



## OFFICE OF CHEMICAL SAFETY AND POLLUTION PREVENTION

WASHINGTON, D.C. 20460

March 25, 2024

Anna Hale  
Drexel Chemical Company  
P.O. Box 13327  
Memphis, TN 38113-0327

Subject: Notification per PRN 98-10 – adding already approved disease to crop for tomatoes  
Product Name: KOP-5  
EPA Registration Number: 19713-695  
Application Date: 8/23/2023  
Case Number: 477290

Dear Anna Hale:

The Agency is in receipt of your Application for Pesticide Notification under Pesticide Registration Notice (PRN) 98-10 for the above referenced product. The Registration Division (RD) has conducted a review of this request for its applicability under PRN 98-10 and finds that the action requested falls within the scope of PRN 98-10.

The label submitted with the application has been stamped “NOTIFICATION” and placed in our records.

Should you wish to add/retain a reference to the company’s website on your label, then please be aware that the website becomes labeling under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) lists examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product’s label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA’s Office of Enforcement and Compliance.

If you have any questions, please contact Yasmin Bowers at 202-566-2507 or [Bowers.Yasmin@epa.gov](mailto:Bowers.Yasmin@epa.gov).

Regards,

A handwritten signature in black ink, appearing to read "Yasmin Bowers". The signature is written in a cursive style with a large initial "Y".

Yasmin Bowers, Risk Manager  
Registration Division (7505T)  
Office of Pesticide Programs  
U.S. Environmental Protection Agency

Enclosure—stamped label

SUB-LABEL A: AGRICULTURAL CROP USES

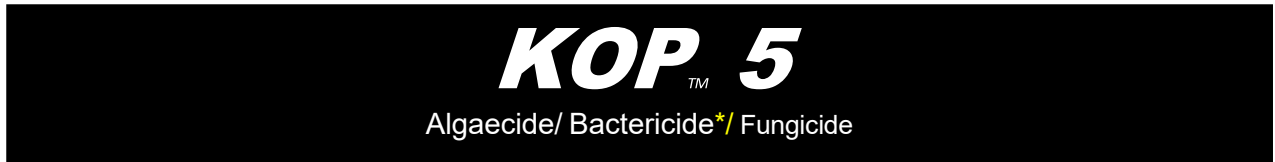
COPPER		GROUP	M01	FUNGICIDE
COPPER	GROUP	NOT CLASSIFIED		HERBICIDE

NOTIFICATION

19713-695

The applicant has certified that no changes, other than those reported to the Agency have been made to the labeling. The Agency acknowledges this notification by letter dated:

03/25/2024



For use against diseases caused by bacteria\* and fungi in Citrus, Field crops, Small fruits, Tree crops, Vegetables, Vine crops, greenhouse and shade house grown crops, miscellaneous crops, and Turf and Ornamentals. Also for use as post-harvest wash on agricultural commodities and against algae in aquatic systems.

ACTIVE INGREDIENT:

Copper sulfate pentahydrate [CAS No. 7758-99-8]\*\* ..... 20.0%

OTHER INGREDIENTS: ..... 80.0%

TOTAL: ..... 100.0%

\*\*Equivalent to 5% metallic copper.

This product contains 0.49 pound of metallic copper per gallon.

A chelated copper product.

KEEP OUT OF REACH OF CHILDREN

DANGER / PELIGRO

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

SHAKE WELL BEFORE USING [RECIRCULATE CONTENTS BEFORE USE]

[See FIRST AID Below]; [See Page \_\_\_ for FIRST AID] [See Container Labeling for (FIRST AID and) Complete Directions for Use] [See (Attached) Booklet (Container Labeling) for Complete Directions for Use]

EPA Reg. No. 19713-695

EPA Est. No. 19713-XX-XXX

Net Content: \_\_\_\_\_ Gals. ( \_\_\_\_\_ L)

FIRST AID
<p><b>IF IN EYES:</b></p> <ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15 to 20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<p><b>IF SWALLOWED:</b></p> <ul style="list-style-type: none"> <li>• Call a poison control center or doctor immediately for treatment advice.</li> <li>• Have person sip a glass of water if able to swallow.</li> <li>• Do not induce vomiting unless told to do so by a poison control center or doctor.</li> <li>• Do not give anything by mouth to an unconscious person.</li> </ul>
<p><b>IF ON SKIN OR CLOTHING:</b></p> <ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15 to 20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<p>Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also call CHEMTREC at 800-424-9300 for emergency medical treatment information.</p>
<p><b>NOTE TO PHYSICIAN:</b> Probable mucosal damage may contraindicate the use of gastric lavage.</p>

\*Non-public health bacteria.

## PRECAUTIONARY STATEMENTS

### HAZARDS TO HUMANS AND DOMESTIC ANIMALS

**DANGER:** Corrosive. Causes irreversible eye damage. Harmful if absorbed through skin. Harmful if swallowed. Do not get in eyes or on clothing. Avoid contact with skin. Wear protective eyewear (goggles, face shield or safety glasses). Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

### PERSONAL PROTECTIVE EQUIPMENT (PPE)

**Mixers, loaders, applicators and other handlers must wear:** Protective eyewear (goggles, face shield or safety glasses), long-sleeved shirt, long pants, shoes, socks, and chemical-resistant gloves made of any waterproof material such as barrier laminate; butyl rubber  $\geq 14$  mil; nitrile rubber  $\geq 14$  mil; neoprene rubber  $\geq 14$  mil; polyvinyl chloride (PVC)  $\geq 14$  mil; or viton  $\geq 14$  mil. For overhead exposure, wear chemical-resistant headgear.

Follow manufacturer's instructions for cleaning/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 this product's concentrate.

### 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.

Pilots must use an enclosed cab that meets the definition listed in the WPS for agricultural pesticides [40 CFR 170.305].

### USER SAFETY RECOMMENDATIONS

**Users should:** 1) Wash hands thoroughly with soap and water before eating, drinking, chewing gum, using tobacco or using the toilet. 2) Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. 3) Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

### ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish and aquatic invertebrates and may contaminate water through runoff. This product has potential for runoff for several months or more after application. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas.

Do not apply directly to water or areas where surface water is present or to intertidal areas below the mean high mark. Do not contaminate water when disposing of equipment washwaters or rinsate.

**Fish Advisory Statement:** This copper product is toxic to fish and aquatic organisms. Unlike most organic pesticides, copper is an element and will not break down in the environment and will therefore accumulate in sediment with repeated applications. Copper is a micronutrient, but its pesticidal application rate exceeds the amount of copper needed as a nutrient.

### PRODUCT INFORMATION

KOP-5 is a copper sulfate pentahydrate formulation that is used against diseases caused by bacteria\* and fungi in Citrus, Field crops, Small fruits, Tree crops, Vegetables, Vine crops, greenhouse and shade house grown crops, miscellaneous crops, and Turf and Ornamentals. It is also for use as post-harvest wash on agricultural commodities and against algae in aquatic systems and tadpole shrimp in Rice fields.

Using water containing moderate to high amounts of sulfur may cause this product to neutralize. Whenever possible, use a compatibility jar test before mixing a whole tank.

**IMPORTANT: Everywhere that bacteria is listed on this label refers to non-public health bacteria/bactericide.**

## **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 (WPS), 40 CFR Part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, 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 (REI). The requirements in this box only apply to uses of this product that are covered by the WPS.

**Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 48 hours. For greenhouse uses, the REI may be reduced to 24 hours provided that the following conditions are met:**

For at least 7 days following the application of this product in greenhouses:

- At least one container or station designed specifically for flushing eyes is available in operating conditions with the WPS-required decontamination supplies for workers entering the area treated with this product.
- Workers are informed orally in a manner they can understand that, **i)** residues in the treated area may be highly irritating to the eyes, **ii)** they should take precautions, such as refraining from rubbing their eyes to keep the residues out of their eyes, **iii)** if they do get residues in their eyes, they should immediately flush their eyes with the eye flush container or in the eye flush station that is located with the decontamination supplies, and **iv)** how to operate the eye flush container or eye flush station.

PPE required for early entry to treated areas that is permitted under the WPS and that involves contact with anything that has been treated, such as plants, soil or water is: Coveralls, chemical-resistant gloves made of any waterproof material such as barrier laminate; butyl rubber  $\geq 14$  mil; nitrile rubber  $\geq 14$  mil; neoprene rubber  $\geq 14$  mil; polyvinyl chloride (PVC)  $\geq 14$  mil; or viton  $\geq 14$  mil, protective eyewear, and shoes plus socks.

### **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 (WPS) 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. Do not allow people or pets to enter treated areas until sprays have dried.

## **RESISTANCE MANAGEMENT**

<b>COPPER</b>	<b>GROUP</b>	<b>M01</b>	<b>FUNGICIDE</b>
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### **FUNGICIDE/BACTERICIDE RESISTANCE MANAGEMENT**

For resistance management, this product contains a Group M01 fungicide/bactericide. Any fungal/bacterial population may contain individuals naturally resistant to this product and other Group M fungicides/bactericides. A gradual or total loss of pest control may occur over time if these fungicides/bactericides are used repeatedly in the same fields. Appropriate resistance management strategies should be followed.

To delay fungicide/bactericide resistance, take one or more of the following steps:

- Rotate the use of this product or other Group M fungicides/bactericides within a growing season sequence with different groups that control the same pathogens.
- Use tank mixtures with fungicides/bactericide from a different group that are equally effective on the target pest when such use is permitted. Use at least the minimum application rate as labeled by the manufacturer.
- Adopt an integrated disease management program for fungicide/bactericide use that includes scouting, uses historical information related to pesticide use, and crop rotation, and which considers host plant resistance, impact of environmental conditions on disease development, disease thresholds, as well as cultural, biological and other chemical control practices.

- Where possible, make use of predictive disease models to effectively time fungicide/bactericide applications. Note that using predictive models alone is not sufficient to manage resistance.
- Monitor treated fungal/bacterial populations for resistance development.
- Contact your local extension specialist or certified crop advisor for any additional pesticide resistance management and/or IPM recommendations for specific crops and pathogens.
- For further information or to report suspected resistance, contact Drexel Chemical Company at (901) 774-4370. You can also contact your pesticide distributor or university extension specialist to report resistance.

## **AQUATIC HERBICIDE RESISTANCE MANAGEMENT**

- Water bodies or management units should be scouted prior to application to identify the weed species present and their growth stage to determine if the intended application will be effective. Water bodies or management units should be scouted after application to verify that the treatment was effective.
- Suspected herbicide-resistant weeds may be identified by these indicators:
  - \* Failure to control a weed species normally controlled by the herbicide at the dose applied, especially if control is achieved on adjacent weeds;
  - \* A spreading patch of non-controlled plants of a particular weed species; and
  - \* Surviving plants mixed with controlled individuals of the same species.
- Implement the “Early Detection, Rapid Response Practice and Maintenance Control” by using the following practices where possible:
  - \* Identify weeds present in a management unit through scouting or history of the water body and understand the biology of target species.
  - \* Applications should target weeds when populations are small and there is low biomass, early in the season to maximize efficacy.
  - \* Applications should be made so that the herbicide contacts the weed. Use the appropriate application method for the use site/weed/chemical combination.
  - \* Weed escapes should not be allowed to go to seed or produce asexual vegetative propagules.
  - \* Use a diversified approach toward weed management. Whenever possible incorporate multiple weed-control practices such as mechanical control, biological management practices, and rotation of MOAs.
  - \* Time applications to have the highest probability for control and minimize need for follow-up control measures. Apply during conditions that minimize herbicide degradation (light /temperature/microbes) and/or dissipation (water exchange).
- Contact your local sales representative, local water management agency, or extension agent to find out if suspected resistant weeds to this MOA have been found in your region. If resistant biotypes of target weeds have been reported, use the application rates of this product specified for your local conditions. Tank-mix products so that there are multiple effective mechanisms of actions for each target weed.

## **SPRAY DRIFT ADVISORIES**

THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT.  
BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.

### **IMPORTANCE OF DROPLET SIZE**

An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

#### **Controlling Droplet Size - Ground Boom**

- Volume - Increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray volume is needed, consider using a nozzle with a higher flow rate.
- Pressure - Use the lowest spray pressure recommended for the nozzle to produce the target spray volume and droplet size.

- Spray Nozzle - Use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift.

#### **Controlling Droplet Size - Aircraft**

- Adjust Nozzles - Follow nozzle manufacturer's recommendations for setting up nozzles. Generally, to reduce fine droplets, nozzles should be oriented parallel with the airflow in flight.

#### **BOOM HEIGHT - Ground Boom**

Use the lowest boom height that is compatible with the spray nozzles that will provide uniform coverage. For ground equipment, the boom should remain level with the crop and have minimal bounce.

#### **RELEASE HEIGHT - Aircraft**

Higher release heights increase the potential for spray drift. When applying aerially to crops, do not release spray at a height greater than 10 ft. above the crop canopy, unless a greater application height is necessary for pilot safety.

#### **SHIELDED SPRAYERS**

Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area.

#### **TEMPERATURE AND HUMIDITY**

When making applications in hot and dry conditions, use larger droplets to reduce effects of evaporation.

#### **TEMPERATURE INVERSIONS**

Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing. Avoid applications during temperature inversions.

#### **WIND**

Drift potential generally increases with wind speed. AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS.

