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1812-374

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TENNESSEE BRAND® COPPER SULFATE CRYSTAL

g374s99a

GRANULAR MEDIUM LARGE **BRIQUETTE**

Active Ingredient:

Copper Sulfate Pentahydrate*	99.0%
Inert Ingredients	1.0%
Total	100.0%

(* Metallic copper equivalent 25.2%)

FOR

(See back for specific use directions.)

- Algae Control in Impounded Waters, Lakes, Ponds and Reservoirs
- Algae and Pondweed Control in Irrigation Conveyance Systems
- Control Root Growth in Sewers
- Wood Treatment to Prevent Fungus, Decay and Rot
- For Manufacturing, Repackaging, Formulation of Algacides, Fungicides, Wood Preservatives and Also Non-pesticidal Uses*

*Each formulator using this product to formulate an end use pesticide product is responsible for obtaining an EPA registration for his end use product.

KEEP OUT OF REACH OF CHILDREN

DANGER

STATEMENT OF PRACTICAL TREATMENT

IF IN EYES: Flush with plenty of water. Call a physician.

IF ON SKIN: Wash with plenty of soap and water. Get medical attention.

IF SWALLOWED: Drink promptly a large quantity of milk, egg white, gelatin solution, or, if these are not available, large quantities of water. Avoid alcohol.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage.

For medical emergencies involving this product, call toll free 1-800-237-1854.

See back panel for additional Precautionary Statements.

GRIFFIN L.L.C.

Valdosta, GA 31601

EPA Reg. No. 1812-374

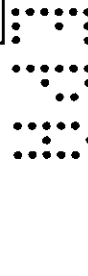
EPA Est. No. 

ACCEPTED

FEB 18 1999

Net Weight: _____

Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No. 1812-374



**PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS (AND DOMESTIC ANIMALS)
DANGER**

Causes severe eye and skin irritation. Harmful if absorbed through skin or inhaled. May cause skin sensitization reactions in certain individuals. Avoid contact with skin, eyes or clothing. Avoid breathing dust. Protective clothing, including goggles, should be worn. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

ENVIRONMENTAL HAZARDS

SPECIAL PRECAUTIONS when applying this product directly to water as an algacide or herbicide: This pesticide is toxic to fish. Direct application of copper sulfate to water may cause a significant reduction in population of aquatic invertebrates, plants and fish. Do not treat more than one-half of a lake or pond at one time in order to avoid depletion of oxygen from decaying vegetation. Allow 1 to 2 weeks between treatment for oxygen levels to recover. Trout and other species of fish may be killed at application rates recommended on this label, especially in soft or acid waters. However, fish toxicity generally decreases when as the hardness of water increases. Do not contaminate water by cleaning of equipment or disposal of wastes.

FOR MANUFACTURING USE: This pesticide is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or public other waters unless this product is specifically identified and addressed in an accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority, except when product is labeled for use in sewers and bears such use instructions. For guidance contact your State Water Board or Regional Office of the EPA.

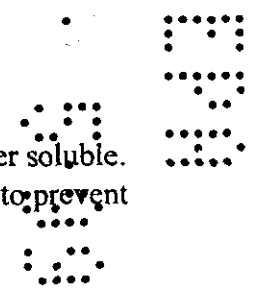
DIRECTIONS FOR USE

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

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.

STORAGE: Store product in a secure dry place. Keep product dry as product is water soluble. When opening, closing or handling open packages, or pouring product, wear goggles to prevent



dusting into eyes. Spilled product should be swept up, used if clean, or disposed of according to the procedures below. Store product only in original container. Store pesticide separately to prevent cross-contamination of other pesticides, fertilizers, food and feed.

DISPOSAL: Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or if allowed by State and local authorities, by burning. If burned, stay out of smoke.

Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

GENERAL INSTRUCTIONS FOR USE

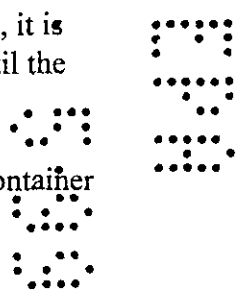
Do not apply this product through any type of irrigation system.

Tennessee Brand Copper Sulfate Crystal effectively controls many species of both filamentous (mat forming green) and planktonic (single cell blue-green) algae.

