (6.803 Kg)



FIRST AID	
If in eyes	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If swallowed	<ul style="list-style-type: none"> • Call a poison control center or doctor for treatment advice. • Have a person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If inhaled	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. • Call poison control center or doctor for further treatment advice.
If on skin or clothing	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call poison control center or doctor for further treatment advice.
HOT LINE SERVICE	
Have the product container or label with you when calling a poison control center or doctor, or for going for treatment. You may contact 800-275-3924 for emergency medical information.	
NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage.	

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER: Corrosive. Causes irreversible eye damage. May be fatal if swallowed. Do not get in eyes or on clothing. For applications in waters destined for use as drinking water, those waters must receive additional and separate potable water treatment. Do not apply more than 1.0 ppm as metallic copper to these waters.

PERSONAL PROTECTIVE EQUIPMENT

Mixers, Loaders, Applicators and other handlers must wear the following: Long sleeve shirt, long pants, shoes plus socks, protective eyewear such as glasses with side shields, chemical resistant gloves made of any waterproof material such as polyethylene or polyvinyl chloride, disposable particulate dust mask NIOSH approved N95. Some materials that are chemical resistant to this product are rubber and latex. If you want more options, follow the instructions for category A on an EPA chemical resistant category selection chart. Follow manufacturer's instructions for cleaning or maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with product's concentrate. Do not reuse them.

USER SAFETY RECOMMENDATIONS

- Users should wash hands before eating, drinking, chewing gum, using tobacco, or using toilet.

- Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Users should remove PPE immediately after handling this product. As soon as possible, wash thoroughly and change into clean clothing. Wash outside of gloves before removing.

ENVIRONMENTAL HAZARDS

AQUATIC USES: This product is toxic to fish and aquatic invertebrates. Water treated with this product and may be hazardous to aquatic organisms. Treatment of aquatic weeds and algae can result in oxygen loss from decomposition of dead algae and weeds. The oxygen loss can cause fish and invertebrate suffocations. To minimize this hazard, do not treat more than ½ of the water body to avoid depletion of oxygen due to decaying vegetation. Wait at least 14 days between treatments. Begin treatment along the shore and proceed outwards in bands to allow fish to move into untreated areas. Consult with State or local agency with primary responsibility for regulating pesticides before applying to public waters to determine if a permit is required.

Certain water conditions including low pH (<6.5), low dissolved organic carbon (DOC levels (3.0 mg or lower), and soft waters (ie. Alkalinity less than 50 mg/L), increase the potential acute toxicity to non-target aquatic organisms.

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Alkalinity less than 50 mg/L), increase the potential acute toxicity to non-target aquatic organisms.

TERRESTRIAL USES: This pesticide is toxic to fish and aquatic invertebrates and may contaminate water through runoff. This product has a potential for runoff for several months or more after application. Poorly drained soils and soils with shallow water tables are more prone to product runoff that contains this product. Drift and runoff may be hazardous to aquatic organisms adjacent to treated areas. Do not apply directly to water, or to area where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash water or rinsate.

DIRECTIONS FOR USE

It is a violation of federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact adults, children, or pets, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribes, consult the agency responsible for pesticide regulation

NON AGRICULTURAL USE REQUIREMENTS

The requirement in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard. For agricultural pesticides (40 CFR. Part 170). The WPS applies when the product is used to produce agricultural plants on farms, forest, nurseries or green-houses. Applicators and other handlers who handle this product for any use NOT covered by the Worker Protection Standard (CFR 40

Part 170) must wear long sleeve shirt, chemical resistant gloves made of water-proof material such as rubber or latex, shoes plus socks and protective eyewear, wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse. Do not allow adults, children or pets to enter treated areas until sprays have completely dried or if applied dry until dust settles.

STORAGE AND DISPOSAL

Do not contaminate food or feed by storage or disposal.

PESTICIDE STORAGE: Store in original container and place in a locked storage area.