Applicators need to be familiar with local wind patterns and terrain that could affect spray drift.

#### **SPRAY DRIFT REQUIREMENTS**

##### **AERIAL APPLICATIONS:**

- Do not release spray at a height greater than 10 feet above the vegetative canopy or water, unless a greater application height is necessary for pilot safety.
- Applicators are required to use a medium or coarser droplet size (ASABE S572.1).
- Do not apply when wind speed exceeds 15 mph at the application site. If the wind speed is greater than 10 mph, the boom length must be 65% or less of the wingspan for fixed wing aircraft and 75% or less of the rotor diameter for helicopters. Otherwise, the boom length must be 75% or less of the wingspan for fixed-wing aircraft and 90% or less of the rotor diameter for helicopters.
- Applicators must use one-half swath displacement upwind at the downwind edge of the application area.
- Do not apply during temperature inversions.

##### **GROUND BOOM APPLICATIONS:**

- Apply with the spray release height recommended by the manufacturer, but no more than 4 feet above the ground or crop canopy.
- Applicators are required to use a medium or coarser droplet size (ASABE S572.1).
- Do not apply when wind speeds exceed 15 miles per hour at the application site.
- Do not apply during temperature inversions.

## **CHEMIGATION INSTRUCTIONS**

Apply this product only through one or more of the following types of systems: Sprinkler including center pivot, lateral move, end row, side (wheel) roll, traveler, big gun, solid set or hand move; flood (basin); furrow; border or drip (trickle) irrigation and system(s). Do not apply this product through any other type of irrigation systems.

Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.

If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.

Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label prescribed safety device for public water systems are in place.

A person knowledgeable of the chemigation system and responsible for its operation or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

Posting areas to be chemigated is required when 1) any part of a treated area is within 300 feet of sensitive areas such as residential areas, labor camps, businesses, day care centers, hospitals, in-patient clinics, nursing homes or any public areas such as schools, parks, playgrounds or other public facilities not including public roads or 2) when chemigated area is open to the public such as golf courses or retail greenhouses.

Posting must conform to the following requirements. Treated areas shall be posted with signs at all usual points of entry and along likely routes of approach from the listed sensitive area. When there are no usual points of entry, signs must be posted in the corners of the treated areas and in any other locations affording maximum visibility to sensitive areas. The printed side of the sign should face away from the treated area towards the sensitive area. The signs shall be printed in English. Signs must be posted prior to application and must remain posted until foliage has dried and soil surface water has disappeared. Signs may remain in place indefinitely as long as they are composed of materials to prevent deterioration and maintain legibility for the duration of the posting period.

All words shall consist of letters of at least 2.5 inches tall and all letters and the symbol shall be in a color which sharply contrasts with their immediate background. At the top of the sign shall be the words "KEEP OUT", followed by an octagonal stop sign symbol at least 8 inches in diameter containing the word "STOP". Below the symbol shall be the words "PESTICIDES IN IRRIGATION WATER".

This sign is in addition to any sign posted to comply with the Workers Protection Standard (WPS).

## **CHEMIGATION SYSTEMS CONNECTED TO PUBLIC WATER SYSTEMS**

Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.

Chemigation systems connected to public water systems must contain a functional, reduced pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the flow outlet end of the fill pipe and the top of the overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.

The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of liquid back toward the injection.



The pesticide injection pipeline must contain a functional, normally closed, solenoid operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.

The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where the pesticide distribution is adversely affected. Systems must use a metering pump, such as a positive displacement injection pump (i.e., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

Do not apply when wind speed favors drift beyond the area intended for treatment.

When mixing, agitation is not necessary. Adjust the pH of the water to 7 or below. If using stickers, spreaders, insecticides, nutrients, etc., add this product **last**. If compatibility is in question, use a compatibility jar test before mixing a whole tank. Because of a wide variety of possible combinations which can be encountered, observe all cautions and limitations on the label of all products used in the mixtures.

This product may be added through a traveling system continuously or at the last 30 minutes of solid set or hand moved irrigation systems. This product readily disperses and needs no agitation.

#### **SPRINKLER CHEMIGATION**

The system must contain a functional check valve, vacuum relief valve, and low pressure drains appropriately located on the irrigation pipeline to prevent water source contamination from back flow.

The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.

The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.

The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

Systems must use a metering pump, such as a positive displacement injection pump (i.e., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

Do not apply when wind speed favors drift beyond the area intended for treatment.

When mixing, agitation is not necessary. Adjust the pH of the carrier water to 7 or below. If using stickers, spreaders, insecticides, nutrients, etc., add this product **last**. If compatibility is in question, use a compatibility jar test before mixing a whole tank. Because of a wide variety of possible combinations which can be encountered, observe all cautions and limitations on the label of all products used in the mixtures.

May be added through a traveling irrigation system, or at the last 30 minutes of solid set or hand moved irrigation systems. This product readily disperses and needs no agitation.

### **FLOOR (BASIN), FURROW AND BORDER CHEMIGATION**

Systems using a gravity flow pesticide dispensing system must meter the pesticide into the water at the head of the field downstream of a hydraulic discontinuity such as drop structure or weir box to decrease potential for water source contamination from back flow if water flow stops.

Systems utilizing a pressurized water and pesticide injection system must meet the following requirements:

- a. The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
- b. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of liquid back toward the injection pump.
- c. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- d. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- e. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- f. Systems must use a metering pump, such as a positive displacement pump (i.e. diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

When mixing, agitation is not necessary. Adjust the pH of the carrier water to 7 or below. If using stickers, spreaders, insecticides, nutrients, etc., add this product **last**. If compatibility is in question, use a compatibility jar test before mixing a whole tank. Because of a wide variety of possible combinations which can be encountered, observe all cautions and limitations on the labels of all products used on the mixtures. This product may be added through a traveling irrigation system continuously or at the last 30 minutes of solid set or hand moved irrigation systems. This product readily disperses and needs no agitation.

### **DRIP (TRICKLE) CHEMIGATION**

The system must contain a functional check valve, vacuum relief valve and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.

The pesticide injection pipeline must contain a functional, automatic, quick closing check valve to prevent the flow of liquid back toward the injection pump.

The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.

The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

Systems must use a metering pump such as a positive displacement injection pump (i.e., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

When mixing, agitation is not necessary. Adjust the pH of the carrier water to 7 or below. If using stickers, spreaders, insecticides, nutrients, etc, add this product **last**. If compatibility is in question, use a compatibility jar test before mixing a whole tank. It is the pesticide user's responsibility to ensure that the combination product is registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on the product label involved in tank-mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank-mixture.

This product may be added through traveling irrigation system continuously or at the last 30 of solid set or hand moved irrigation systems. This product readily disperses and needs no agitation.

**FOR SPRAY AND SOIL DRENCH APPLICATIONS**

Always spray for total foliage coverage. When respraying, the application rates may be varied within the specified rate range depending on the severity of the disease and environmental conditions. At times, lower rates can be as effective as higher rates and should be tried first. Usually, preventive programs may be maintained at lower rates. Use of low volume spraying is effective against Botrytis and not effective against established powdery mildew and *Xanthomonas* infections. Also, applications on actively growing tissue may be more effective than applications on dormant tissue.

**MINIMUM SPRAY VOLUME WHEN APPLYING THIS PRODUCT**

GALS./AC.			
CROP	BY AIR	BY GROUND	
		Dilute	Concentrate*
Citrus	10	125	30
Field crops	3	20	-
Small fruits	5	150	30
Tree crops	10	400	50
Vegetables	3	20	-
Vines	5	150	30

\*Pesticide application equipment such as Curtec® or other similar sprayers capable of obtaining coverage at low volumes may be used as low as 20 gals./Ac. of spray volume.

**FROST INJURY PROTECTION - BACTERIAL ICE NUCLEATION INHIBITOR**

Application of this product at specified rates to all crops on this label at stages of growth at least 24 hours prior to anticipated frost conditions will afford control of ice nucleating bacteria (*Erwinia herbicola*, *Pseudomonas flourescens*, and *Pseudomonas syringae*) and may, therefore, provide some protection against light frost. This product is not recommended for use in geographical areas where conditions favor severe frost.

**FOR USE AS POST-HARVEST WASH ON AGRICULTURAL COMMODITIES (EXCEPT CA)**

For use as a post-harvest wash, this product may be applied with any type of application equipment that gives thorough and uniform coverage. Devices may include, but are not limited to, dunk and dip tanks, spray applicators or fogging.

Washing raw agricultural commodities will both clean and control bacteria\* and fungi that cause spoilage. Depending on water quality and cleaning conditions or when adding new processing water, add from 103 to 128 fluid ounces of this product per 1,000 gallons of water. Allow thorough coverage of the commodity and then let dry. Rinsing is not required.

Depending on water quality, cleaning conditions or when adding new processing water, start at lower rinse rates. Add this product as per the table below.

Amount of This Product (fl. oz.)	Amount of Rinse Water (Gals.)
25.6 to 32	250
51.2 to 64	500
103 to 128	1,000

**Note:** Commodities need only be immersed long enough to allow complete coverage.

\*Non-public health bacteria.

## **FOR USE TO CONTROL ALGAE AND TADPOLE SHRIMP IN RICE FIELDS**

### **RESISTANCE MANAGEMENT**

- Apply 6.85 pounds of metallic copper (13.9 gals. of this product) per acre foot of water or 2.5 ppm per application to control Algae and Tadpole shrimp.
- If Tadpole shrimp is not present, apply 2.74 pounds of metallic copper (5.5 gals. of this product) per acre foot or 1 ppm per application.
- The maximum application rate must be no greater than be 13.7 pounds of metallic copper (27.9 gals. of this product) per acre-foot per year to control Tadpole shrimp.
- The maximum application rate must be no greater than 5.48 pounds of metallic copper (11.2 gals. of this product) per acre-foot per year to control Algae in water-seeded Rice.
- For simultaneous control of both Algae and Tadpole shrimp, the maximum application rate must be no greater than be 13.7 pounds of metallic copper (27.9 gals. of this product) per acre-foot per year.
- Do not make more than 2 applications per year at no less than 14 days apart.

### **PRE-APPLICATION DOSE DETERMINATION**

For Algae treatments, applicators should conduct initial dose determination tests simulating a full-scale treatment program to determine the minimum efficacious concentrations for eliminating the target species, unless an effective dose is already known for the given target pest population.

### **APPLICATION**

Apply this product at the first sign of Algae growth on the surface of the field or at any time Tadpole shrimp appears between planting time and when the seedlings are well rooted and have emerged through the water. Applications are most effective when made prior to Algae leaving the soil surface and rising to the water surface. Factors such as water depth, temperature, pH, and the amount of algae can affect the amount of this product required. This product can be metered into the Rice field as water is being applied into each paddy when water is being held.

## **FOR USE AS A FUNGICIDE/BACTERICIDE\* ON GROWING AGRICULTURAL COMMODITIES**

(\*Non-public health bacteria)

### **USE INSTRUCTIONS**

This product may be applied with any type of application equipment that gives uniform coverage of foliage, including ground, aerial and low volume sprayers as specified on this label. Use application equipment that is made of PVC or 316L stainless steel.

This product is compatible with most fungal and insecticidal biopesticides when applied at least 2 days before or after application of the biopesticide(s). It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on the product label involved in tank-mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank-mixture.

**Phytotoxicity:** Although this product has been tested on a wide variety of fruits, vegetables and nuts without phytotoxicity, some varieties and cultivars may become sensitive to this product due to environmental factors and stages of growth. Depending on the equipment used and the specific crop, the spray volume applied per acre will differ. Refer to the table “*MINIMUM SPRAY VOLUME*”. Complete spray coverage is essential to assure optimum performance from this product. When treating by aerial application or with low volume application equipment, unless you have had specific previous experience, it is advisable to test for compatibility and tolerance to crop injury prior to full scale commercial utilization.

Read this label for specific rates and timing of application by crop. Where application rates and intervals are provided in a range (e.g., 2 to 4 fl. ozs. and 7 to 10 day intervals), use the higher specified rate and shorter spray time intervals when rainfall is heavy and/or disease pressure is high. Use the higher specified rates for large mature tree crops. The use of a surfactant such as Surf-AC® 820, Cell-U-Wett™ are acceptable for plants having waxy or hairy surfaces. This product works via surface contact with the plants and materials being treated. It is important to ensure that all surfaces are thoroughly wetted. This product does not produce any visible residue or have a distinct odor. It does have a residual, especially if applied with a surfactant.

**SPECIAL PRECAUTIONS**

- DO NOT mix with acidic compounds such as fosetyl-aluminum (e.g., Alliette™) within 14 days before or after application of same.
- Environmental conditions such as extended periods of wet weather, acid rain, etc., which alter the pH of the leaf surface may affect the performance of this product resulting in possible phytotoxicity or loss of effectiveness.
- This product may be reactive on masonry and metal surfaces such as galvanized roofing. Avoid contact with metal surfaces. Do not spray on cars, houses or other metal surfaces susceptible to damage.
- DO NOT mix with potash.
- 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. 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 and even some synthetic materials such as plastics, rubbers, etc. Therefore, it is necessary when using equipment containing these materials that they be thoroughly flushed with clean water after each days use.