Use Tennessee Brand Copper Sulfate Crystal as noted below. When using Tennessee Brand Copper Sulfate Crystal to control algae, there are many factors to consider: water hardness; temperature of the water; kind and amount of vegetation to be controlled; and the amount of water flow.

Algae can be controlled more easily and effectively if treatment with Tennessee Brand Copper Sulfate Crystal is made soon after plant growth has started. Small amounts of copper sulfate can effectively control algae in water. However, if treatment is delayed until a large amount of algae is present, larger quantities of copper sulfate may be required. Control of algae in water systems is not always permanent. Usually algae is are more difficult to control with copper sulfate when water temperatures are low. The dose rates recommended for copper sulfate are based on water temperatures of 60°F or above. Larger quantities of copper sulfate will also be required in hard water. Normally, larger quantities of copper sulfate will be required to kill algae in water which is flowing than in a body of stagnant water. If possible, curtail the flow of water before treatment and hold dormant for approximately three days after treatment or until the plants have begun to die. It is usually best to treat algae on a sunny day when the heavy mats of filamentary filamentous algae are most likely to be floating on the surface where it they can be sprayed directly. If there is some doubt about the concentration to apply, it is generally best to start with a lower concentration and to increase this concentration until the algae is are killed.

NOTE: When preparing a copper sulfate solution in water, it is best that the mixing container



be made of glass or plastic or if a metal container is used, that it be either painted, enameled or copper-lined. The use of a galvanized container causes a chemical reaction to take place by which the copper displaces the galvanized coating of the container.

NOTE: This product may be reactive on metal and masonry surfaces such as galvanized roofing. Avoid contact with metal surfaces. Do not spray on cars, houses, lawn furniture, etc.

NOTE: It must be determined in the selection process if proper application equipment is available and if the waste associated with its use can be properly handled. Agricultural chemicals are often reactive with the materials used in the construction of application equipment, is also an important factor as agricultural chemicals are often reactive with soft metals such as aluminum, rubber and even some synthetic materials, such as plastics, rubbers, etc. This factor should be taken into consideration when selecting proper application equipment. Therefore, It is necessary when working with that all application equipment containing these materials that they are be thoroughly flushed with clean water after each day's use.

CALCULATIONS FOR THE AMOUNT OF WATER IMPOUNDED AND FOR THE AMOUNT OF TENNESSEE BRAND COPPER SULFATE CRYSTAL TO BE USED

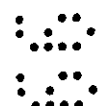
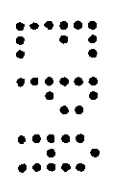
Calculate water volume as follows:

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

NOTE: If treated water is to be used as potable water, the residual copper content must not exceed 1 ppm (4 ppm copper sulfate pentahydrate).

ALGAECIDE

Tennessee Brand Copper Sulfate Crystal can be used in Slow Moving or Quiescent Bodies of Water, including: Lakes; Potable Water Reservoirs; Golf, Farm, Fish and Fire Ponds; Fish Hatcheries; and Crop and Non-Crop Irrigation Conveyance Systems, Ditches, Canals and Laterals.

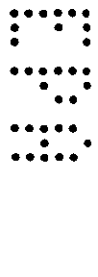


LAKES, POTABLE WATER RESERVOIRS, PONDS (Golf, Farm, Fish and Fire), FISH HATCHERIES, AND CROP AND NON-CROP IRRIGATION CONVEYANCE SYSTEMS, DITCHES, CANALS AND LATERALS:

Tennessee Brand Copper Sulfate Crystal kills filamentous and planktonic algae in water. Apply at a rate of 3 to 6 pounds per acre foot of water (0.27 ppm to 0.54 ppm ~~(Ca)~~ copper in the treated water). Apply as a uniform surface spray dissolved in at least 3 to 5 gallons of water using boat, plane or other pressurized spray device. Apply twice yearly or as needed. Determine the number of acre feet of water to be treated. An acre foot of water is equal to one acre of water one foot deep which equals 328,000 gallons or 2,720,000 pounds.

