

10103-10

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NET CONTENTS \_\_\_\_\_ GALLONS

# MOUNTAIN BRAND COPPER SULFATE LIQUID

## ACTIVE INGREDIENT

Copper sulfate anhydrous ..... 15.0%

## INERT INGREDIENTS

..... 85.0%

(Copper as Metallic ..... 8%)

One gallon contains 0.58 lbs copper as metallic which equals 2.3 lbs copper sulfate pentahydrate or Bluestone. Specific gravity of solution = 1.18.

## CAUTION

### PRECAUTIONARY STATEMENTS

### HAZARD TO HUMANS AND DOMESTIC ANIMALS

Harmful if swallowed. Avoid contact with skin, eyes, or clothing.

### STATEMENT OF PRACTICAL TREATMENT:

If in eyes or on skin, flush with plenty of water for at least 15 minutes. If in eyes, call a physician. If on skin, wash with soap and water. Remove contaminated clothing before reuse. If swallowed, promptly drink large quantities of milk, egg white or gelatin solution. If these are not available, drink large quantities of water. Call a physician immediately.

Note to Physicians: Probably mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression, and convulsion may be needed.

### ENVIRONMENTAL HAZARDS:

Trout and certain other fish species may be killed at application rates recommended on this label, especially in soft or acid waters. However, fish toxicity generally decreases when the hardness of the water increases. If the entire water body is to be treated, treat only 1/3 to 1/2 of the water area in a single operation and wait 10 to 14 days between treatments. Consult your State Fish and Game Agencies before applying this product, especially to public waters. Do not contaminate water by cleaning of equipment or disposal of wastes. Avoid contact with or drift to desirable plants or crops since the concentrated product may cause injury.

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

FOR:

- Algae control in impounded waters, lakes, ponds, and reservoirs.
- Algae and Potamogeton pond weed control in potable water or irrigation conveyance systems.
- Preparation of a Bordeaux spray to control certain plant diseases.
- Also for manufacturing, repackaging, formulating algicides, fungicides, and other non-pesticidal uses.

Keep Out of Reach of Children

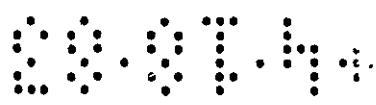
## CAUTION

See side panel of label for additional precautionary and statement of practical treatment.

EPA Reg. No. 10103-10

EPA Est. No. 10103-CA-1

TENNESSEE CHEMICAL COMPANY  
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APR 22 1984

## DIRECTIONS FOR USE

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

## STORAGE AND DISPOSAL

**STORAGE:** This material undiluted is corrosive to metal and should not be allowed to remain in contact with metal application and spray equipment that are not stainless steel. Rinse spray equipment thoroughly after use. Preferably store and handle product in glass, plastic, fiberglass, stainless steel or other materials not corroded by strong acids. Store product above 35° F.

Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited.

**PESTICIDE DISPOSAL:** Pesticide, spray mixture or rinsate that cannot be used or chemically reprocessed should be disposed of according to procedures approved by Federal, State or Local Disposal Authorities.

**CONTAINER DISPOSAL:** Metal or Plastic-Triple rinse (or equivalent) and offer for recycling or reconditioning, or dispose of in a sanitary landfill, or by other approved State and Local procedures, or if plastic, by incineration if permitted by State and Local authorities.

**GENERAL:** Consult Federal, State, or Local Disposal Authorities for approved alternative procedures.

## ALGAE CONTROL

### General Instructions:

This liquid copper sulfate product is easy and ready to use to control algae in potable or irrigation water including reservoirs, ponds, lakes, irrigation or potable water conveyance systems.

Copper sulfate effectively controls many species of both filamentous (mat forming green algae) and planktonic (single cell blue-green) algae. The dose of copper sulfate and control are affected by algae species, water hardness, water temperature, amount of algae present, as well as whether water is clear, turbid, flowing, or static. Preferably water should be clear and above 60° F, with treatment made in the late morning on a sunny day. Static water usually requires less copper sulfate than flowing water. The harder the water, the higher the required dose of copper sulfate. When mats of filamentous algae are floating, the surface of these mats should be sprayed. Algae will absorb the copper sulfate within hours after treatment, and death should be evident within 3 to 5 days. If there is some doubt about the concentration to apply, it is generally best to begin with a lower dose and increase the dose until the algae are killed. (A few algae species are resistant to copper sulfate treatment and may not be killed.) Repeat treatments may be needed to keep algae under control to the desired levels.