**FOR USE ON CROPS, TURF, AND ORNAMENTALS**

**Note to Users in California:** California (CA) rates are for applications onto labeled crop(s)/disease(s) in California only.

**CITRUS (such as Grapefruit, Kumquat, Lemon, Lime, Oranges, Pummelo, Tangelo, Tangerine)**

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Alternaria brown rot	30 to 70	70	On susceptible varieties, apply when the first Spring flush appears and each following flush. On the fruit, start application after two-thirds of the petals have fallen. Repeat at 21 day intervals or as needed. Use the higher specified rates when conditions favor disease development.
Canker (suppression)	12.8 to 64	64	Spray flushes 7 to 14 days after shoots begin to grow. Young fruit may require additional applications. Number and timing of applications will be dependent on disease pressure. Under heavy pressure, spray each new flush of growth.
Greasy spot, Pink pitting	9 to 64 CA: 25.6 to 64	64	Apply during mid-summer.

Melanose, Algal spot (Except CA)	25.6 to 85	85	Apply 2 times per year before the onset of Spring and Autumn rains.
Melanose (CA Only)	25.6 to 64	64	
Phytophthora brown rot, Septoria spot (Except CA)	25 to 70	70	Apply at first indication of rain or first appearance of disease. Repeat application as needed during wet weather.
Scab	25.6 to 64	64	Apply shortly before trees begin to flush. Re-apply at two-thirds petal fall. Repeat application 4 weeks later if necessary.
Do not apply more than 12.6 lbs. of copper (25.4 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

## FIELD CROPS

### Alfalfa

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Cercospora leaf spot, Leptosphaerulina leaf spot	9 to 32	32	Apply 10 to 14 days before each harvest or earlier if disease threatens. <b>Note:</b> Spray injury may occur with sensitive varieties of Lahontan.
	CA: 19.2 to 32		
Do not apply more than 1.12 lbs. of copper (2.2 gals. of this product) per acre per year. Minimum retreatment interval is 30 days.			

### Barley, Oats, Wheat

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Helminthosporium spot, Blotch, Septoria leaf blotch	9 to 25.6	25.6	Make first application at early heading and follow with second spray 10 days later. Use the higher specified rates when conditions favor disease.
	CA: 19.2 to 25.6		
Do not apply more than 1.06 lbs. of copper (2.1 gals. of this product) per acre per year. Minimum retreatment interval is 10 days.			

### Corn (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Bacterial stalk rot	9 to 32	32	Begin treatment when disease first appears and repeat every 7 to 10 days or as needed. Use the higher specified rates and shorter spray intervals when conditions favor disease.
Do not apply more than 4.2 lbs. of copper (8.4 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

## Peanuts

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Cercospora leaf spot	13 to 25.6	25.6	Begin spraying at 35 to 40 days after planting or when disease symptoms first appear. Repeat at 10 to 14 day intervals or as needed. Reduce sprays to 7 day intervals during humid weather. Use the higher specified rates when conditions favor disease. Sulfur may be added at their label specified rates.
	CA: 19.2 to 25.6		
Do not apply more than 4.74 lbs. of copper (9.5 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

## Potatoes

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Early blight, Late blight	9 to 32	32	Apply at 7 to 10 day intervals or as needed starting when plants are 2 to 6 inches high in locations where disease is light. Use the higher specified rate when conditions favor disease. Under severe disease conditions, disease control using this product will be improved by tank mixing with other compatible fungicides registered for use in Potatoes. Read and follow the most restrictive label.
	CA: 19.2 to 32		
Do not apply more than 25 lbs. of copper (50.5 gals. of this product) per acre per year. Minimum retreatment interval is 5 days.			

## Sugar beets

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Cercospora leaf spot	9 to 38.4	38.4	Begin applications when conditions first favor disease development. Repeat at 10 to 14 day intervals or as needed. Use higher specified rates when conditions favor disease. Addition of a sticker/spreader is recommended.
	CA: 19.2 to 38.4		
Do not apply more than 7.86 lbs. of copper (15.8 gals. of this product) per acre per year. Minimum retreatment interval is 10 days.			

## Tobacco (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Angular Leaf Spot, Downy Mildew	19.2 to 25.6	25.6	Apply at first sign of disease or when conditions favor disease development.
Do not apply more than 2 lbs. of copper (4 gals. of this product) per acre per application. Do not apply more than 4 lbs. of copper (8.1 gals. of this product) per acre per year. Minimum retreatment interval is 3 days.			

## ORNAMENTALS

Spray foliage thoroughly for good coverage. Re-application rates and intervals can vary according to disease severity and adversity of environmental conditions. Lower rates may be as effective as higher rates and should be tried first. Routine preventive programs may be maintained using lower rates.

Use of low volume equipment is effective against Botrytis but may not be effective against established Powdery mildew ad/or Xanthomonas infections.

Applications on actively growing tissues may be more effective than applications on dormant tissues.

### USE PRECAUTION

- Rates above 15 fluid ounces of this product per 100 gallons of water may damage some tender, open blooms.

### USE RESTRICTIONS

- On Easter Lilies, do not apply more than 2.5 pounds of copper [640 fl. ozs. (5 gals.) of this product] per acre per application. Do not apply more than 75 pounds of copper [150 gals. of this product] per acre per year. Minimum retreatment interval is 7 days. Do not apply any additional pesticide containing copper to this land for 36 months.
- On other Ornamentals, do not apply more than 2 pounds of copper [512 fl. ozs. (4 gals.) of this product] per acre per application. Do not apply more than 20 pounds of copper [40 gals. of this product] per acre per year. Minimum retreatment interval is 7 days.

## Annual and Perennial Bedding Plants

Plant	Disease(s) / Pathogen(s)	This Product (fl. oz./100 gals.)
Alyssum	Botrytis, Downy Mildew	11.2 to 22.4
Argyranthemum*	Botrytis, Erwinia	11.2 to 22.4
Begonia	Botrytis	14.5 to 22.4
	Powdery Mildew, Xanthomonas	16.8 to 33.6
Chrysanthemum*	Botrytis, Pseudomonas	16.8 to 28.0
Daylily	Botrytis	14.5 to 22.4
	Erwinia, Powdery Mildew	16.8 to 28.0
Dusty Miller	Alternaria	16.8 to 28.0
	Botrytis	14.5 to 22.4
Fuchsia	Botrytis	14.5 to 22.4
	Powdery Mildew	14.5 to 28.0
Geranium	Botrytis, (Preventive) Rust	16.8 to 22.4
	Preventive: Pseudomonas, Xanthomonas	16.8 to 50.5
	Therapeutic: Pseudomonas, Xanthomonas	56.1
	Therapeutic: Rust	28 to 44.8
Hollyhock*	Botrytis	14.5 to 22.4
	Powdery Mildew, Rust	16.8 to 28.0
Hosta*	Botrytis	16.8 to 22.4
	Erwinia	16.8 to 33.6
Impatiens	Alternaria	16.8 to 39.2
	Botrytis	14.5 to 16.8
	Phytophthora*	15 to 20
	Powdery Mildew*	14.5 to 28.0
	Pseudomonas	16.8 to 39.2
Lisianthus	Botrytis	14.5 to 22.4
	Erwinia*, Pseudomonas*, Xanthomonas*	13 to 25
New Guinea Impatiens	Botrytis	14.5 to 16.8
	Powdery Mildew	14.5 to 22.4
Pachysandra*	Botrytis	14.5 to 16.8
	Volutella	14.5 to 28.0
Pansy	Botrytis, Phytophthora	14.5 to 22.4



	Cercospora	16.8 to 22.4
Periwinkle	Botrytis	14.5 to 22.4
	Phytophthora	16.8 to 22.4
Ranunculus	Bacterial Blight, Botrytis	14.5 to 22.4
	Powdery Mildew*	16.8 to 28.0
Snapdragon	Botrytis	14.5 to 22.4
	Downy Mildew, Rust	14.5 to 28.0
Zinnia	Botrytis	14.5 to 22.4
	Powdery Mildew*	16.8 to 33.6
	Pseudomonas, Xanthomonas	14.5 to 28.0
Additional annuals & perennials <sup>1,*</sup>	Botrytis	14.5 to 22.4
	Downy Mildew	16.8 to 33.6
	Powdery Mildew, Pseudomonas	16.8 to 28.0

<sup>1</sup> Additional annuals and perennials include Anemone, Aster, Bacopa, Baptista, Carnation, Coleus, Columbine, Coneflower, Coreopsis, Cuphea, Dahlia, Daisy, Dianthus, Delphinium, Echinacea, Ipomoea, Lantana, Lead Plant, Liatris, Lobelia, Lupine, Marigold, Monarda, Ornamental Grasses, Pentas, Petunia, Phlox, Poppy, Prairie Smoke, Primrose, Pulmonaria, Rudbeckia, Salvia, Scabiosa, Sedum, Silphium, Verbena, Veronica, Vinca, Viola.

\* Not registered for use in California.

### Cut Flowers

Plant	Disease	This Product (fl. oz./100 gals.)
Alstromeria*	Botrytis	14.5 to 16.8
Carnation*	Botrytis	14.5 to 22.4
Chrysanthemum*	Botrytis	16.8 to 28.0
Delphinium*	Botrytis	14.5 to 16.8
Freesia*	Botrytis	14.5 to 16.8
Gerbera	Botrytis	16.8 to 28.0
Gladiola	Botrytis	14.5 to 16.8
Lisianthus	Botrytis	14.5 to 22.4
Orchid	Botrytis	14.5 to 16.8
Rose	Botrytis	16.8 to 56.0
Snapdragon*	Botrytis	14.5 to 22.4
Sweetpea*	Botrytis	14.5 to 16.8

\* Not registered for use in California

### Nursery Plants

Plant	Disease(s) / Pathogen(s)	This Product (fl. oz./100 gals.)
Azalea	Anthrachnose	16.8 to 28.0
	Botrytis	14.5 to 28.0
	Cylindrocladium	16.8 to 39.2
	Phytophthora	22.4 to 28.0
Buxus	Volutella	16.8 to 28.0
Cherry Laurel*	Xanthomonas	22.4 to 39.2
Conifers*	Botrytis	14.5 to 28.0
	Diplodia	11.2 to 14.5
Crape Myrtle*	Botrytis	14.5 to 28.0
	Powdery Mildew	22.4 to 33.6
Dogwood	Anthrachnose, Powdery mildew	22.4 to 33.6
	Botrytis	14.5 to 28.0
Elm*	Erwinia	22.4 to 44.8
Euonymus	Anthrachnose	16.8 to 33.6
	Botrytis	14.5 to 28.0

Hawthorn	Cedar Apple Rust	16.8 to 28.0
Hydrangea	Botrytis, Powdery mildew	14.5 to 28.0
	Cercospora	16.8 to 28.0
Indian Hawthorn	Botrytis	14.5 to 28.0
	Cercospora*	15 to 25
	Entomosporium	16.8 to 33.6
Japanese Maple	Botrytis	14.5 to 28.0
	Pseudomonas, Verticillium	16.8 to 28.0
Juniper*	Phomopsis	14.5 to 28.0
Leyland Cypress*	Cercospora	14.5 to 28.0
Lilac*	Botrytis, Pseudomonas	14.5 to 28.0
	Powdery Mildew	16.8 to 28.0
Nandina*	Xanthomonas	16.8 to 28.0
Oak*	Anthraco-nose	39.2
	Botrytis	14.5 to 28.0
Oak (Trunk Spray)*	Phytophthora	33.6 to 50.5
Photinia*	Entomosporium	16.8 to 33.6
Pinus*	Dothistroma	16.8 to 28.0
Rhododendron	Botrytis	14.5 to 28.0
	Cylindrocladium	16.8 to 39.2
	Phytophthora	22.4 to 39.2
Rosaceae: Cotoneaster (Malus), Mountain Ash, Ornamental Crabapple, Ornamental Pear, Pyracantha	Apple Scab	44.8
	Botrytis	14.5 to 28.0
	Fireblight	22.4 to 44.8
	Pseudomonas	16.8 to 39.2
Rose**	Preventive: Black Spot, Powdery mildew	16.8 to 33.6
	Therapeutic: Black Spot, Powdery mildew	39.2 to 56.1
	Preventive: Botrytis, Cylindrocladium, *Downy mildew	16.8 to 22.4
	Therapeutic: Botrytis, Cylindrocladium, *Downy mildew	28.0 to 56.0
Ruscus*	Pseudomonas	14.5 to 28.0
Silver Buttonwood*	Powdery mildew	20
Sycamore*	Anthraco-nose	39.2
	Botrytis	14.5 to 28.0
Viburnum*	Botrytis	14.5 to 28.0
	Cercospora	16.8 to 28.0
	Phytophthora	22.4 to 28.0
Additional nursery plants <sup>1</sup>	Botrytis, Rhizoctonia	14.5 to 28.0
	Fireblight	22.4 to 44.8
	Dothistroma*	22.4 to 44.8
	Powdery Mildew	22.4 to 28.0
	Pseudomonas	16.8 to 39.2

<sup>1</sup> Additional Nursery Plants include: Shrubs/Vines\* - Barberry, Bougainvillea, Clematis, Cornus, Cotinus, Forsythia, Gardenia, Holly, Paeonia, Philadelphus, Physocarpus, Potentilla, Ribes, Rosa, Spirea, Weigela, Wisteria; Deciduous\* - Acer, Amelanchier, Betula, Celtis, Cercis, Crataegus, Ficus, Fraxinus, Ginkgo, Gleditsia, Magnolia, Malus, Populus, Prunus, Pyrus, Tilia; Conifers\* - Abies, Juniper, Picea, Pinus, Pittosporum, Pseudotsuga, Taxus, Thuja, Tsuga; Non-Bearing Fruit Trees and Vines – Apple (In California, Fireblight only), Pear\*, Grape (In California, Botrytis only), Citrus\*  
\* Not registered for use in California.