How to Apply: Tennessee Brand Copper Sulfate Crystal can be applied to impounded water by the following methods:

1. **Application by Dragging under Water:** Tennessee Brand Copper Sulfate Crystal can be applied by dragging it in a burlap or finer mesh bag attached to a boat or float so that bags are suspended in the top foot of water until the crystals are dissolved. Drag the bag of crystals first near the shoreline and continue outward by moving as the boat travels in parallel lines about 20 to 100 feet apart until area has been treated or until 1/3 to 1/2 of the surface area has been treated. Continue dragging bag over treated area until the required minimum dose is applied and all crystals are dissolved. Determine the quantity of crystals needed to treat the problem area following directions and precautions on this label.
2. **Application by Spraying Solution on Water Surface:** Dissolve the minimum required dose of Tennessee Brand Copper Sulfate Crystal in water and spray the solution uniformly over the body of water. When spraying a solution of copper sulfate, mix copper sulfate in sufficient water to thoroughly spray the water surface. While the volume per surface acre depends on the type of spray equipment being used, spray volume should be approximately 20 to 500 or more gallons per acre of surface water. Several types of solutioning and spraying equipment may be used. Observe previous cautions on the effect of copper sulfate solution on various metals in spraying containers.
3. **Application by Broadcasting:** Dry Tennessee Brand Copper Sulfate Crystal can be broadcast on the water surface using a properly equipped boat. An air blower can be used to discharge these 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.
4. **Application by Spraying from Airplanes and Helicopters:** Professional personnel licensed by the State Agricultural Extension Service are allowed to apply dry Tennessee Brand Copper Sulfate Crystal in some states.



CROP AND NON-CROP IRRIGATION CONVEYANCE SYSTEMS, DITCHES, CANALS AND LATERALS: Tennessee Brand Copper Sulfate Crystal controls the *Potamogeton* pondweeds, leafy and sago.

How to Apply: Tennessee Brand Copper Sulfate Crystal can be applied to irrigation conveyance systems by the following methods:

1. **Continuous Application Method:** Apply 1.6 to 2.4 pounds per cubic foot per second per day.

Note: For best control of leafy and sago pondweed, it is essential to begin copper sulfate additions when water is first turned into the system or ditch to be treated and continue throughout the irrigation season. Copper sulfate becomes less effective as the bicarbonate alkalinity increases. Its effectiveness is significantly reduced when the bicarbonate alkalinity exceeds about 150 ppm as calcium carbonate (CaCO₃). Should copper sulfate fail to control pondweeds satisfactorily, it may be necessary to either treat the ditch with either a suitable approved herbicide or use mechanical means to remove excess growth. In either case resume copper sulfate addition as soon as possible.

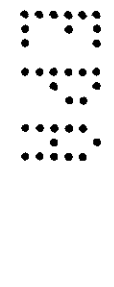
2. **Slug Application Method:** Make a dump of Tennessee Brand Copper Sulfate Crystal into the irrigation ditch or lateral at 1/4 to 2 pounds per second of water per treatment. Repeat about every 2 weeks as needed. A dump is usually necessary every 5 to 30 miles depending on water hardness, alkalinity, and algae concentration. Copper sulfate becomes less effective as the bicarbonate alkalinity increases. Its effectiveness is significantly reduced when the bicarbonate alkalinity exceeds about 150 ppm as calcium carbonate (CaCO₃).

SEWER TREATMENT - ROOT DESTROYER*

GENERAL INFORMATION: Roots of shrubbery and trees growing near sewer lines frequently penetrate sewer lines in search of moisture and nutrients, even through extremely small cracks, holes, or poorly sealed joints. These tiny root hairs, if not controlled, will continue to grow both in diameter and number, causing tile breakage, gradual reduced flow, and frequently flow stoppage. Copper sulfate has successfully controlled roots for over 50 years in residential and commercial sewers.

To control root growth in Commercial, Institutional, and Municipal Sewers use as follows:

SEWERS: Use 2 pounds of Tennessee Brand Copper Sulfate Crystal every 6 to 12 months, applied into each junction or terminal manhole as a preventive measure. Add copper sulfate



during periods of reduced flow; however, ~~a small~~ some flow is essential. If reduced flow due to root masses is observed, but flow has not completely stopped, add the copper sulfate in the next manhole above the reduced flow area. If completely blocked, use a rod to penetrate the mass so some flow begins before treatment.

STORM DRAINS: Use 2 pounds of Tennessee Brand Copper Sulfate Crystal per drain per year. Apply during a period of light water flow. In dry weather, introduce a flow with a hose. If storm drains become almost plugged, repeat treatment 3 or 4 times at 2-week intervals.

SEWER PUMPS AND FORCE MAINS: Place 2 pounds of Tennessee Brand Copper Sulfate Crystal in a cloth bag at the storage well inlet. Repeat as needed.