Treatment of algae can result in oxygen loss from the water caused by the decay of dead algae. This loss can cause fish suffocation. To minimize this hazard, treat 1/3 to 1/2 of the water area in a single operation and wait 10 to 14 days between treatments. Begin treatments along the shore and proceed outwards in bands to allow fish to move into untreated water.

## 1. For Algae Control in Reservoirs, Lakes, and Ponds:

**When to Apply:** Early treatment is essential for most satisfactory dosage levels. Early growth is usually confined to shallower when not over 5 to 10% of the water surface area is covered usually nearest the shoreline. Delaying treatment until heavy usually requires a higher dose and may result in fish distress. Situation of heavy growths greatly reduces the oxygen content of treatments are usually necessary to control algae each season.

**Dosage Rates to Control Algae:** First, accurately determine the treated at one time and multiply this by the average depth determine the acre feet of water to be treated. One acre foot = x one foot of depth. Each acre foot of water contains 326,000 g water. Secondly, if the problem algae genera is known, use the lence to determine the approximate dosage of this product ne the genera of either filamentous or planktonic algae is not kn product per acre foot of water, using the lower rate in soft w water. For control of bottom-attached algae Chara and Nitella of water to be treated. If control is not achieved or in very adve needed, but consider the fish species.

## COPPER SULFATE REQUIRED FOR TR DIFFERENT GENERA OF AL

The genera of algae listed below are commonly found in water lower recommended rate in soft waters (less than 50 ppm me higher concentration in hard water (above 50 ppm alkalinity). A Game Agency before applying this product to public waters.

ORGANISM	1/4 to 1/2 ppm*	1/2 to 1 ppm*	1 to 1-	
Cyanophyceae (Blue-green)	Anabaena			
	Anacystis			
	Aphanizomenon			
	Gloeoetrichia			
	Gomphosphaeria			
	Polycystis			
Chlorophyceae (Green)	Rivularia			
	Closterium			
	Hydrodictyon			
	Spirogyra			
	Ulothrix			
	Diatomaceae (Diatoms)	Asterionella		
Fragilaria				
Melosira				
Navicula				
Protozoa (Flagellates)		Dinobryon		
		Synura		
	Jroglina			
	Volvox			
	Cylindrospermum			
	Oscillatoris			
Plectonera				
Botryococcus				
Cladophora				
Coelastrum				
Draparnaldia				
Enteromorpha				
Gloeocystis				
Microspora				
Tribonema				
Zygnema				
Gomphonema				
Nitzschia				
Stephanodiscus				
Synedra				
Tabellaria				
Ceratium				
Cryptomonas				
Euglena				
Glenodinium				
Mallomonas				
Nostoc				
Phorm				
Chlorel				
Crucige				
Desmic				
Golenk				
Oocysti				
Palmel				
Pithoph				
Staur				
Tetraec				
Achna				
Cymbe				
Neidiu				
Chlamy				
Hawm				
Peridin				

PPM CuSO<sub>4</sub> pentahydrate = Quarts of this product

\*1/4 to 1/2 ppm = 1.2 to 2.4 qts/acre foot of water

\*1/2 to 1 ppm = 2.4 to 4.5 qts/acre foot of water

\*1 to 1-1/2 ppm = 4.5 to 6.8 qts/acre foot of water

\*1-1/2 to 2 ppm = 6.8 to 9.3 qts/acre foot of water

**How to Apply this Liquid Copper Sulfate Product:** Dilute the recommended amount of this product in sufficient water to thoroughly and uniformly spray the water surface including any floating algae mats.

**2. Algae Control in Irrigation and Potable Water Conveyance Systems:** Accurately determine the water flow rate in Cubic Feet per Second (C.F.S.) or gallons per minute (Gal/Min). One C.F.S. equals 450 Gal/Min. Treatment can be made by either the Continuous or Slug application method. Copper sulfate becomes less effective as the bicarbonate alkalinity increases and is significantly reduced when the bicarbonate alkalinity exceeds about 150 ppm as CaCO<sub>3</sub> regardless if applied by either of the following methods.