\*\* On Roses, rates up to 70 fluid ounces of this product per 100 gallons of water may be used against Powdery mildew if no blooms are open.

## Potted Flowering Plants

Plant	Disease(s) / Pathogen(s)	This Product (fl. oz./100 gals.)
African Violet	Botrytis, Powdery Mildew	14.5 to 16.8
Azalea	Botrytis	14.5 to 28.0
	Colletotrichum	16.8 to 28.0
	Cylindrocladium	16.8 to 39.2
Calla lily	Botrytis, Erwinia	14.5 to 22.4
Chrysanthemum	Botrytis, Crown gall*, Erwinia, Powdery mildew	16.8 to 28.0
Cineraria*	Botrytis	14.5 to 22.4
Cyclamen	Botrytis	16.8 to 22.4
	Erwinia	16.8 to 22.4
Daffodil*	Botrytis	14.5 to 22.4
Easter Lily	Botrytis	14.5 to 22.4
Exacum*	Botrytis	14.5 to 22.4
Gerbera	Botrytis, Powdery mildew	16.8 to 28.0
Gloxinia*	Botrytis	14.5 to 22.4
Holiday Cactus*	Botrytis	14.5 to 28.0
	Erwinia, Pseudomonas, Xanthomonas	16.8 to 56.1
Hyacinth*	Botrytis	14.5 to 22.4
Hydrangea	Botrytis	14.5 to 28.0
	Powdery Mildew	14.5 to 28.0
Iris*	Botrytis	14.5 to 22.4
	Erwinia	16.8 to 22.4
Kalanchoe	Botrytis	16.8 to 28.0
	Erwinia, Powdery mildew	16.8 to 39.2
Lisianthus	Botrytis	14.5 to 22.4
Orchid	Botrytis	14.5 to 16.8
	Erwinia, Pseudomonas, Xanthomonas	16.8 to 44.8
Poinsettia	Botrytis	16.8 to 22.4
	Scab	22.4 to 39.2
	Preventive: Erwinia, Powdery Mildew, Xanthomonas	16.8 to 22.4
	Therapeutic: Erwinia, Powdery Mildew, Xanthomonas	22.4 to 39.2
Primula	Botrytis	14.5 to 22.4
	Erwinia	16.8 to 22.4
Rose bush**	Preventive: Black Spot, Powdery mildew	16.8 to 33.6
	Therapeutic: Black Spot, Powdery mildew	39.2 to 56.1
	Preventive: Botrytis, Cylindrocladium, *Downy mildew	16.8 to 22.4
	Therapeutic: Botrytis, Cylindrocladium, *Downy mildew	28.0 to 56.1
Tulip	Botrytis	14.5 to 22.4

\* Not registered for use in California.

\*\* On Roses, rates up to 70 fluid ounces of this product per 100 gallons of water may be used against Powdery mildew if no blooms are open.

## Tropical Foliage Plants

Plant	Disease(s) / Pathogen(s)	This Product (fl. oz./100 gals.)
Dracaena	Rust	16.8 to 28.0
Ferns*	Botrytis, Erwinia, Rhizoctonia	14.5 to 22.4
Hibiscus	Botrytis	14.5 to 28.0
	Pseudomonas, Xanthomonas	16.8 to 28.0
Ivy	Botrytis	14.5 to 22.4
	Xanthomonas*	16.8 to 56.1
Palms*	Botrytis, Erwinia	14.5 to 22.4
	Pseudomonas, Xanthomonas	14.5 to 28.0
Philodendron selloum*	Fireblight	20 to 40
Spathiphyllum	Botrytis	14.5 to 28.0
	Cylindrocladium	16.8 to 28.0
	Phytophthora	16.8 to 33.6
Tropical Foliage	Botrytis, Powdery mildew	14.5 to 28.0
	Erwinia, Pseudomonas, Xanthomonas	22.4 to 56.1

\*Not registered for use in California.

## SPRAY AND DIP APPLICATIONS DURING PROPAGATION

### Harvesting Cuttings on Site

When harvesting cuttings on site, spray or fog stock plants using the rates in the following table 1 to 2 days prior to taking cuttings. Spray cuttings to drench again at same rate 2 to 3 days after sticking in rooting medium or dip cuttings for a few seconds prior to sticking.

### Delivered Rooted, Callused or Unrooted Cuttings

When using shipped-in rooted, callused or unrooted cuttings, spray cuttings to drench using the rates in the following table 2 to 3 days after planting or sticking, or dip cuttings for few seconds prior to sticking. Under severe disease pressure, repeat application in 7 to 10 days.

## Herbaceous and Woody Stock Plants and Cuttings

Plant	Disease(s) / Pathogen(s)	This Product (fl. oz./100 gals.)
Azalea	Botrytis*	14.5 to 28.0
	Cylindrocladium	16.8 to 39.2
Chrysanthemum	Botrytis*, Erwinia	16.8 to 28.0
Geranium	Botrytis	16.8 to 22.4
	Xanthomonas	16.8 to 56.1
Holiday Cactus*	Botrytis	14.5 to 28.0
	Erwinia	16.8 to 22.4
Hydrangea	Botrytis*	14.5 to 28.0
	Xanthomonas	16.8 to 28.0
Lavender*	Botrytis	14.5 to 22.4
Mini-Rose	Botrytis*	16.8 to 22.4
	Cylindrocladium	16.8 to 56.1
Poinsettia	Botrytis	16.8 to 22.4
	Erwinia, Scab	22.4 to 39.2
	Xanthomonas*	22.4 to 39.2
Tropical Foliage	Botrytis*	14.5 to 28.0
	Cylindrocladium	16.8 to 28.0
	Erwinia	22.4 to 56.1

\*Not registered for use in California.

## POST-HARVEST DIP APPLICATIONS ON CUT FLOWERS

Dip cut flowers and buds for a few seconds soon after cutting.

Plant	Disease	This Product (tsp./5 gals.)
Alstromeria	Botrytis	0.8 to 1.1
Carnation*	Botrytis	2.2 to 3.3
Chrysanthemum*	Botrytis	2.2 to 3.3
Delphinium*	Botrytis	1.1 to 2.2
Freesia	Botrytis	0.8 to 1.1
Gerbera*	Botrytis	2.2 to 3.3
Gladiola	Botrytis	1.6 to 3.3
Orchid*	Botrytis	2.2 to 3.3
Rose	Botrytis	3.3 to 4.2
Snapdragon*	Botrytis	1.1 to 2.2
Sweetpea	Botrytis	1.1 to 2.2

\*Not registered for use in California.

## BULB APPLICATIONS

Dip bulbs for 5 minutes or spray bulbs to drip, then allow to dry before planting.

Plant	Pathogen	This Product (fl. oz./100 gals.)
Calla Lily	Erwinia	33.6

## SOIL DRENCH APPLICATIONS (GREENHOUSE, FIELD, LANDSCAPE AND INTERIOR)

Plant	Disease(s) / Pathogen(s)	This Product (fl. oz./100 gals.)
African Violet	Phytophthora	14.5 to 22.4
Aster	Phytophthora	22.4 to 33.6
Azalea	Cylindrocladium	22.4 to 39.2
	Rhizoctonia	22.4 to 39.2
Calla Lily*	Erwinia	16.8 to 33.6
Cyclamen	Erwinia	16.8
Ferns	Rhizoctonia	16.8 to 33.6
Geranium*	Botrytis	22.4 to 39.2
Hosta	Erwinia	16.8 to 28.0
Impatiens	Phytophthora	22.4 to 39.2
Japanese Maple	Verticillium	28.0
Pansy	Phytophthora	16.8 to 28.0
	Pythium	16.8 to 28.0
Periwinkle	Phytophthora	16.8 to 22.4
Pittosporum	Rhizoctonia	16.8 to 22.4
Poinsettia	Phytophthora	16.8 to 28.0
	Rhizoctonia	22.4 to 39.2
Rhododendron	Rhizoctonia	22.4 to 39.2
Rose	Black spot	22.4 to 39.2
	Cylindrocladium*	22.4 to 39.2
Spathiphyllum	Cylindrocladium*	22.4 to 39.2
	Phytophthora	22.4 to 39.2
Vinca Minor*	Rhizoctonia	16.8 to 28.0

\*Not registered for use in California.

## SPRAY APPLICATION (SHADE AND ORNAMENTAL TREES)

### Sycamore (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Anthracnose	9 to 18	18	Apply as a full cover spray in 100 gals. of water or sufficient volume for thorough coverage at bud crack. Repeat 7 to 10 days later at 10% leaf expansion. Use the higher specified rates when disease is severe.
Do not apply more than 0.37 lb. of copper (0.75 gal. of this product) per acre per year. Minimum retreatment interval is 7 days.			

## TRUNK INJECTION APPLICATIONS (SHADE AND ORNAMENTAL TREES)

### Elm [Dutch elm disease and Cankers (Botryodiplodia, Cytospora, Tubercularia)]

Inject once during the growing season for control or prevention. Injection sites should be six inches or less above the soil line. Injection should not be done against Dutch elm disease if the Elm appears more than 20% diseased or if the disease may have entered through root grafts from another diseased tree or stump. Remove dead and diseased limbs within 10 days after treatment.

Elm Size (diameter at chest height)	This Product (fl. oz.)	Water (gals.)
12 to 19 inches	2.2	2
20 to 26 inches	3.3	3
27 to 33 inches	4.4	4
34 to 40 inches	5.6	5
41 to 48 inches	6.7	6

On Red elm, use the dosage specified below for Red oak.

### Oak and Sycamore\* [Oak Wilt, Phytophthora]

#### \*Anthracnose

On Red oak, use as preventative treatment only. Follow the injection directions in the "ELM" section, taking care that holes are not too deep on shallow-barked Oaks.

Treatment is best in the month before Fall color in northern climates.

Tree Size (Diameter at Chest Height)	This Product (fl. oz.)		Water (gals.)
	Red Elm / Red Oak	Oak / Sycamore	
12 to 19 inches	1.1	1.6	3.0
20 to 26 inches	1.6	2.2	4.5
27 to 33 inches	2.2	3.3	6.0
34 to 40 inches	2.8	3.9	7.5
41 to 48 inches	3.3	5.0	9.0

\*Not registered for use in California.

**Shade Trees [Cankers: Cytospora on Cottonwood, Green Ash, Paper Birch; Botryodiplodia and Cytospora on Hackberry, Silver Maple; Nectria on Honey Locust]**

Follow injection directions in the “ELM” section.

Tree Size (Diameter at Chest Height)	This Product (fl. oz.)	Water (gals.)
10 inches	1.4	1.0
20 inches	2.8	2.0

**SMALL FRUITS**

**Blackberries (such as Aurora, Boysen, Cascade, Chehalem, Logan, Marion, Santiam, Thornless Evergreen)**

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Anthracnose, Cane spots, Leaf spots, Purple blotch, Yellow rust	9 to 19.2	19.2	Apply when leaf buds begin to open. Repeat when flower buds show white. If needed, agricultural type spray oil may be added. <b>Note:</b> Crop injury may occur if applied to foliage under certain environmental conditions such as hot or prolonged moist periods. Discontinue applications if signs of crop injury appear.
	CA: 19.2		
Anthracnose, Cane spots, Leaf spots, Pseudomonas blight, Purple blotch, Yellow rust	17 to 32	32	Make Fall application after harvest. Apply delayed dormant spray after pruning/training in the Spring. If needed, agricultural type spray oil may be added.
	CA: 32		
Do not apply more than 10 lbs. of copper (20.2 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

**Blueberries**

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Bacterial canker	26 to 51.2	51.2	Make application before fall rains and a second application 4 weeks later. Use the higher specified rate when conditions favor disease.
	CA: 33 to 51.2		
Fruit rot, Phomopsis twig blight	17 to 51.2	51.2	<b>Dormant Application:</b> Begin applications when bloom buds begin to swell. Make additional applications at 10 to 14 day intervals or as needed before blooms open.
	CA: 25.6 to 51.2		
Do not apply more than 8.4 lbs. of copper (16.9 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

**Cranberries (Except CA)**

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Bacterial stem canker	51.2	51.2	Apply post-harvest and again in Spring at bud swell. Apply one or two additional applications at 10 to 14 intervals or as needed depending on disease severity.

Fruit rot	51.2	51.2	Make application in late bloom. Apply one or two additional applications at 10 to 14 day intervals or as needed depending on disease severity.
Leaf blight, Red leaf spot, Stem blight, Tip blight ( <i>Monilinia</i> )	51.2	51.2	Apply delayed dormant spray in the Spring. Repeat at 10 to 14 day intervals or as needed through prebloom.
Rose bloom	51.2	51.2	Apply three sprays on 10 to 14 day schedule or as needed as soon as symptoms are observed.
Do not apply more than 12.6 lbs. of copper (25.7 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

### Currants, Gooseberries (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Anthracnose, Leaf spots	52 to 64	64	Make initial application after first leaves have expanded. Continue on a 10 to 14 day schedule or as needed during wet conditions in the Spring. Make additional application after harvest.
Do not apply more than 16 lbs. of copper (32.6 gals. of this product) per acre per year. Minimum retreatment interval is 10 days.			

