COBPER-Z 4/4 ALGICE/Herbicide

ACTIVE INGREDIENTS: (BY WT.)
Copper (II) Sulfate Pentahydrate 10.00%
Insert INGREDIENTS: 90.00%
TOTAL: 100.00%
Copper (Cu) as metallic 4%
One gallon contains 0.42 lb. of elemental copper and 0.42 lb. of elemental zinc.

KEEP OUT OF REACH OF CHILDREN DANGER – PELIGRO
Si usted no entiende la etiqueta, busque a alguien que se la explique a usted en detalle.
If you do not understand the label, find someone to explain it to you in detail.

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
DANGER
Corrosive. Causes eye damage. Harmful or fatal if swallowed. Harmful if absorbed through the skin. Do not get in eyes, on skin or on clothing. Avoid contact with skin. Potable water sources treated with copper products may be used as drinking water only after proper additional potable water treatments.

FIRST AID
IF IN EYES: Hold eyelid 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 immediately for treatment advice.
IF ON SKIN: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a person control center or doctor immediately for treatment advice.
IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Do not induce vomiting unless told to do so by a poison control center or doctor. Have a person sip a glass of water if able to swallow. Do not give anything to an unconscious or convulsing person.
IF INHALED: Move victim to fresh air. If not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
NOTICE TO USER
How the product container or label with you when calling a person control center or doctor or going for treatment. In case of emergency, call ChemiCares 1-800-424-0300.

STORAGE AND DISPOSAL
Do not contaminate water, food, or feed by the use of this product.
Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or mixture residue 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, feed, or fuel could occur.

CONTAINER DISPOSAL:
NONREFILLABLE CONTAINER (EVEN IF 70% OR LESS THAN 5 GALLONS): Do not reuse or refill this container. Triple rinse container or equivalent properly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and pour for 10 seconds after the flow begins to stop. Fill the container 1/2 full with water and recirculate for 10 seconds. Pour into a mix tank into the application equipment or a mix tank or a mix tank for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Offer for recycling, if available.
NONREFILLABLE CONTAINER (GREATER THAN 5 GALLONS): Do not reuse or refill this container. Triple rinse container or equivalent properly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/2 full with water. Replace and tighten container. Tip container on its side and fill tank base and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over and do other end and tip it back and forth several times. Empty the rinse into application equipment or a mix tank or obtain label or drum rinse for later use or disposal. Repeat this procedure two more times. Offer for recycling, if available.

REPLACEMENT CONTAINER: Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents into the container into application equipment or a mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour water into application equipment or mix tank system. Repeat this procedure two more times.

ENVIRONMENTAL HAZARDS
This pesticide is toxic to fish and aquatic organisms. For terrestrial uses, do not apply directly to water. To avoid entering surface water is present or to interstitial areas below the mean high water mark, drift and runoff from treated areas may be hazardous to fish and aquatic organisms in adjacent aquatic areas. 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 desiccation and evaporation. Allow 1 to 2 weeks between treatments for oxygen levels to recover. Do not apply this product in such a manner as to directly or through drift expose waterfowl or other persons. The area being treated must be isolated by unharmed persons. Trust and other species of fish may be killed at application rates recommended on this label, especially in soft and acid waters. However, this 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.

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 conflict with weather or other persons, other directly or indirectly subject. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation.
REFER TO INSIDE OF BOOKLET FOR COMPLETE DIRECTIONS FOR USE.

Manufactured For
HELENA CHEMICAL COMPANY
225 SCHILLING BOULEVARD, SUITE 300 • COLLIerville, TENNESSEE 38017

EPA Reg. No. 5905-486
EPA Est. No.: 944489-TX-001
AD 061610

NET CONTENTS: 2.5 Gallons (9.46 Liters)
COPPER-Z 4/4

ALGICIDE/HERBICIDE

ACTIVE INGREDIENT:
Copper (II) Sulfate Pentahydrate .................................................. 10.00% (BY WT.)
INERT INGREDIENTS ................................................................. 90.00%
TOTAL .......................................................................................... 100.00%
Copper (Cu) as metallic .............. 4% One gallon contains 0.42 lb. of elemental copper and 0.42 lb. of elemental zinc.

KEEP OUT OF REACH OF CHILDREN
DANGER – PELIGRO
Si usted no entienda 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.)

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
DANGER
Corrosive. Causes eye damage. Harmful or fatal if swallowed. Harmful if absorbed through the skin. Do not get in eyes, on skin or on clothing. Avoid contact with skin.
Rotted water sources treated with copper products may be used as drinking water only after proper additional potable water treatments.

FIRST AID

IF IN EYES:
• Hold eyelid 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 immediately for treatment advice.

IF ON SKIN:
• Take off contaminated clothing.
• Rinse skin immediately with plenty of water for 15-20 minutes.
• Call a poison control center or doctor immediately for treatment advice.

IF SWALLOWED:
• Call a poison control center or doctor immediately for treatment advice.
• Do not induce vomiting unless told to do so by a poison control center or doctor.
• Have a person sip a glass of water if able to swallow.
• Do not give anything to an unconscious or convulsing person.

IF INHALED:
• Move victim to fresh air. If not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.

HOT LINE NUMBER
Have the product container or label with you when calling a poison control center or doctor or going for treatment. In case of emergency, call ChemTrec at 1-800-424-9300.

