

COPPER-Z 4/4 Algicide/Herbicide

ACTIVE INGREDIENTS:	BY WT.
Copper Sulfate Anhydrous	10.00%
INERT INGREDIENTS:	<u>90.00%</u>
TOTAL	100.00%

Copper (Cu) as metallic 4%
 One gallon contains 0.42 lbs. of elemental copper and .42 lbs. of elemental zinc.

KEEP OUT OF REACH OF CHILDREN

DANGER - PELIGRO

Si usted no entiende la etiqueta, busque a alguien par que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

SEE SIDE PANELS FOR ADDITIONAL PRECAUTIONARY STATEMENTS

STATEMENT OF PRACTICAL TREATMENT

IF IN EYES: Hold eyelid open and flush with a steady, gentle stream of water for 15 minutes.

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

IF INHALED: Remove victim to fresh air. Get medical attention.

IF SWALLOWED: Drink immediately a large quantity of either milk, egg whites or gelatin solution. If these are not available drink a large quantity of water. Avoid alcohol. Get medical attention. (NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate use of gastric lavage.)

EPA REG. NO.: 5905-486
EPA EST. NO.:

NET CONTENTS:

**MANUFACTURED BY
HELENA CHEMICAL COMPANY
MEMPHIS, TN 38119**

Specimen Label

formatted for electronic distribution by CDMS

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER

Corrosive. Causes eye damage. Harmful or fatal if swallowed. Do not get in eyes or clothing. Avoid contact with skin.

STATEMENT OF PRACTICAL TREATMENT

IF IN EYES: Hold eyelid open and flush with a steady, gentle stream of water for 15 minutes.

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

IF INHALED: Remove victim to fresh air. Get medical attention.

IF SWALLOWED: Drink immediately a large quantity of either milk, egg whites or gelatin solution. If these are not available drink a large quantity of water. Avoid alcohol. Get medical attention. (NOTE TO PHYSICIAN: Probably mucosal damage may contraindicate use of gastric lavage.)

PERSONAL PROTECTIVE EQUIPMENT

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks
- Protective eyewear

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

USER SAFETY RECOMMENDATIONS

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

Specimen Label

formatted for electronic distribution by CDMS

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish and aquatic organisms. For terrestrial uses, do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to fish and aquatic organism in adjacent aquatic sites. Direct application of copper sulfate to water may cause a significant reduction in populations of aquatic invertebrates, plants and fish. Do not treat more than one-half of lake or pond at one time in order to avoid depletion of oxygen levels from decaying vegetation. Allow 1 to 2 weeks between treatment for oxygen levels to recover. Do not apply this product in such a manner as to directly or through drift expose workers or other persons. The area being treated must be vacated by unprotected persons.

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 the hardness of water increases. Do not contaminate water by cleaning of equipment or disposal of wastes. Consult your State Fish and Game Agency before applying this product to public waters. Permits may be required before treating such waters.

PHYSICAL OR CHEMICAL HAZARDS

Do not use, pour, spill or store near heat or open flame.

CHEMIGATION PROHIBITION

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

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 workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and

Specimen Label

formatted for electronic distribution by CDMS

that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Waterproof gloves
- Shoes plus socks
- Protective eyewear

NON-AGRICULTURAL USE REQUIREMENTS

The requirements 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 this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Keep unprotected persons out of treated areas until sprays have dried.

STORAGE AND DISPOSAL

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

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. Store in a cool, dry place in the original container. Do not store in a manner where cross contamination with other pesticides, fertilizers, food or feed could occur.

CONTAINER DISPOSAL:

Metal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

Plastic: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Helena Copper-Z 4/4 can be used to control Algae in impounded waters, lakes, ponds and reservoirs, for algae and potamogeton pond weed control in potable water or irrigation conveyance systems and for fungicidal control of specific diseases on crops.

GENERAL DIRECTIONS

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-Z 4/4 effectively controls many species of both filamentous (mat forming green algae) and planktonic (single cell blue-green) algae. The rate 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. Preferable water should be clear and above 60 DEGREES 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 rate 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 rate and increase the rate 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. Trout and other species of fish may be killed at application rates recommended on this label, especially in soft and acid waters.

1. For Algae Control in Reservoirs, Lakes, Ponds, Impounded Waters:

When to apply: Early treatment is essential for most satisfactory algae control at the lowest rate levels. Early growth is usually confined to shallower shore areas. Begin treatment when not over 5 to 10% of the water surface area is covered with algae growths which is usually nearest the shoreline. Delaying treatment until heavy algae growths are present usually requires a higher rate and may result in fish distress or death since rapid decomposition of heavy growths greatly reduces the oxygen content of the water. Several repeat treatments are necessary to control algae each season.