### Raspberries

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Anthracnose, Cane spots, Leaf spots, Purple blotch, Yellow rust	17 to 19.2	19.2	Apply when leaf buds begin to open. Repeat when flower buds show white. If needed, agricultural type spray oil may be added. <b>Note:</b> Crop injury may occur if applied to foliage under certain environmental conditions such as hot or prolonged moist periods. Discontinue applications if signs of crop injury appear.
	CA: 19.2		
Anthracnose, Cane spots, Leaf spots, Pseudomonas blight, Purple blotch, Yellow rust	17 to 32	32	Make Fall application after harvest. Apply delayed dormant spray after pruning/training in the Spring. If needed, agricultural type spray oil may be added.
	CA: 32		
Do not apply more than 10 lbs. of copper (20.2 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

### Strawberries

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Angular leaf spots ( <i>Xanthomonas</i> ), Leaf blight, Leaf scorch, Leaf spots	9 to 25.6	25.6	Begin application when plants are established and continue on a weekly schedule throughout the season. Apply in at least 20 gallons of water. Use the higher specified rates when conditions favor disease. <b>Note:</b> Discontinue applications if signs of crop injury appear.
	CA: 19.2 to 25.6		
Do not apply more than 6 lbs. of copper (12.2 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			



### TURFGRASS (Except CA)

Target	Rate/1000 ft <sup>2</sup> (fl. oz.)	Maximum Rate Per 1000 ft <sup>2</sup> Application (fl. oz.)	Use Instructions
Black algae, Moss	6	17.7	Apply at first indication of rain or first appearance of Black algae or Moss. Repeat application as needed during wet weather.
Do not apply more than 21 lbs. of copper (42 gals. of this product) per acre per year. Minimum retreatment interval is 10 days.			

### TREE CROPS

#### Almonds, Apricots, Cherries, Plums, Prunes

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Bacterial blast*	9	9	<b>Almonds Only*</b> : For Bacterial blast in sprinkler irrigated orchards or where disease is severe, apply post-bloom at 14 day intervals or as needed just before sprinkling. <b>Note</b> : Foliar injury may occur from post-bloom sprays especially on NePlus varieties of Almonds.
Bacterial blast ( <i>Pseudomonas</i> ), Bacterial canker, Coryneum blight (Shothole)	51.2 to 103	103	Make first and second applications before Fall rains and at late dormant, respectively. Use the higher specified rates when conditions favor disease. If needed, agricultural type spray oil may be added. <b>For Cherries</b> : Where disease is severe, an additional application shortly after harvest may be required. <b>Note</b> : Foliar injury may occur from post-bloom sprays on Almonds, especially on NePlus varieties.
	CA: 32 to 64	CA: 64	
Black knot (Plums)*	32 to 64	64	Make application at bud swell up to early bloom for early disease suppression. Apply before full bloom. Use the higher specified rates when rainfall is heavy and disease pressure is high. <b>Note</b> : To avoid plant injury, do not use after full bloom.
Blossom brown rot, Coryneum blight (Shothole) – On Almonds only	51.2 to 64	64	Apply during early bloom. Do not apply after full bloom or injury may occur. Use the higher specified rates when rainfall is heavy and disease pressure is high.
Blossom brown rot, Coryneum blight (Shothole) – On Apricots, Cherries, Plums & Prunes	60 to 90	90	
Cherry leaf spots*	38.4 to 64	64	<b>Sour Cherries Only</b> : Apply at petal fall as well as one to two times after petal fall. Use the lower specified rates where disease infection is light and use the higher rates for a dormant application or where disease infection is moderate to heavy. As Cherry varieties (such as Sweet Cherry and English Morello) differ in sensitivities to copper, evaluate injury potential of this product before treating Cherry orchard.

Do not apply more than 18 lbs. of copper (36.7 gals. of this product) per acre per year. Minimum retreatment interval is 5 days for bloom/growing season applications; minimum retreatment interval is 7 days for dormant/late dormant applications (up to pink bud in Apricot, Cherry, Peach, Plum, and Prune fruits).  
 \* Not for registered for use in California.

## Apples

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Anthracnose, Blossom blight, European canker ( <i>Nectria</i> ), Shoot blast ( <i>Pseudomonas</i> )	51.2 to 103	103	Apply before Fall rains. Use the higher specified rates when conditions favor disease. <b>Note:</b> Use on yellow varieties may cause discoloration. To avoid discoloration, pick before spraying. Only one application is permitted per season.
	CA: 51.2 to 64	CA: 64	
Apple scab, Fire blight	9 to 26*	26*	<b>Extended spray schedule where fruit finish is not a concern:</b> Continued applications may be made at 5 to 7 day intervals or as needed between one-half inch green-tip and first cover spray. <b>Note:</b> Moderate to severe crop injury may result from this extended spray schedule. It is not intended for fresh market Apples or for Apples where fruit finish is a concern as it is likely to cause fruit russetting.
	CA: (Apple scab) 19.2 to 32	CA: 32	
	CA: (Fireblight) 19.2 to 25.6	CA: 25.6	
Apple scab, Fire blight	51.2 to 103	103	Make application between silvertip and green-tip. Apply as a full cover spray for early season disease suppression. <b>Note:</b> Moderate to severe crop injury may occur from late application. Discontinue use when green-tip reaches one-half inch. Only one application is permitted per season.
	CA: 51.2 to 64	CA: 64	
Collar rot, Crown rot	32	32	Apply 4 gallons of solution as a drench on the lower trunk area of each tree. For best results, apply in early Spring or Fall after harvest. Do not apply to foliage or fruit. Only one application is permitted per season.

Do not apply more than 16 lbs. of copper (32.3 gals. of this product) per acre per year. Minimum retreatment interval is 5 days.  
 Only one application is permitted during Fall / late dormant stage. Only one application is permitted between silver-tip and green-tip. Maximum single application rate is 6 lbs. of copper (12.2 gals. of this product) per acre.  
 \*Not registered for use in California.

## Avocados

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Anthracnose, Blotch, Scab	35 to 64	64	Apply when bloom buds begin to swell. Continue application at monthly intervals for 5 to 6 applications. Use the higher specified rates when conditions favor disease.
	CA: 51.2 to 64		

Do not apply more than 18.9 lbs. of copper (38.1 gals. of this product) per acre per year. Minimum retreatment interval is 14 days.

### Bananas (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Black pitting	26 to 32	32	Mix 100 gallons of water. Apply to the fruit stem and the basal portion of the leaf crown. Apply during the first and second weeks after fruit emergence.
Sigatoka (Black, Yellow)	19.2 to 26	26	Apply by air in 3 gallons of water. If needed, agricultural type spray oil may be added. Apply on a 14 day schedule or as needed throughout the wet season. Apply at 21 day intervals or as needed during dry periods.
Do not apply more than 18.9 lbs. of copper (38.1 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

### Cacao (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Black pod	9 to 64	64	Begin applications at the start of the rainy season and continue while infection conditions persist.
Do not apply more than 15.75 lbs. of copper (31.8 gals. of this product) per acre per year. Minimum retreatment interval is 14 days.			

### Coffee

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Bacterial blight	35 to 64	64	Begin spray program before the onset of long rainy periods. Continue throughout the rainy season at 14 to 21 day intervals or as needed. The critical time for spraying to control disease is just before, during and after flowering(s), especially when coinciding with wet weather. Use the higher specified rates when rainfall is heavy and disease pressure is high.
	CA: 38.4 to 64		
Coffee berry disease ( <i>Colletotrichum coffeanum</i> )	35 to 64	64	Apply first spray after flowering and before onset of long rains and then at 21 to 28 day intervals or as needed until picking. Use the higher specified rates when conditions favor disease.
	CA: 38.4 to 64		
Iron spot ( <i>Cercospora coffeicola</i> ), Pink disease ( <i>Corticium salmonicolor</i> )	9 to 19.2	19.2	Use concentrate or dilute spray. Begin treatment at the start of wet season and continue at monthly intervals for three applications.
	CA: 19.2		
Leaf rust ( <i>Hemileia vastatrix</i> )	9 to 32	32	Apply before the onset of rain and then, at 21 day intervals or as needed while the rains continue. Use the higher specified rates when rainfall is heavy and disease pressure is high.
	CA: 19.2 to 32		
Do not apply more than 12.6 lbs. of copper (25.4 gals. of this product) per acre per year. Minimum retreatment interval is 14 days.			

### Filbert / Hazelnut (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Bacterial blight	64 to 155	155	Apply as a post-harvest spray. In seasons of heavy rainfall, apply a second spray when three-fourths of the leaves have dropped. Use the higher rates when rainfall is heavy and disease pressure is high. If needed, agricultural type spray oil may be added.
Eastern filbert blight	64 to 155	155	Apply as a dilute spray in adequate water for thorough coverage. Make applications starting at bud swell to bud break and continue at 14 day intervals or as needed until early May. Thorough coverage is essential. Use the higher specified rates when rainfall is heavy and disease pressure is high. If needed, agricultural type spray oil may be added.
Do not apply more than 18 lbs. of copper (36.7 gals. of this product) per acre per year. Minimum retreatment interval is 14 days.			

### Mango (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Anthracnose	26 to 64	64	Apply monthly after fruit set until harvest. Use the higher specified rates when rainfall is heavy and disease pressure is high.
Do not apply more than 48 lbs. of copper (97.9 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

### Olive (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Olive knot, Peacock spot	52 to 86	86	Make first application before Winter rains begin. Repeat application in early Spring if disease is severe. Apply the higher specified rates for heavy disease pressure or when conditions favor disease development.
Do not apply more than 18 lbs. of copper (36.7 gals. of this product) per acre per year. Minimum retreatment interval is 30 days.			

### Peaches, Nectarines (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Bacterial blast ( <i>Pseudomonas</i> ), Bacterial canker, Bacterial spot ( <i>Xanthomonas</i> ), Coryneum blight (Shothole), Leaf curl	51.2 to 103	103	Make first application before Fall rains and a second at late dormant. For Peach leaf curl, apply at late dormant application before leaf buds swell. Use the higher specified rates when rainfall and disease pressure is high. If needed, agricultural type spray oil may be added.
Bacterial spot	4.5 to 19.2	19.2	Spotting of leaves and defoliation may occur from use in cover sprays. Varietal differences occur.

Blossom brown rot, Coryneum blight (Shothole), Leaf curl	35 to 76.8	76.8	Apply as full cover spray at pink bud. Use the higher specified rates when conditions favor disease.
Do not apply more than 18 lbs. of copper (36.7 gals. of this product) per acre per year. Minimum retreatment interval is 5 days during the bloom/growing season. Minimum retreatment interval is 7 days during the dormant/late dormant season up to pink bud.			

### Pears (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Blossom blight ( <i>Pseudomonas</i> )	51.2 to 103	103	Apply before Fall rains and again, during dormancy before Spring growth starts. Use the higher specified rates when disease pressure is high or when conditions favor disease development.
Fire blight	9 to 19.2	19.2	Apply at 5 day intervals or as needed throughout the bloom period. <b>Note:</b> Russetting may occur in copper sensitive varieties. Excessive dosages may cause fruit russet on any variety.
Do not apply more than 16 lbs. of copper (32.3 gals. of this product) per acre per year. Minimum retreatment interval is 5 days during the bloom/growing season. Only one application is permitted during Fall / late dormant stage. Only one application is permitted between silver-tip and green-tip. Maximum single application rate is 6 lbs. of copper (12.2 gals. of this product) per acre.			

### Pecans (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Ball moss, Spanish moss	35 to 64	64	Apply in the Spring when ball moss is actively growing using 1.5 gallons of spray solution per foot of tree height. Make sure to wet ball moss tufts thoroughly. The addition of a nonionic surfactant will improve control. A second application may be required after 12 months.
Kernel rot, Shuck rot ( <i>Phytophthora cactorum</i> ), Zonate leaf spot ( <i>Cristulariella pyramidalis</i> )	9 to 32	32	For suppression, apply in sufficient water to ensure complete spray coverage at 2 to 4 week intervals or as needed starting at kernel growth. Continue until shucks open. Use the higher specified rates and shorter spray intervals if frequent rainfall occurs.
Do not apply more than 6.3 lbs. of copper (12.8 gals. of this product) per acre per year. Minimum retreatment interval is 14 days.			

### Pistachio

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Botryosphaeria panicle and shoot blight, Botrytis blight, Late blight ( <i>Alternaria alternata</i> ), Septoria leaf blight	26 to 64	64	Make initial application at bud swell. Repeat at 14 to 28 day intervals or as needed. If disease conditions are severe, use the higher specified rates and shorter spray intervals.
	CA: 32 to 64		
Do not apply more than 8.4 lbs. of copper (16.9 gals. of this product) per acre per year. Minimum retreatment interval is 14 days.			