Note to Physician: Probable mucosal damage may contraindicate the use of gastric lavage.

SEE INSIDE PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS.

AD 061610
EPA REG. NO. 5905-486
EPA EST. NO. 044889-TX-001

NET CONTENTS: 2.5 Gallons (9.46 Liters)

Manufactured For
HELENA CHEMICAL COMPANY
225 SCHILLING BOULEVARD, SUITE 300 • COLLIERVILLE, TENNESSEE 38017
PERSONAL PROTECTIVE EQUIPMENT
Applicators and other handlers must wear:
- Long-sleeved shirt
- Long pants
- Chemical-resistant gloves made of any waterproof material
- 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.

ENGINEERING CONTROLS
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/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS
This pesticide is toxic to fish and aquatic organisms. For terrestrial uses, do not apply directly to water, 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 organisms 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 a lake or pond at one time in order to avoid depletion of oxygen levels from decaying vegetation. Allow 1 to 2 weeks between treatments 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 State or Tribal 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.
AGRICULTURAL USE REQUIREMENTS (cont.)
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 that involves contact with anything that has been treated, such as soil or water, is:
- Coveralls
- Chemical-resistant gloves made of any waterproof material
- 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:
NONREFILLABLE CONTAINER (EQUAL TO OR LESS THAN 5 GALLONS): Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Offer for recycling, if available.

NONREFILLABLE CONTAINER (GREATER THAN 5 GALLONS): Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Offer for recycling, if available.

REFILLABLE CONTAINER: Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

Helena Copper-Z 4/4 can be used to control algae in impounded waters, lakes, ponds and reservoirs, for algae and potomogenon pond weed control in potable water or irrigation conveyance systems.

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. Preferably 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 form 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 growth, 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:

\[ 0.000002 \times 2,720,000 = 5.44 \text{ lbs. Copper Sulfate Pentahydrate.} \]

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 equivalent to determine the approximate rate of 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 Niestella 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.

<table>
<thead>
<tr>
<th>ORGANISM</th>
<th>1.6-3.3 qt.</th>
<th>3.3-6.2 qt.</th>
<th>6.2-9.3 qt.</th>
<th>9.3-12.8 qt.</th>
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</thead>
<tbody>
<tr>
<td>Oxyrophyceae</td>
<td>1/4 to 1/2 ppm*</td>
<td>1/2 to 1 ppm*</td>
<td>1 to 1 1/2 ppm</td>
<td>1 1/2 to 2 ppm</td>
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<td>(Blue-green)</td>
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<td>Anabaena</td>
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<td>Anacystis</td>
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<td>Aphanothecium</td>
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<td>Anabaena</td>
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<td>Anacystis</td>
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<td>Aphanothecium</td>
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<td>Oscillatoria</td>
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<td>Plecostomum</td>
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<tr>
<td>Chlorophyceae</td>
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<td>(Green)</td>
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<td>Closterium</td>
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<td>Hydrodictyon</td>
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<td>Spirogyra</td>
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<td>Ulothrix</td>
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<td>Botryococcus</td>
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<td>Cladophora</td>
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<td>Coelastrum</td>
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<td>Draparnaldia</td>
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<td>Enteromorpha</td>
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<td>Gloeocytis</td>
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<td>Microspora</td>
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<td>Tribonema</td>
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<td>Zygmena</td>
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<td>Gomphonema</td>
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<td>Synedra</td>
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<td>Tabellaria</td>
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<td>Chara</td>
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<td>Cruciogenia</td>
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<td>Desmidium</td>
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<td>Golenknia</td>
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<td>Oocyntis</td>
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<td>Palmella</td>
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<td>Pithophora</td>
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<td>Staurostream</td>
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<td>Tetraedron</td>
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<td>Achnanthes</td>
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<td>Cymbella</td>
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<td>Neidium</td>
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(continued)
## PPM Equivalent of Copper-Z 4/4 Per Acre Foot of Water (cont.)

<table>
<thead>
<tr>
<th>ORGANISM</th>
<th>1.6–3.3 qt. 1/4 to 1/2 ppm*</th>
<th>3.3–6.2 qt. 1/2 to 1 ppm*</th>
<th>6.2–9.3 qt. 1 to 1-1/2 ppm*</th>
<th>9.3–12.8 qt. 1-1/2 to 2 ppm*</th>
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</thead>
<tbody>
<tr>
<td>Protozoa (Flagellates)</td>
<td>Dinobryon</td>
<td>Ceratium</td>
<td>Chlamydomonas</td>
<td>Eudorina</td>
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<td></td>
<td>Synura</td>
<td>Cryptomonas</td>
<td>Hawmatococcus</td>
<td>Pandorina</td>
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<td></td>
<td>Uroglena</td>
<td>Euglena</td>
<td>Peridinium</td>
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<td></td>
<td>Volvox</td>
<td>Glenodinium</td>
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<td></td>
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<td>Mallomonas</td>
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</tbody>
</table>

### 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.

### 2. Algae Control and the Potamogeton 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 CaCO3 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 oz. (0.32–0.65 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 pond weeds 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.
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AND LIMITATIONS OF LIABILITY AND REMEDIES

Read the Conditions of Sale – Warranty and Limitations of Liability and Remedies before using this product. If the terms are not acceptable, return the product, unopened, and the full purchase price will be refunded.

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 or 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.

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