**For Algae Control by the Continuous Application Method,** begin treatment when water is first turned into the system and continue until water flow is stopped, applying 5-3/4 to 11-1/2 fl. oz. (170 to 340 mls) per C.F.S. of water during each 24 hours. For Leafy and Sago Pondweed Control continuously apply 5 to 7 pints (2600 to 3300 mls) per C.F.S. of water during each 24 hours. Should copper sulfate fail to control pondweeds satisfactorily, it may be necessary to treat the ditch with either a suitable approved herbicide or use mechanical means to remove the excess growth. In either case resume copper sulfate addition as soon as possible.

**For Algae Control using the Slug Application Method,** apply 1 to 7 pints (410 to 3300 mls) per C.F.S. of water per treatment. Repeat about every 2 weeks as needed. A slug is usually necessary every 5 to 30 miles depending on water hardness, alkalinity, and algae concentration.

### BORDEAUX SPRAY PREPARATION to control certain plant diseases

**Understanding a Bordeaux formulation:** As an example, if a Bordeaux spray recommendation reads 10-10-100, the first figure means the number of pounds of copper sulfate pentahydrate. The second figure means the pounds of hydrate spray grade lime Ca(OH)<sub>2</sub>, and the third figure is the gallons of water into which both ingredients are mixed. This spray formulation is usually applied to the point that the spray runs off of the plants. Various Bordeaux sprays including 8-8-100, 5-5-100, and 2-6-100 are commonly used on various crops.

**To Formulate a Bordeaux Spray:** For a 10-10-100 mix 4-1/3 gallons of this Copper Sulfate Liquid (which provides copper sulfate equal to 10 lbs. of copper sulfate pentahydrate) in spray water, then add spray grade hydrated lime and remaining water as given in the next section on **Mixing a Bordeaux Spray.** For a 3-2-6-100 Bordeaux spray, mix 3 lbs zinc sulfate, 7 pints of this Copper Sulfate Liquid, 6 lbs of spray grade hydrated lime to give 100 gallons final water.

**Mixing a Bordeaux Spray:** Fill a tank 3/4 full with water. Then with agitator running, pour in the required amount of this product. Add the hydrated lime by washing it through a bronze, stainless steel or plastic screen and finish filling tank with water. Continue agitation until all spray has been applied.

CROP	TO CONTROL	DIRECTIONS
Almonds, Apricots, Peaches, Nectarines	Shot-Hole Fungus	Prepare a 10-10-100 Bordeaux and apply as a dormant spray in late fall or early spring.
Almonds, Apricots, Cherries, Peaches, Nectarines, Plums, Prunes	Brown Rot Blossom Blight	Prepare a 10-10-100 Bordeaux and apply when buds begin to swell.
Sour Cherries	Leaf Spot	Prepare a 10-10-100 Bordeaux. Apply as a full coverage spray after petal fall or as recommended by the State Extension Service.

Lemons, Oranges, Grapefruit

Phytophthora Brown Rot

Prepare a 3-4 1/2-100 Bordeaux where there is no history of copper injury or a 3-2-6-100 (Zinc Sulfate-Copper Sulfate-Hydrated Lime-Gallons of water) Bordeaux. Spray 6 gallons on skirt of tree 3 to 4 feet high and 2 to 4 gallons on trunk and ground under tree. If P.hibernalis is present, use 10 to 25 gallons to completely cover each tree. Apply in Nov. or Dec. just before or after first rain. In severe brown rot season, apply second application in Jan. or Feb.

Lemons, Oranges, Grapefruit

Septoria Fruit and Leaf Spot, Central Calif. and Brown Rot and Zinc and Copper Deficiencies

Prepare a 3-2-6-100 Bordeaux and use 10 to 25 gallons to completely cover each tree. Apply in Oct., Nov., or Dec. before or just after first rain.

Walnuts

Walnut Blight

Prepare a 15-10-100 plus one-half gallon summer oil emulsion. Apply in early prebloom 10-20% pistillate (not when catkin blooms are showing) before or after rain. Use only if Bordeaux mixture has been shown to be non-phytotoxic in your area.

Seller's guarantee shall be limited to the terms of the label and that product in its unopened package conforms to the chemical description on the label; and subject thereto the buyer assumes any risk to persons or property arising out of use or handling and accepts the products on these conditions.