### Quince (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Fire blight	9 to 19.2	19.2	Apply at 5 day intervals or as needed throughout the bloom period. Apply in adequate water for thorough coverage.
Do not apply more than 16 lbs. of copper (32.3 gals. of this product) per acre per year. Minimum retreatment interval is 5 days during the bloom season. Only one application is permitted during Fall / late dormant stage. Only one application is permitted between silver-tip and green-tip.			

### Walnut

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Walnut blight	38.4 to 103	103	Apply at first spray at early pre-bloom prior to or when catkins are partially expanded. Make additional applications during bloom and early nutlet stage or as needed when frequent rainfall or extended periods of moisture occur. Thorough coverage of catkins, leaves and nutlets is essential for effective control. <b>Note:</b> Adequate control may not be obtained when copper tolerant species of <i>Xanthomonas</i> bacteria are present.
	CA: 32 to 51	CA: 51	
Do not apply more than 32 lbs. of copper (65.3 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

### VEGETABLES

#### Beans (Dry, Green) (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Brown spot, Common blight, Halo blight	9 to 25.6	25.6	For protective sprays, apply when plants are 6 inches high. Repeat on a 7 to 14 day schedule or as needed depending on environmental conditions. Use the higher specified rates for more severe disease.
Do not apply more than 4.74 lbs. of copper (9.6 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

#### Beets (Green, Table) (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Cercospora leaf spot	9 to 32	32	Begin applications when conditions first favor disease development. Repeat at 10 to 14 day intervals or as needed. Use the higher specified rates when conditions favor disease.
Do not apply more than 7.86 lbs. of copper (15.8 gals. of this product) per acre per year. Minimum retreatment interval is 10 days.			

### Carrots

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Alternaria leaf spot, Cercospora leaf spot	9 to 26	26	Begin applications when conditions first favor disease development. Repeat at 10 to 14 day intervals or as needed.
	CA: 19.2	CA: 19.2	
Do not apply more than 5 lbs. of copper (10.1 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

### Celery, Celeriac (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Bacterial blight, Cercospora early blight, Septoria late blight	9 to 17	17	Begin applications as soon as plants are first established in the field. Repeat at 7 to 14 day intervals or as needed depending on disease severity
Do not apply more than 5.3 lbs. of copper (10.8 gals. of this product) per acre per year. Minimum retreatment interval is 7 days. Not for use on Celeriac in California.			

### Crucifers (Broccoli, Brussels sprouts, Cabbage, Cauliflower, Collard greens, Mustard greens, Turnip greens)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Black leaf spot ( <i>Alternaria</i> ), Black rot ( <i>Xanthomonas</i> ), Downy mildew	9 to 25.6	25.6	Begin application after transplants are set in the field or shortly after emergence of field seeded crops or when conditions favor disease development. Apply at 7 to 10 day intervals or as needed. Use the higher specified rates when conditions favor disease. <b>Note:</b> Reddening of older leaves may occur on Broccoli and a flecking of wrapper leaves may occur on Cabbage.
	CA: 19.2 to 25.6		
Do not apply more than 2.65 lbs. of copper (5.3 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

### Cucurbits (Cantaloupes, Cucumbers, Honeydew, Muskmelons, Pumpkins, Squash, Watermelons)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Alternaria leaf spot, Angular leaf spot, Anthracnose, Downy mildew, Gummy stem blight, Powdery mildew, Watermelon bacterial fruit blotch (suppression)	9 to 25.6	25.6	Begin applications prior to disease development and continue while conditions are favorable for disease development. Repeat at 5 to 7 day intervals or as needed. Use the higher specified rates when conditions favor disease. <b>Note:</b> Crop injury may occur from application at higher specified rates and shorter intervals. Discontinue use if injury occurs.
	CA: 19.2 to 25.6		
Do not apply more than 5.25 lbs. of copper (10.6 gals. of this product) per acre per year. Minimum retreatment interval is 5 days.			

### Eggplant

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Alternaria blight, Anthracnose, Phomopsis	9 to 25.6	25.6	Begin applications prior to development of disease symptoms. Repeat sprays at 7 to 10 day intervals or as needed depending on disease severity.
	CA: 19.2	CA: 19.2	
Do not apply more than 7.9 lbs. of copper (15.9 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

### Okra (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Anthracnose, Bacterial leaf spot, Leaf spots, Pod spot, Powdery mildew	9 to 32	32	Begin treatment when disease first threatens. Repeat every 5 to 10 days or as needed depending on disease severity. Use the higher specified rates and shorter spray intervals when conditions favor disease.
Do not apply more than 5.25 lbs. of copper (10.6 gals. of this product) per acre per year. Minimum retreatment interval is 5 days.			

### Onions, Garlic

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Bacterial blight, Downy mildew, Purple blotch	9 to 25.6	25.6	Begin when plants are 4 to 6 inches high. Repeat at 7 to 10 day intervals or as needed depending on disease severity. Can cause phytotoxicity to leaves.
	CA: 19.2	CA: 19.2	
Do not apply more than 6 lbs. of copper (12.1 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

### Peas

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Powdery mildew	9 to 25.6	25.6	Begin applications when disease symptoms first appear. Repeat at weekly intervals or as needed. Use the higher specified rates when conditions favor disease.
	CA: 19.2 to 25.6		
Do not apply more than 3.95 lbs. of copper (7.9 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

### Peppers

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Anthracnose, Bacterial spot, Cercospora leaf spot	9 to 52	52	Begin applications when conditions first favor disease development. Repeat at 7 to 10 day intervals or as needed depending on disease severity. Use the higher specified rates when conditions favor disease.
	CA: 19.2 to 25.6	CA: 25.6	
Do not apply more than 11.85 lbs. of copper (23.9 gals. of this product) per acre per year. Minimum retreatment interval is 3 days.			



## Spinach

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Anthracnose, Blue mold spot, Cercospora leaf spot, White rust	9 to 25.6	25.6	Begin application when disease first appears or when conditions favor disease development. Repeat at 7 to 10 day intervals or as needed. Use the higher specified rates when conditions favor disease. <b>Note:</b> Flecking may occur on Spinach leaves.
	CA: 19.2 to 25.6		
Do not apply more than 3.95 lbs. of copper (7.9 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

## Tomatoes

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Anthracnose, Bacterial speck, Bacterial spot, Early blight, Gray leaf mold, Late blight, Powdery mildew, Septoria leaf spot	9 to 52	52	Begin applications when disease first threatens. Repeat at 5 to 10 day intervals or as needed depending on disease severity. Use the higher specified rates when conditions favor disease.
	CA: 19.2 to 32	CA: 32	
<b>For Tomatoes (fresh):</b> Do not apply more than 8 lbs. of copper (16.3 gals. of this product) per acre per year. Minimum retreatment interval is 3 days.			
<b>For Tomatoes (processing):</b> Do not apply more than 17.4 lbs. of copper (35.1 gals. of this product) per acre per year. Minimum retreatment interval is 3 days.			

## Watercress

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Cercospora, Leaf spot	9 to 19.2	19.2	Begin applications when plants are first established in the field. Repeat at 7 to 14 day intervals or as needed depending on disease severity. Do not exceed four applications per crop. Apply using ground spray equipment at no less than 50 gallons of spray solution per acre.
	CA: 19.2		
For applications made to Watercress, production fields must be drained of water at least 24 hours prior to each application and water must not be re-applied to the field for a minimum of 24 hours following each application. Copper must not be applied to Watercress during the aquatic production phase.			
Do not apply more than 2.12 lbs. of copper (4.2 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

## VINES

### Grapes

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Black rot, Downy mildew, Phomopsis, Powdery mildew	17 to 52	52	Begin applications at bud break with subsequent applications throughout the season depending on disease severity. Use the higher specified rates when conditions favor disease. <b>Note:</b> Foliage injury may occur on copper sensitive varieties such as Concord, Delaware, Niagara, and Rosette.
	CA: 19.2 to 32	CA: 32	
Do not apply more than 20 lbs. of copper (40.4 gals. of this product) per acre per year. Minimum retreatment interval is 3 days.			

### Hops (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Downy mildew	9 to 19.2	19.2	Make crown treatments after pruning but before training. After training, additional treatments are needed at minimum 10 day intervals. <b>Note:</b> Discontinue use two weeks before harvest.
Do not apply more than 2.65 lbs. of copper (5.3 gals. of this product) per acre per year. Minimum retreatment interval is 10 days.			

### Kiwi (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
<i>Erwinia herbicola</i> , <i>Pseudomonas</i> <i>flourescens</i> , <i>Pseudomonas syringae</i>	26 to 52	52	Apply in 200 gallons of water per acre. Make applications on a monthly basis. A maximum of three applications can be made per year.
Do not apply more than 6.3 lbs. of copper (12.6 gals. of this product) per acre per year. Minimum retreatment interval is 30 days.			

### MISCELLANEOUS CROPS

#### Atemoya/Sugar Apple (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Anthrachnose	9 to 103	103	Make initial application just before flowering. Repeat at weekly intervals until just before harvest. Apply in sufficient water for thorough coverage. Use the higher specified rates when disease is severe.
Do not apply more than 12.6 lbs. of copper (25.4 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

#### Carambola (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Anthrachnose	35 to 52	52	Make initial application just before flowering. Repeat at weekly intervals until just before harvest. Apply in sufficient water for thorough coverage. Use the higher specified rates when disease is severe.
Do not apply more than 10.5 lbs. of copper (21.2 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

### Chives

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Downy mildew	9 to 19.2	19.2	Begin application when plants are established in the field. Repeat every 7 to 10 days or as needed depending on disease conditions.
	CA: 19.2		
Do not apply more than 2.65 lbs. of copper (5.3 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

**Dill**

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Phoma leaf spot, Rhizoctonia foliage blight	9 to 25.6	25.6	Begin applications when plants are first established in the field. Repeat at 7 to 10 day intervals or as needed depending on disease severity and environmental conditions. Use the higher specified rates when disease is severe.
	CA: 19.2 to 25.6		
Do not apply more than 3.95 lbs. of copper (7.9 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

**Ginseng (Except CA)**

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Alternaria leaf blight, Stem blight	9 to 26	26	Apply this product in tank mixture with label specified rates of iprodione (e.g., Rovral® 50 WG / SP) in 100 gals. of water. Follow the most restrictive label limitations and precautions. Begin application as soon as plants have emerged in Spring. Repeat at 7 day intervals or as needed until plants become dormant in Fall. Apply at least 8 hours before rain. The use of sticker/spreader is advised. <b>Note:</b> Alternaria leaf and stem blight are severe in humid conditions such as those found in dense canopies of 2 to 4 year old Ginseng plants. Thoroughly cover the stems and canopy with spray. Use a spray equipment that provides good coverage.
Do not apply more than 5.25 lbs. of copper (10.7 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

**Guava (Except CA)**

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Anthracoese, Red algae	9 to 38.4	38.4	Apply before flowering. Repeat at weekly intervals until just before harvest. Apply in sufficient water for through coverage. Use the higher specified rates when disease is severe.
Do not apply more than 4.92 lbs. of copper (9.9 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

**Litchi (Except CA)**

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Anthracoese	9 to 38.4	38.4	Apply before flowering. Repeat at weekly intervals until just before harvest. Use the higher specified rates when disease is severe.
Do not apply more than 4.92 lbs. of copper (9.9 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

### Macadamia (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Anthracnose	26 to 64	64	Initiate sprays at first sign of flowering. Repeat on a weekly schedule until just before harvest. Apply in sufficient water for thorough coverage. Use the higher specified rates when disease is severe.
Phytophthora blight ( <i>P. capsici</i> ), Raceme blight ( <i>Botrytis cinerea</i> )	17 to 64	64	Apply during raceme development and bloom periods in sufficient water for thorough coverage. Use the higher specified rates when conditions favor disease.
Do not apply more than 9.44 lbs. of copper (19 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

### Mamey Sapote (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Algal leaf spot, Anthracnose	35 to 64	64	Apply when conditions favor disease development. Repeat on a 14 to 30 schedule or as needed as disease severity and environmental conditions dictate. Use the higher specified rates when conditions favor disease.
Do not apply more than 8.4 lbs. of copper (16.9 gals. of this product) per acre per year. Minimum retreatment interval is 14 days.			

### Papaya (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Anthracnose	26 to 52	52	Apply before disease appears. Repeat at 10 to 14 day intervals under light disease pressure. Shorten spray intervals to 7 days under heavy disease pressure. Addition of a spreader is desirable. Use the higher specified rates when disease is severe.
Do not apply more than 21.2 lbs. of copper (43.2 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

### Parsley (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Bacterial blight ( <i>Pseudomonas</i> sp.)	9 to 26	26	Begin application when plants are first established in the field. Repeat at 10 day intervals or as needed depending on disease severity and environmental conditions
Do not apply more than 2 lbs. of copper (4 gals. of this product) per acre per year. Minimum retreatment interval is 10 days.			

### Passion Fruit (Except CA)

Disease(s)	Rate/Ac. (fl. oz.)	Maximum Rate Per Acre Per Application (fl. oz.)	Use Instructions
Anthracnose	35 to 52	52	Apply just before flowering. Repeat at 7 day intervals just before harvest. Apply in sufficient water for thorough coverage. Use the higher specified rates when disease is severe.
Do not apply more than 9.44 lbs. of copper (19.2 gals. of this product) per acre per year. Minimum retreatment interval is 7 days.			