Rates to Control Algae: First, accurately determine the surface acres of water to be treated at one time and multiply this by the average depth in feet of this water area to determine the acre feet of water to be treated. [One acre foot = one surface acre (43,560 sq. ft.) x one foot depth.]

Each acre foot of water contains 326,000 gallons, or 2,720,000 pounds of water. Since recommended concentrations are normally given in parts per million (ppm), it will first be necessary to convert the value in parts per million to a decimal equivalent. For example, 2 ppm is the same as 0.000002 when used in this calculation. Therefore, to calculate the amount of Copper Sulfate Pentahydrate to treat 1 acre-foot of water with 2 ppm Copper Sulfate, the calculation would be as follows:

$0.000002 \times 2,720,000 = 5.44$ lbs. Copper Sulfate Pentahydrate.

To obtain the correct amount of Helena Copper-Z 4/4 divide 5.44 lbs. by 1.677 lbs. which equals 3.2 gallons of Copper-Z 4/4. The rates of Copper-Z 4/4 per acre foot of water to control specific algae species are given later in the label.

Secondly, if the problem algae genera is known, use the table below and its equivalence to determine the approximate rate of this product needed to control that genera. If the genera of either filamentous or planktonic algae is not known, apply 6.2 - 9.3 quarts of this product per acre foot of water, using

the lower rate in soft water and the higher rate to hard water. For control of bottom-attached algae Chara and Nietella use 9.3 - 12.8 quarts per acre foot of water to be treated. If control is not achieved or in very adverse waters, a higher rate may be needed, but consider the fish species.

COPPER SULFATE REQUIRED FOR TREATMENT OF DIFFERENT GENERA OF ALGAE
The genera of algae listed below are commonly found in waters of the United States. Use the lower recommended rate in soft waters (less than 50 ppm methyl orange alkalinity) and the higher concentration in hard water (above 50 ppm alkalinity). Always consult State Fish and Game Agency before applying this product in municipal water.

PPM EQUIVALENT OF COPPER-Z 4/4 PER ACRE FOOT OF WATER

	1.6 - 3.3 qt.	3.3 - 6.2 qt.	6.2 - 9.3 qt.	9.3 - 12.8 qt.
ORGANISM	1/4 to 1/2 ppm*	1/2 to 1 ppm*	1 to 1 1/2 ppm*	1 1/2 to 2 ppm*
<i>Cyanophyceae</i> (Blue-green)	Anabaena Anacystis Aphanizomenon Gloeotrichia Gomphosphaeria Polycystis Rivularia	Cylindrospermum Oscillatoris Plectonema	Nostoc Phormidium	Calothrix Symploca
<i>Chlorophyceae</i> (Green)	Closterium Hydrodictyon Spirogyra Ulothrix	Botryococcus Cladophora Coelastrum Draparnaldia Enteromorpha Gloecystis Microspora Tribonema Zygnema	Chlorella Crucigenia Desmidium Golenkinia Oocystis Palmella Pithophora Staurastrum Tetraedron	Ankistrodesmus Chara Nitella Scenedesmus
<i>Diatomaceae</i> (Diatoms)	Asterionella Fragilaria Melosira Navicula	Gomphonema Nitzschia Stephanodiscus Synedra Tabellaria	Achnanthes Cymbella Neidium	
<i>Protozoa</i> (Flagellates)	Dinobryon Synura Uroglena Volvox	Ceratium Cryptomonas Euglena Glenodinium Mallomonas	Chlamydomonas Hawmatococcus Peridinium	Eudorina Pandorina

How to apply Copper-Z 4/4: Dilute the recommended amount of this product in sufficient water to thoroughly and uniformly spray the water surface including any floating algae mats.

- Algae Control and the potomogeton Pond Weeds, Leafy and Sago, 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 CFS equals 450 Gal/Min. The calculation of water flow in ditches, streams and irrigation device can be found by means of

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_3 regardless if applied by either of the following methods. For Potable Water Systems, the amount of Copper Sulfate Pentahydrate applied should not exceed 4 ppm, which is an equivalent copper concentration of 1 ppm in the treated water.

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 7.9 to 15.8 fl. oz. (.32 - .65 fl. oz./hr./CFS) per CFS of water during each 24 hours. For Leafy and Sago Pondweed Control continuously apply 6.9 to 9.6 pints per CFS (4.6 - 6.4 fl. oz./hr./CFS) 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 1.4 - 9.6 pints per CFS 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.