To control root growth in Residential or Household Sewer Systems use as follows:

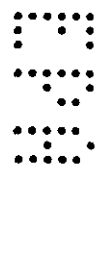
Make treatment when the reduced flow rate thought to be caused by root growth is first noticed. Do not delay until stoppage has occurred because ~~even a slight~~ some flow is needed to move Tennessee Brand Copper Sulfate Crystal to root growth. When roots accumulate sufficient copper sulfate to cause death, root decay will begin and flow rate should increase in 3 to 4 weeks. Since copper sulfate treatment usually kills only those roots in the pipe, roots will regrow, requiring follow-up treatments. Generally make a treatment in the spring after plants begin to grow, with a second treatment during late summer or early fall each year, and/or any time when reduced flow possibly caused by root growth is noted.

HOW TO USE TENNESSEE BRAND COPPER SULFATE CRYSTALS: In household sewers use 2 to 6 pounds of crystals twice yearly. ~~as discussed before.~~ Add Tennessee Brand Copper Sulfate Crystal to sewer line by pouring about 1/2 pound into the toilet bowl nearest to the sewer line and flush, repeating process until recommended dose has been added, or remove cleanout plug and pour entire recommended quantity directly into the sewer line, replacing plug and flush toilet several times. ~~Do not attempt to flush Briquette size down the toilet as blockage may result.~~

If system is equipped with a septic tank, copper sulfate will be precipitated in the septic tank and little will pass into the absorption drain field. To treat drain field pipes, add 2 to 6 pounds of Tennessee Brand Copper Sulfate Crystal to distribution box located between the septic tank and the drain field. If distribution box does not have an opening, it would be advisable to install a cleanout 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 apply Tennessee Brand Copper Sulfate Crystal through sink or tub drains as it will corrode these metal drains.

NOTE: Laboratory studies have shown that copper sulfate added to an active 300 gallon septic

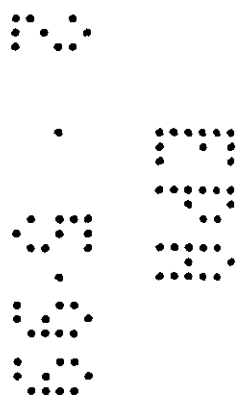


tank at 2, 4 and 6 pounds per treatment temporarily reduced bacterial action, but ~~was again~~ it returned to normal 15 days after treatment. Trees and shrubbery growing near a treated line normally will have only a small portion of ~~their its total~~ roots in contact with the copper sulfate that primarily kills only those roots inside the pipe, thus not affecting the growing plants.

***Do not use as a sewer additive where prohibited by State law. State law prohibits the use of this product in sewage systems in the State of Connecticut.**

**WOOD TREATMENT
(green peeled posts material)**

Prepare a solution of ~~18 pounds of sodium chromate~~ sodium dichromate, sodium dichromate dihydrate or other registered inorganic wood treatment salt in accordance with label directions. ~~in each 26 gallons of water, to be used and a separate second solution of 18 pounds of copper sulfate in each 24 gallons of water to be used;~~ Soak the peeled, green material posts, butt end down first in the copper sulfate in this solution for up to 3 days. ~~then butt end down in the sodium chromate solution for 2 days, and finally turn the post upside down in the sodium chromate solution for 1 additional day~~ Prepare a solution of 18 to 36 pounds of Tennessee Brand Copper Sulfate Crystal in each 24 gallons of water (do not use more than 1.5 pounds per gallon of water); then soak the green material in the Tennessee Brand Copper Sulfate Crystal solution for up to three additional days, remove and rinse posts green material with clear water.



WARRANTY STATEMENT

GRIFFIN warrants that this product conforms to the chemical description on the label thereof and is reasonably fit for purposes stated on such label only when used in accordance with directions under normal use conditions. It is impossible to eliminate all risks inherently associated with use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of GRIFFIN. In no case shall GRIFFIN be liable for consequential, special or indirect damages resulting from the use or handling of this product. All such risks shall be assumed by the Buyer. The exclusive remedy of any buyer or user of this product for any and all losses, injuries, or damages resulting from or in any way arising from the use, handling or application of this product, whether in contract, warranty, tort, negligence, strict liability or otherwise, shall not exceed the purchase price paid for this product or at GRIFFIN'S election, the replacement of this product. GRIFFIN MAKES NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

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