### GREENHOUSE AND SHADE HOUSE GROWN CROPS

**Notice to Users:** This product may be used in greenhouses and shade houses to control diseases on crops which appear on this label and specific instructions have been developed for the below listed crops. The grower should bear in mind that the sensitivity of crops grown in greenhouses and shade houses differs greatly from crops grown under field conditions. Neither the Manufacturer nor the Seller has determined whether or not this product can be used safely on all greenhouse and shade house grown crops. Consequently, injury arising from the use of this product on these types of greenhouse and shade house crops is the responsibility of the user. The user should determine if this product can be used safely prior to commercial use. In a small area, apply the specified rates to the plants in question, i.e. foliage, fruit etc., and observe for 7 to 10 days for symptoms of phytotoxicity prior to commercial use.

Apply this product according to specific rates given for the crops listed on this label in fluid ounces per acre.

**One fluid ounce = 29.5 milliliters (mL) = 6 teaspoons per 1,000 square feet is equivalent to 43.5 fluid ounces per acre.** Apply this product in adequate water for thorough coverage of plant parts. Begin application at first sign of disease and repeat at 7 to 14 day intervals or as needed. Use the shorter spray intervals during periods when severe disease conditions persist.

**NOTE:** On Citrus seedlings grown in greenhouses or shade houses, phytotoxicity may occur on young tender flush when this product is applied.

Crop	Disease(s)	Rate/1,000 sq. ft. (mL)*	Use Instructions
Citrus (Non-bearing)	Brown rot, Citrus canker, Greasy spot, Melanose, Pink pitting, Scab	15 (3 tsp.)	Begin applications when disease first threatens. Repeat at 30 day intervals or as needed depending on disease severity. Minimum retreatment interval is 7 days.
Cucumber	Angular leaf spot, Downy mildew	5 to 12 (1 to 2.4 tsp.)	Apply weekly when plants begin to vine. Use the higher specified rates when conditions favor disease. Minimum retreatment interval is 5 days.
Eggplant	Alternaria blight, Anthracnose, Phomopsis	9 (1.8 tsp.)	Begin applications prior to development of disease symptoms. Repeat at 7 to 10 day intervals or as needed depending on disease pressure. Minimum retreatment interval is 7 days.
Pepper	Bacterial spot	9 to 15 (1.8 to 3 tsp.)	Begin applications when conditions favor disease development. Repeat at 5 to 10 day intervals or as needed depending on severity. Use the higher rates when conditions favor disease. Minimum retreatment interval is 3 days.

Tomato	Anthrachnose, Bacterial speck, Bacterial spot, Early blight, Gray leaf mold, Late blight, Septoria leaf spot	9 to 15 (1.8 to 3 tsp.)	Begin applications when disease first threatens. Repeat at 5 to 10 day intervals or as needed depending on disease severity. Use the higher specified rates when conditions favor disease. Minimum retreatment interval is 3 days.
*29.5 milliliters (mL) = 1 fl. oz. = 6 tsps./1,000 sq. ft. which is equivalent to 43.5 fl. ozs./Ac.			

## STORAGE AND DISPOSAL

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

**PESTICIDE STORAGE:** Store in original container. Keep container tightly closed. Store this product above 30°F. If this product freezes, allow to thaw and thoroughly agitate before use. Keep away from galvanized pipe and any nylon storage handling equipment. In the event of a spill, neutralize with limestone or baking soda before disposal. Concentrate may deteriorate concrete.

**PESTICIDE 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.

### CONTAINER HANDLING:

**Nonrefillable Container (rigid material; ≤ 5 gallons):** Nonrefillable container. Do not reuse or refill this container. Clean container 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 one-fourth 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. Then, offer for recycling if available or dispose of empty container in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

**Nonrefillable Container (rigid material; > 5 gallons up to < 250 gallons):** Nonrefillable container. Do not reuse or refill this container. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container one-fourth 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. Then, offer for recycling if available or dispose of empty container in a sanitary landfill or by incineration, or if allowed by State and local authorities, by burning. If burned, stay out of smoke.

**Refillable Container (≥ 250 gallons & Bulk):** 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% 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.

Then offer for recycling if available or reconditioning if appropriate or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

## **WARRANTY—CONDITIONS OF SALE**

OUR DIRECTIONS FOR USE of this product are based upon tests believed reliable. Follow directions carefully. Timing and method of application, weather and crop conditions, mixture with other chemicals not specifically directed and other influencing factors in the use of this product are beyond the control of the Seller. To the extent consistent with applicable laws, Buyer assumes all risks of use, storage and handling of this material not in strict accordance with directions given herewith. To the extent consistent with applicable laws, in no case shall the Manufacturer or the Seller be liable for consequential, special or indirect damages resulting from the use or handling of this product when such use and/or handling is not in strict accordance with directions given herewith. The foregoing is a condition of sale by the Seller and is accepted as such by the Buyer.

Manufactured By:



**Drexel Chemical Company**

P.O. BOX 13327, MEMPHIS, TN 38113-0327

**SINCE 1972**

KOP, SURF-AC and the DREXEL logo are either trademarks or registered trademarks of Drexel Chemical Company. All other brand names, product names or trademarks belong to their respective holders.

	COPPER	GROUP	M01	FUNGICIDE
COPPER	GROUP	NOT CLASSIFIED		HERBICIDE

**SUB-LABEL B: NON-AGRICULTURAL USES**  
(NOT FOR USE IN THE STATE OF NEW YORK)



# KOP 5™

Algaecide/ Bactericide\*/ Fungicide

For use against Algae, Aquatic weeds/plants, Bacteria\*, Leeches, Mollusks, Mussels, Snails in various listed sites.

**ACTIVE INGREDIENT:**

Copper sulfate pentahydrate [CAS No. 7758-99-8]\*\* ..... 20.0%

**OTHER INGREDIENTS:** ..... 80.0%

**TOTAL:** ..... 100.0%

\*\*Equivalent to 5% metallic copper.

This product contains 0.49 pound of metallic copper per gallon.

A chelated copper product.

**KEEP OUT OF REACH OF CHILDREN**  
**DANGER / PELIGRO**

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

**SHAKE WELL BEFORE USING**

[RECIRCULATE CONTENTS BEFORE USE]

[See FIRST AID Below] [See Page \_\_\_ for FIRST AID]

[See Container Labeling for (FIRST AID and) Complete Directions for Use]

[See (Attached) Booklet (Container Labeling) for Complete Directions for Use]

EPA Reg. No. 19713-695

EPA Est. No. 19713-XX-XXX

Net Content: \_\_\_\_\_ Gals. ( \_\_\_\_\_ L)

FIRST AID
<p><b>IF IN EYES:</b></p> <ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15 to 20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<p><b>IF SWALLOWED:</b></p> <ul style="list-style-type: none"> <li>• Call a poison control center or doctor immediately for treatment advice.</li> <li>• Have person sip a glass of water if able to swallow.</li> <li>• Do not induce vomiting unless told to do so by a poison control center or doctor.</li> <li>• Do not give anything by mouth to an unconscious person.</li> </ul>
<p><b>IF ON SKIN OR CLOTHING:</b></p> <ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15 to 20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<p>Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also call CHEMTREC at 800-424-9300 for emergency medical treatment information.</p>
<p><b>NOTE TO PHYSICIAN:</b></p> <p>Probable mucosal damage may contraindicate the use of gastric lavage.</p>

\*Non-public health bacteria.



## PRECAUTIONARY STATEMENTS

### HAZARDS TO HUMANS AND DOMESTIC ANIMALS

**DANGER:** Corrosive. Causes irreversible eye damage. Harmful if absorbed through skin. Harmful if swallowed. Do not get in eyes or on clothing. Avoid contact with skin. Wear protective eyewear (goggles, face shield or safety glasses). Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

### PERSONAL PROTECTIVE EQUIPMENT (PPE)

**Mixers, loaders, applicators and other handlers must wear:** Protective eyewear (goggles, face shield or safety glasses), long-sleeved shirt, long pants, shoes, socks, and chemical-resistant gloves made of any waterproof material such as barrier laminate; butyl rubber  $\geq 14$  mil; nitrile rubber  $\geq 14$  mil; neoprene rubber  $\geq 14$  mil; polyvinyl chloride (PVC)  $\geq 14$  mil; or viton  $\geq 14$  mil. For overhead exposure, wear chemical-resistant headgear.

Follow manufacturer's instructions for cleaning/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 this product's concentrate.

### 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.

Pilots must use an enclosed cab that meets the definition listed in the WPS for agricultural pesticides [40 CFR 170.305].

### USER SAFETY RECOMMENDATIONS

**Users should:** 1) Wash hands thoroughly with soap and water before eating, drinking, chewing gum, using tobacco or using the toilet. 2) Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. 3) Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

### ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish and aquatic invertebrates. Waters treated with this product may be hazardous to aquatic organisms. Treatment of aquatic weeds and algae can result in oxygen loss from decomposition of dead algae and weeds. This oxygen loss can cause fish and invertebrate suffocation. To minimize this hazard, do not treat more than one-half of the water body and wait at least 14 days between treatments to avoid depletion of oxygen due to decaying vegetation (excluding water infrastructure and constructed conveyance such as drainage and irrigation canals, ditches and pipelines or intakes and aqueducts for drinking water or irrigation use). Begin treatment along the shore and proceed outwards in bands to allow fish to move into untreated areas. Consult with the 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/L or lower), and "soft" waters (i.e., alkalinity less than 50 mg/L) increases the potential acute toxicity.

**Fish Advisory Statement:** This copper product is toxic to fish and aquatic organisms. Unlike most organic pesticides, copper is an element and will not break down in the environment and will therefore accumulate in sediment with repeated applications. Copper is a micronutrient, but its pesticidal application rate exceeds the amount of copper needed as a nutrient.

## PRODUCT INFORMATION

KOP-5 is a copper sulfate pentahydrate formulation that is used for the suppression of bacterial odors and toxic gases in sewage lagoons, feedlot runoff pits, animal confinement facilities, and organic sludge pits containing organic matter of algae/bacteria\*. It may be used to control algae, bacteria\*, aquatic weeds, mollusks, leeches and snails in irrigation reservoirs, lakes, swimming areas, farm, industrial, retention and golf course ponds, ornamental water features or fountains, aquaculture ponds, livestock watering systems, biological fish ponds or systems, irrigation and chemigation systems, and waters destined for use as drinking water. This product may also be used to control Quagga and Zebra mussels in lakes, ponds, lagoons, reservoirs, sedimentation basins, canals and ditches and also for the control of algae and suppression of bacterial\* growth in private and public pools, spas and hot tubs. **Note: Aquatic applications are prohibited in New York State.**

**IMPORTANT: Everywhere that bacteria is listed on this label refers to non-public health bacteria / bactericide.**

## 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 requirement specific to your state or tribe, consult the state or tribal agency responsible for pesticide regulation.

### 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 (WPS) 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. Do not allow people or pets to enter treated areas until sprays have dried.

## RESISTANCE MANAGEMENT

COPPER	GROUP	M01	FUNGICIDE
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### FUNGICIDE/BACTERICIDE RESISTANCE MANAGEMENT

For resistance management, this product contains a Group M01 fungicide/bactericide. Any fungal/bacterial population may contain individuals naturally resistant to this product and other Group M fungicides/bactericides. A gradual or total loss of pest control may occur over time if these fungicides/bactericides are used repeatedly in the same fields. Appropriate resistance-management strategies should be followed.

To delay fungicide/bactericide resistance, take one or more of the following steps:

- Rotate the use of this product or other Group M fungicides/bactericides within a growing season sequence with different groups that control the same pathogens.
- Use tank mixtures with fungicides/bactericide from a different group that are equally effective on the target pest when such use is permitted. Use at least the minimum application rate as labeled by the manufacturer.
- Adopt an integrated disease management program for fungicide/bactericide use that includes scouting, uses historical information related to pesticide use, and crop rotation, and which considers host plant resistance, impact of environmental conditions on disease development, disease thresholds, as well as cultural, biological and other chemical control practices.
- Where possible, make use of predictive disease models to effectively time fungicide/bactericide applications. Note that using predictive models alone is not sufficient to manage resistance.
- Monitor treated fungal/bacterial populations for resistance development.
- Contact your local extension specialist or certified crop advisor for any additional pesticide resistance-management and/or IPM recommendations for specific crops and pathogens.
- For further information or to report suspected resistance, contact Drexel Chemical Company at (901) 774-4370. You can also contact your pesticide distributor or university extension specialist to report resistance.