3. Algae Control in Rice Fields: Apply 6.3 to 9.1 gallons Copper-Z 4/4 liquid per acre to the water surface as a surface spray. Application should be made when the algae has formed on the soil surface but prior to rising of the water surface. Apply higher rate (9.1 gallons) in water of 6 inches or greater.
4. Tadpole Shrimp Control in Rice Fields: Apply 3.1 to 6.3 gallons of Copper-Z 4/4 liquid per acre to the flooded field at any time the pest appears between planting time and until the seedlings are rooted and have emerged through the water surface. The lower rate should be used when the water depth and flow rate are minimal and higher rate should be used when the water depth and flow are at a maximum.

FOR FUNGICIDE USE

Use as directed below. Depending on the equipment used and the specific crop, the volume applied per acre will differ. For high volume sprays, use from 25 to 100 gallons per acre (GPA). For concentrate ground sprays, apply from 20 to 50 GPA. For aerial spraying, 3 to 15 GPA are commonly used.

SPECIFIC INSTRUCTIONS

BEANS: Bacterial Blight (Halo & Common). Use 31 to 72 fl. oz. per acre. Make first application when plants are 3 to 5 inches high before disease symptoms appear. Continue application on a 7-10 day schedule, depending on local conditions.

CANTALOUPE: HONEYDEWS, MUSKMELON, WATERMELON, Downy Mildew, Powder Mildew, Alternaria & Angular Leaf Spot, Scar. Apply at 31 to 72 fl. oz. per acre when plants begin to vine. Continue applications on a weekly basis. In areas where Angular Leaf Spot is a problem,

applications should be made on a 5-7 day schedule.

CELERY: Early, Late & Bacterial Blight. Apply 31 to 72 fl. oz. per acre. Begin applications when plants are first established, then every 7 days, depending on disease conditions.

CUCUMBERS: Alternaria & Angular Leaf Spot, Powdery Mildew. Apply at 31 to 72 fl. oz. per acre when plants begin to vine. Continue applications on a weekly basis. In areas where Angular Leaf Spot is a problem, applications should be made on a 5-7 day schedule.

PEANUTS: Cercospora Leaf Spot. Begin spraying at 31 to 72 fl. oz. per acre at first sign of disease and every 10-14 days thereafter.

POTATOES: Early and Late Blight. Apply at 31 to 72 fl. oz. per acre. Begin applications when plants are 3-4 inches high and continue at 7-10 day intervals.

SOYBEANS: Bacterial Blight (Halo & Common). Use 45 to 58 fl. oz. per acre. Make first application when plants are 3-5 inches high before disease symptoms appear. Continue applications on a 7-10 day schedule, depending on local conditions.

SQUASH: (summer & winter), Alternaria & Angular Leaf Spot, Powdery Mildew. Use 31 to 72 fl. oz. per acre when plants begin to vine. Continue applications on a weekly basis. In areas where Angular Leaf Spot is a problem, applications should be made on a 5-7 day schedule.

SUGAR BEETS: Cercospora Leaf Spot. Use 31 to 72 fl. oz. per acre. Begin when plants are 3-4 inches high and continue on a 10-14 day interval or more frequently if disease conditions are severe.

TOMATO: Bacterial Spot, Early Blight. Use 31 to 72 fl. oz. per acre. In seed beds, begin application when seedlings emerge and repeat at 4-5 day intervals. In field, begin applications immediately after transplanting and continue on 7 day intervals or more frequently if disease conditions are severe.

PEPPERS: Bacterial Sot, Cercospora Leaf Spot. Apply at 31 to 72 fl. oz. per acre. Begin application before disease appears and continue at 7-10 day intervals.

CONDITIONS OF SALE - LIMITED WARRANTY AND LIMITATIONS OF LIABILITY AND REMEDIES

The directions on this label are believed to be reliable and should be followed carefully. Insufficient control of pests and/or injury to the crop to which the product is applied may result from the occurrence of extraordinary or unusual weather conditions, the failure to follow the label directions, or good application practices, all of which are beyond the control of Helena Chemical Company (the "Company") or seller. In addition, failure to follow label directions may cause injury to crops, animals, man, or the environment. The Company 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 factors noted above which are beyond the control of the Company. The Company makes no other warranties or representations of any kind, express or implied, concerning the product, including no implied warranty of merchantability or fitness for any particular purpose, and no such

warranty shall be implied by law.

The exclusive remedy against the Company for any cause of action relating to the handling or use of this product is a claim for damage and in no event shall damages or any other recovery of any kind against the Company exceed the price of the product which causes the alleged loss, damage, injury, or other claim. The Company shall not be liable and any and all claims against the Company are waived for special, indirect, incidental, or consequential damages or expense of any nature, including, but not limited to, loss of profits or income.

The Company and the seller offer this product and the buyer and user accept it, subject to the foregoing conditions of sale and limitation of warranty, liability, and remedies.

Specimen Label

formatted for electronic distribution by CDMS