PESTICIDE DISPOSAL: Call your local solid waste agency for disposal instructions. Unless otherwise instructed, place in trash. Never pour unused product down the drain or on the ground.

CONTAINER DISPOSAL: If empty - Non-refillable container. Do not reuse or refill this container.

Do not rinse unless required for recycling. Place in trash or offer for recycling of available.

If partially filled - Call your local solid waste agency for disposal instructions. Unless otherwise instructed, place in trash. Never pour unused product down a drain or on the ground.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

ALGAE CONTROL

When using Copper Sulfate to control algae, there are many factors to consider such as water hardness, temperature of the water, type and quantity of vegetation to be controlled and the amount of water flow. Algae can be controlled more easily and effectively if treatment with Copper Sulfate is made soon after plant growth has started. Under such circumstances, small amounts of Copper Sulfate can effectively control algae in water. However, if treatment is delayed until large amounts of algae are present larger quantities of Copper Sulfate will be required. Control of algae in water systems is not always permanent. Usually algae is more difficult to control with Copper Sulfate when water temperatures are low. The dose rates for Copper Sulfate are based on a water of 60 ° F or higher. Larger amounts of Copper Sulfate will be required in hard water. Normally, larger quantities of Copper Sulfate will be required to kill algae in water that is flowing than in a body of stagnant water: If possible, curtail the flow of water before treatment and hold dormant for about three days after treatment or until plants have begun to die. When preparing a Copper Sulfate solution in water, it is best that the mixing vessel be made of plastic or glass. Metal containers lined with plastic or painted or enameled are permissible. Galvanized containers are to be avoided. It is best to treat algae on calm, sunny days when heavy mats of filamentary algae are most likely to be floating on the surface where it can be sprayed directly. When in doubt about the concentration to be used, it is recommended to start with a lower concentration and gradually increase the concentration until the algae is killed.

CALCULATIONS FOR AMOUNT OF WATER AND COPPER SULFATE PENTAHYDRATE TO BE USED.

A. Calculate water volume as follows:

1. Obtain surface area by measuring regular shaped ponds or mapping irregular ponds or by use of a previously recorded data or maps.
2. Calculate average depth by sounding in a regular pattern and taking the mean of these readings or by use of previously recorded data.
3. Multiply surface area by square feet by average depth in feet to obtain cubic feet of water volume, or
4. Multiply surface area in acres by average depth in feet to obtain total acre feet of water volume.

B. Calculate weight of water to be treated as follows:

1. Multiply volume in cubic feet by 62.44 to obtain total pounds of water, or
2. Multiply volume in acre feet by 2,720,000 to obtain total pounds of water.

C. Calculate amount of Copper Sulfate Pentahydrate to add:

To calculate the weight of Copper Sulfate Pentahydrate needed to achieve the desired concentration, multiply the weight of water in pounds by the recommended concentration. Since the recommended concentrations are given in parts per million (ppm), first convert the value to a decimal equivalent. A value of 1 ppm is equivalent 0.000001 as a decimal value. Thus the amount of Copper Sulfate Pentahydrate required to treat 1 acre-foot (2,720,000 pounds) of water with 1 ppm of Copper Sulfate Pentahydrate would be $0.000001 \times 2,720,000 = 2.72$ lbs. Copper Sulfate Pentahydrate.

FOR SMALL PONDS: Follow the directions in "A" above. Calculate the weight of water to be treated by multiplying the volume in cubic feet by 62.44 to obtain total pounds of water. For 1 ppm of Copper Sulfate multiply the pounds by .000001. The result is pounds of Copper Sulfate. The amount of Copper Sulfate to treat a pond 100 ft by 100 ft by 2 ft deep: $100 \times 100 \times 2 = 20,000 \text{ ft}^3$ $20,000 \text{ cu ft} \times 62.44 \text{ lbs} = 1,248,800 \text{ lbs of water}$ $\times .0001 = 1.25 \text{ pounds of Copper Sulfate}$.

Treatment of algae can result in oxygen loss for decomposition of dead algae. This loss can cause fish suffocation. Therefore to minimize this hazard, treat $\frac{1}{3}$ to $\frac{1}{2}$ of the water area in a single operation and wait 14 days between treatments. Begin treatments along the shore and proceed outwards in bands to allow fish to move into untreated water. NOTE: If treated water is to be used as a source of potable water, the metallic copper residual must not exceed 1 Ppm (4 ppm Copper Sulfate Pentahydrate).

SPECIFIC INSTRUCTIONS

TO CONTROL ALGAE AND THE POTOMOGETON POND WEED, LEAFY SAGO IN IRRIGATION SYSTEMS: Once the amount of Copper Sulfate required for treating ditches or streams has been calculated, use a continuous application method, selecting proper equipment to supply Copper Sulfate crystals as follows:

FOR ALGAE CONTROL- Begin continuous addition of Copper Sulfate crystals when water is first turned into the system and continue throughout the irrigation system, applying 0.1 to 0.2 pounds per cubic

foot per second per day.

FOR LEAFY AND SAGO POND WEED CONTROL- Use the same continuous feeder applying 1.6 to 2.4 pounds Copper Sulfate Pentahydrate per cubic foot per second per day. **NOTE:** For best control of leafy and sago pond weed, it is essential to begin Copper Sulfate additions when water is first turned into the system or ditch to be treated and to continue through the irrigation system. Copper Sulfate becomes less effective as the alkalinity increases. Its effectiveness is significantly reduced when the bicarbonate alkalinity exceeds 150 ppm. Should Copper Sulfate fail to control pond weeds satisfactorily, it may be necessary to treat the ditch with either a suitable approved herbicide or use of a mechanical means to remove excess growth. In either case, resume Copper Sulfate addition as soon as possible.

TO CONTROL ALGAE IN IRRIGATION CONVEYANCE SYSTEMS USING THE SLUG APPLICATION METHOD: Make an addition (dump) of Copper Sulfate into the irrigation ditch or lateral at 0.25 to 2.0 pounds per cubic foot per second of water per treatment. Repeat at approximate two-week intervals as required. Depending on water hardness, alkalinity and algae concentrations, a dump is usually required every 5 to 30 miles. Effectiveness of Copper Sulfate decreases as the bicarbonate alkalinity increases and is significantly reduced when the alkalinity exceeds approximately 150 ppm as CaCO_3 .

TO CONTROL ALGAE IN RICE FIELDS: (Domestic and Wild): Application should be made when algae has formed on the soil surface in the flooded field. Applications are most effective when made prior to algae leaving the soil surface and rising to the surface of the water. For a

3-inch flood depth, apply Copper Sulfate at a rate of 2.72 lbs. per acre at the first sign of algae. Apply Copper Sulfate crystals to the surface of the water or dissolve in water and make a surface spray. For a 6-inch flooded depth, use 5.44 lbs. per acre. Adjust the rate according to the average water depth, not to exceed the maximum application rate of 4 ppm of Copper Sulfate (1 ppm metallic copper), which is equivalent to 10.88 lbs. of Copper Sulfate per acre-foot of water. The minimum retreatment interval is 14 days.

TO CONTROL TADPOLE SHRIMP IN RICE FIELDS: Application should be made to the flooded rice fields anytime the pest appears from planting time until the seedlings are well rooted and have emerged through the water. For a 3-inch flood depth, apply 6.75 pounds per acre. For a flood depth of 6 inches, use 13.6 lbs. per acre. Adjust the rate according to the average water depth, not to exceed the maximum application rate of 10 ppm of Copper Sulfate (2.5 ppm metallic copper), which is equivalent to 27.2 pounds of Copper Sulfate per acre of water.

TO CONTROL ALGAE IN ROUNDED WATER, LAKES, PONDS AND RESERVOIRS: There are several methods by which to apply Copper Sulfate to impounded water. Probably the simplest and the most satisfactory method is to dissolve the Copper Sulfate crystals in water and spray the solution over the body of water. A small pump mounted in the boat can easily be used for this purpose. Copper Sulfate may be broadcast directly on the water surface from a properly equipped boat. A specially equipped air blower can be used to discharge these size crystals at a specific rate over the surface of the water. When using this

method, the wind direction is an important factor. Do not use this method unless completely familiar with this type of application. Copper Sulfate is also designed to be used as a dry application from airplanes, using a maximum of 5.3 pounds per acre-foot. Where the situation permits, Copper Sulfate may be applied under the water by dragging burlap bags filled with Copper Sulfate through the water by means of a boat. Begin treatment along the shoreline and proceed outward until $\frac{1}{3}$ to $\frac{1}{2}$ of the total area has been treated. Care should be taken that the course of the boat is such as to cause even distribution of the chemical. In large lakes, it is customary for the boat to travel in parallel lines about 20 to 100 feet apart. Continue dragging the burlap bags over the treated area until the minimum dosage is achieved and all the crystals have been dissolved. The minimum treatment interval is 14 days.

COPPER SULFATE REQUIRED FOR TREATMENT OF DIFFERENT GENERA OF ALGAE:

The genera of algae listed below are commonly found in impounded water, lakes, ponds, and reservoirs in the United States. Use the lower recommended rate of Copper Sulfate in soft waters (less than 50 ppm methyl orange alkalinity) and higher concentration in hard water (above 50 ppm alkalinity).

NOTE: Do not use concentration of $1\frac{1}{2}$ ppm or more where fish are present. Concentrations up to 6 ppm are permitted in waters such as rice fields where fish are not present. Always consult State Fish and Game Agency before applying this product to municipal waters.

CONCENTRATION:	¼ TO ½ ppm	½ TO 1 ppm	1 TO 1½ ppm	1½ TO 2 ppm
POUNDS/ACRE FOOT:	.67 TO 1.3	1.3 TO 2.6	2.6 TO 3.9	3.9 TO 5.3
ORGANISM Cyanophyceae (Blue Green)	Anabaena Anacystis Aphanizomenon Gloeotrichia Gomphosphaeria Polycystis Rivularia	Cylindrospermum Oscillatoris Pleustonema	Nostoc Phormidium	Calothrix Symplocia
Chlorophyceae (Green)	Closterium Hydrodictyon Spirogyra Ulothrix	Botryococcus Cladophora Coelastrum Drapamaldia Enteromorpha Gloeocystis Microspora Tribonema Zygnema	Chlorella Crucigenia Desmidiium Golenkinia Oocystis Palmelia Pithiphora Staurostrum Tetraedron	Ankistrodesmus Chara Nitella Scenedemus
Diatomaceae (Diatoms)	Asterionella Fragilaria Melorisa Navicula	Gomphonema Nitzschia Stephanodiscus Synedra Tabellaria	Achnanthes Cymbella Neidium	
Protozoa (Flagellates)	Dinobryon Synura Uroglena Volvox	Ceratium Cryptomonas Euglena Glenodinium Mallomonas	Chlamydomonas Hawmatococcus Peridinium	Eudorina Pandorina

SEWER TREATMENT-ROOT DESTROYER ROOT CONTROL GENERAL INFORMATION

Plant roots can penetrate through small cracks and poorly sealed joints of sewer lines. If not controlled, these small roots will continue to grow larger in number causing breakage, reduced flow and eventually flow stoppage. This product has been known to be an effective means to control roots in residential and commercial sewers.

ROOT COMMERCIAL, INSTITUTIONAL AND MUNICIPAL SEWERS CONTROL IN SEWERS.

As a preventative measure, apply into each junction or terminal manhole. Two pounds of this product every 6 to 12 months. At time of reduced flow (some water is essential) add this product. If flow has not completely stopped, but has a reduced flow due to root masses, add this product in the next manhole above the reduced flow area. For complete stoppage, penetrate the mass with a rod to enable some flow before treatment.

ROOT CONTROL IN STORM DRAINS:

Apply when water flow is light. If no water flow, as in dry weather, use a hose to produce a flow. Apply 2 pounds of this product per drain per year. It may be necessary to repeat treatments 3 to 4 times at 2 week intervals if drains become nearly plugged.

SEWER PUMPS AND FORCE MAINS:

At the storage well inlet, place a cloth bag containing 2 lbs. of this product. Repeat as necessary.

RESIDENTIAL OR HOUSEHOLD SEWER SYSTEMS:

When a reduced water flow is first noticed, and root growth is thought to be the cause, treat with this product. It is important not to wait until a stoppage occurs because some water flow is necessary to move this product to the area of root growth. Usually, within 3 to 4 weeks, after roots have accumulated sufficient Copper Sulfate Pentahydrate, the roots will

die and begin to decay and water flow should increase. As the roots re-grow, follow-up treatments with this product may be required every 6 months. Applications may be made each year in the spring after plant growth begins, during late summer or early fall, or anytime a reduced water flow, thought to be caused by root growth, occurs. Apply one pound of this product every six months to household sewers. Add this product to sewer lines by pouring about ½ pound increments into the toilet bowl nearest the sewer line and flush. Repeat this process until recommended dose has been added. Or remove cleanout plug and pour entire recommended quantity directly into the sewer line. Replace the plug and flush toilet several times. Do not apply Copper Sulfate through sink or tub as it will corrode metal drains. If system is equipped with septic tank, Copper Sulfate will precipitate in the septic tank and little will pass into the absorption drain field. To treat drain field pipes, add 2 pounds of Copper Sulfate once a year to the distribution box located between the septic tank and the drain field. If the distribution box does not have an opening, it would be advisable to install a clean out plug opening into the outlet pipe from the septic tank leading to the drain field for effective root control in the drain field pipes.

***NOTE:** Do not use a sewer additive where prohibited by State Law. State Law prohibits the use of this product in sewer systems in the State of Connecticut. Not for sale or use in California counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma for root control in sewers. Not for sale or use in septic systems in the State of Florida

WOOD TREATMENT

(Green, peeled posts)- fungus decay rot

Prepare a solution of 18.0 pounds of sodium chromate in each 26 gallons of water to be used and a separate second solution of 18.0 pounds of Copper Sulfate in each 24 gallons of water to be used; soak the peeled, green posts, butt end down first in the Copper Sulfate solution for 3 days, then butt end down in Sodium Chromate solution for 2 days, and finally,

turn the posts upside down in Sodium Chromate solution for 1 additional day. Remove and rinse posts with clear water.

CONDITION OF SALE
LIMITED WARRANTY AND LIMITATIONS
OF LIABILITY AND REMEDIES

Read and follow all package directions carefully. Purchaser and user assume all risks associated with improper use, or application or other factors beyond BioNova Corp's control. BioNova Corp. warrants that this product conforms to the chemical description on the label and is reasonably fit for the purpose referred to in the directions for use subject to the risks referred above. BIONOVA CORP.. MAKES NO AND THE LAW SHALL NOT FIND ANY EXPRESSED OR BULLED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. To the extent consistent with applicable law, purchaser's use and sole remedy against BioNova Corp. for any cause of action related to the handling or use of this product shall be for damages, for the amount of which shall not exceed the price paid for the product that causes the alleged loss, damages, injury, or other claim to the extent consistent with applicable law. In no event shall BioNova Corp. be liable for special, indirect, incidental or consequential damages or expenses. By purchasing or using this product, purchaser or user accept the foregoing conditions of sale and limitation of warranty, liability, and remedies.

ENVIRONMENTALLY HAZARDOUS
SUBSTANCE
SOLID, N.O.S. (CUPRIC SULFATE),
9, UN3077, PG III, RQ
CAS NO. 7758-99-8