## **AQUATIC HERBICIDE RESISTANCE MANAGEMENT**

- Water bodies or management units should be scouted prior to application to identify the weed species present and their growth stage to determine if the intended application will be effective. Water bodies or management units should be scouted after application to verify that the treatment was effective.
- Suspected herbicide-resistant weeds may be identified by these indicators:
  - \* Failure to control a weed species normally controlled by the herbicide at the dose applied, especially if control is achieved on adjacent weeds;
  - \* A spreading patch of non-controlled plants of a particular weed species; and
  - \* Surviving plants mixed with controlled individuals of the same species.
- Implement the “Early Detection, Rapid Response Practice and Maintenance Control” by using the following practices where possible:
  - \* Identify weeds present in a management unit through scouting or history of the water body and understand the biology of target species.
  - \* Applications should target weeds when populations are small and there is low biomass, early in the season to maximize efficacy.
  - \* Applications should be made so that the herbicide contacts the weed. Use the appropriate application method for the use site/weed/chemical combination.
  - \* Weed escapes should not be allowed to go to seed or produce asexual vegetative propagules.
  - \* Use a diversified approach toward weed management. Whenever possible incorporate multiple weed-control practices such as mechanical control, biological management practices, and rotation of MOAs.
  - \* Time applications to have the highest probability for control and minimize need for follow-up control measures. Apply during conditions that minimize herbicide degradation (light /temperature/microbes) and/or dissipation (water exchange).
- Contact your local sales representative, local water management agency, or extension agent to find out if suspected resistant weeds to this MOA have been found in your region. If resistant biotypes of target weeds have been reported, use the application rates of this product specified for your local conditions. Tank-mix products so that there are multiple effective mechanisms of actions for each target weed.

## **SPRAY DRIFT ADVISORIES**

THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT.  
BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.

### **IMPORTANCE OF DROPLET SIZE**

An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

### **Controlling Droplet Size - Ground Boom**

- Volume - Increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray volume is needed, consider using a nozzle with a higher flow rate.
- Pressure - Use the lowest spray pressure recommended for the nozzle to produce the target spray volume and droplet size.
- Spray Nozzle - Use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift.

### **Controlling Droplet Size - Aircraft**

- Adjust Nozzles - Follow nozzle manufacturer's recommendations for setting up nozzles. Generally, to reduce fine droplets, nozzles should be oriented parallel with the airflow in flight.

### **BOOM HEIGHT - Ground Boom**

Use the lowest boom height that is compatible with the spray nozzles that will provide uniform coverage. For ground equipment, the boom should remain level with the crop and have minimal bounce.

### **RELEASE HEIGHT - Aircraft**

Higher release heights increase the potential for spray drift. When applying aurally to crops, do not release spray at a height greater than 10 ft. above the crop canopy, unless a greater application height is necessary for pilot safety.

### **SHIELDED SPRAYERS**

Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area.

### **TEMPERATURE AND HUMIDITY**

When making applications in hot and dry conditions, use larger droplets to reduce effects of evaporation.

### **TEMPERATURE INVERSIONS**

Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing. Avoid applications during temperature inversions.

### **WIND**

Drift potential generally increases with wind speed. AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS.

Applicators need to be familiar with local wind patterns and terrain that could affect spray drift.

### **SPRAY DRIFT REQUIREMENTS**

#### **AERIAL APPLICATIONS:**

- Do not release spray at a height greater than 10 feet above the vegetative canopy or water, unless a greater application height is necessary for pilot safety.
- Applicators are required to use a medium or coarser droplet size (ASABE S572.1).
- Do not apply when wind speed exceeds 15 mph at the application site. If the wind speed is greater than 10 mph, the boom length must be 65% or less of the wingspan for fixed wing aircraft and 75% or less of the rotor diameter for helicopters. Otherwise, the boom length must be 75% or less of the wingspan for fixed-wing aircraft and 90% or less of the rotor diameter for helicopters.
- Applicators must use one-half swath displacement upwind at the downwind edge of the application area.
- Do not apply during temperature inversions.

#### **GROUND BOOM APPLICATIONS:**

- Apply with the spray release height recommended by the manufacturer, but no more than 4 feet above the ground or crop canopy.
- Applicators are required to use a medium or coarser droplet size (ASABE S572.1).
- Do not apply when wind speeds exceed 15 miles per hour at the application site.
- Do not apply during temperature inversions.

## USE DIRECTIONS

### APPLICATION INSTRUCTIONS FOR AQUATIC USE\*\*

Waters treated with this product may be hazardous to aquatic organisms. Treatment of aquatic weeds and algae can result in oxygen loss from decomposition of dead biomass. This oxygen loss can cause fish and invertebrate suffocation. To minimize this hazard, do not treat more than one-half of the water body and wait at least 14 days between treatments to avoid depletion of oxygen due to decaying vegetation (excluding water infrastructure and constructed conveyances such as drainage canals, ditches and pipelines or intakes and aqueducts for drinking water or irrigation use).

Begin treatment along the shore and proceed outward in bands to allow fish to move into untreated areas. Consult with the state or local agency with primary responsibility for regulating pesticides before applying to public waters to determine if a permit is required.

Application of algaecides to high density blooms of cyanobacteria can result in the release of intracellular contents into the water. Some of these intracellular compounds are known mammalian hepato- and nervous system toxins. Therefore, to minimize the risk of toxin leakage, manage cyanobacteria effectively in order to avoid applying this product when blooms of toxin-producing cyanobacteria are present at high density. In situations where rapidly reproducing toxic algal species pose a public health threat to drinking or recreational water resources, applicators must receive authorization from applicable state, local or tribal water resources authorities to apply copper at intervals shorter than 14 days should the circumstance demand.

Certain water conditions including low pH ( $\leq 6.5$ ), low dissolved organic carbon (DOC) levels (3.0 mg/L or lower) and "soft" waters (i.e. alkalinity less than 50 mg/L) increases the potential acute toxicity to non-target aquatic organisms. The application rates on this label are appropriate for water with pH values  $> 6.5$ , DOC levels  $> 3.0$  mg/L, and alkalinity greater than 50 mg/L. Avoid treating waters with pH values  $< 6.5$ , DOC levels  $> 3.0$ , and alkalinity less than 50 ppm (e.g., soft or acid waters), as trout and other sensitive species of fish may be killed under such conditions if present.

Consult your state department of natural resources or fish and game agency before applying this product to public waters. Permits may be required before treating such waters.

\*\*Excludes uses in swimming pools, spas, hot tubs, fountains, aquatic agriculture and livestock ponds.

### PRE-APPLICATION DOSE DETERMINATION FOR ALGAE AND AQUATIC PLANT TREATMENTS

For algae and aquatic plant treatments, applicators should conduct initial dose determination tests simulating a full-scale treatment program to determine the minimum efficacious concentrations for eliminating the target species, unless an effective dose is already known for the given target pest population.

### FOR CONTROL OF BACTERIAL ODOR AND TOXIC GAS PRODUCED BY BACTERIAL ACTION (EXCEPT CA)

Apply up to 1 gallon of this product per 60,000 gallons (8,000 cubic feet) of organic matter (sewage). Application rates may vary depending on amounts of sewage in lagoons and pits. Apply by pouring this product into the pit or lagoon. Several application points speed up dispersal. For faster results, disperse this product evenly throughout sewage. Bacterial odors should be noticeably reduced in 1 to 2 weeks. Repeat application when odors recur. Minimum retreatment interval is 14 days.

**Feedlot Runoff Lagoons:** Add a portion of the required dosage of this product at several locations around the lagoon to speed dispersal of the product. A minimum of two applications per year (Spring and Fall) is recommended. Additional applications may be required as needed or when the lagoon is pumped.

**Animal Confinement Pits:** If pits are located under the confinement buildings, add this product directly to these pits. If the pits are outside, add this product to transfer line to the pit.

**Organic Sludge Pits:** Apply 1 gallon this product in 60,000 gallons of sludge. Mix thoroughly.

**FOR AQUATIC PLANT, ALGAE AND BACTERIA\* CONTROL IN IMPOUNDED WATERS, LAKES, PONDS, LIVESTOCK WATERING SYSTEMS, RESERVOIRS, \*\*SWIMMING AREAS, FARM, INDUSTRIAL, RETENTION AND GOLF COURSE PONDS, \*\*AQUACULTURE PONDS, \*\*BIOLOGICAL FISH PONDS OR SYSTEMS, IRRIGATION AND CHEMIGATION SYSTEMS, \*\*ORNAMENTAL WATER FEATURES AND FOUNTAINS**

Apply this product through metering pump, sub-surface hoses or from a properly equipped moving boat into the body of water. No more than one-half of the body of water may be treated in a single application.

For small ponds and ornamental water features and fountains, apply this product by directly pouring 2 fluid ounces per 125 cubic feet (1/4 tsp./20 gals.) of water for 1 ppm of copper into the water around half of the perimeter of the body of water.

When applying from boat, use minimal speed to allow the prop wash to disperse and mix the product into the treated waters. Dispense up to 5.5 gallons per acre-foot of water (see “*USE RATE*” chart below). Apply in late Spring or early Summer when algae/bacteria\* first appear. For best results, disperse this product evenly to warm, still water on a sunny day when algae are near the surface. Several application points speed up dispersal.

Use rates vary, depending on algae/bacteria\* species, water hardness, water temperature, and amount of algae/bacteria\* present; as well as whether water is clear, turbid, flowing or static. Preferably, the water should be clear with temperatures above 60°F (15.6°C). Higher dosages are required at lower water temperatures, higher algae/bacteria\* concentrations, and for hard waters. Static water requires less chemical for algae/bacteria\* control than does flowing water. Use higher dosages for Chara, Nitella, and filamentous algae (pond scum), and lower dosages for planktonic algae. If there is uncertainty about the dosage, begin with a lower dose and increase until control is achieved or until the maximum allowable level has been reached. See the “*USE RATE*” chart below.

**Application Directions to Control Algae in Catfish Ponds**

Applications are no longer needed in the Fall after fish are harvested or the average water temperatures fall below 70°F. Apply mid-morning at a rate of 0.31 pounds metallic copper (0.6 gals. of this product) per acre foot (0.11 ppm metallic copper). Place copper crystals in a cloth bag and then put the filled bag into another cloth bag to slow the rate at which the copper dissolves. Suspend the double bagged unit of copper about 20 feet in front of a paddlewheel aerator. Run the aerator until all the copper sulfate is dissolved; this usually requires an hour or two. Use copper only if you plan to harvest fish before fall and anticipate problems with off-flavoring algae.

Do not make routine copper treatments for Algae control in fingerling ponds or in broodfish ponds because off-flavors are not a problem in those fish. Do not use this treatment regimen in waters of low hardness and alkalinity (less than 50 ppm as CaCO<sub>3</sub>) because copper may stress or kill fish.

**Application Directions to Control Ich in Earthen Catfish Ponds**

To apply copper to control Ich in earthen Catfish ponds as static batch treatment, administer 0.27 to 0.69 pounds metallic copper (0.5 to 1.4 gals. of this product) per acre foot (0.1 to 0.25 ppm or mg/L based on metallic copper = 0.4 to 1 ppm or mg/L by product) per 100 mg/L total alkalinity (as CaCO<sub>3</sub>) as an indefinite exposure once daily for 5 to 11 consecutive days.

### **Application Directions for Applying Copper to Water Mold on Catfish Eggs in the Hatchery**

Water molds on Catfish eggs are treated inside the hatchery using a flow-through hatching trough. Administer a rate of 6.9 pounds metallic copper (14 gals. of this product) per acre foot (2.5 ppm or mg/L based on metallic copper = 10 ppm or mg/L by product) to the water of a flow-through hatching trough once daily until the embryos (eggs) develop eyes; flow rate should allow for 1 exchange every 30 minutes.

### **Use Restrictions for Ponds, Lakes and Reservoirs**

Maximum annual application rate of 21.9 pounds of metallic copper (44.6 gals. of this product) per acre foot (8 applications per year at up to 1 ppm). This rate/frequency is calculated based on staggering the treatment of each half of the water body every 14 days [at a rate of 2.74 lbs. metallic copper (5.5 gals. of this product) per acre-foot = 1 ppm] for 8 months (244 days). In situations where rapidly reproducing toxic algal species pose a public health threat to drinking or recreational water resources, applicators must receive authorization from applicable state, local or tribal water resources authorities to apply copper in excess of 21.9 lbs. of metallic copper (44.6 gals. of this product) per acre-foot (8 applications per year at up to 1 ppm).

\*\*Not registered for use in California

### **FOR LEECH AND SNAIL CONTROL IN IMPOUNDED WATERS, LAKES, PONDS, LIVESTOCK WATERING SYSTEMS, RESERVOIRS, SWIMMING AREAS, FARM, INDUSTRIAL, RETENTION AND GOLF COURSE PONDS, AQUACULTURE PONDS, BIOLOGICAL FISH PONDS OR SYSTEMS, IRRIGATION AND CHEMIGATION SYSTEMS, ORNAMENTAL WATER FEATURES AND FOUNTAINS (EXCEPT CA)**

Apply this product through metering pump, subsurface hoses or from a properly equipped moving boat into body of water. No more than one-half of the body of water may be treated in a single application.

For small ponds and ornamental water features and fountains, apply this product by directly pouring 2 fluid ounces per 125 cubic feet (1/4 tsp./20 gals.) of water for 1 ppm of copper into the water around half of the perimeter of the body of water.

When applying from boat, use minimal speed to allow the prop wash to disperse and mix the product into the treated waters. Dispense up to 8.25 gallons per acre-foot of water. See the "USE RATE" chart below.

### **USE RATE**

<b>This Product (Gals./Ac./Ft.)</b>	<b>Equivalent Metallic Copper (ppm)</b>
0.33	0.06
0.50	0.09
3.30	0.60
5.50	1.00
8.25**	1.50**
**Not registered for use in California.	

Before treating bodies of water, consult proper state authorities, such as the fisheries commission or conservation department to obtain any necessary permits. Do not apply copper sulfate to water less than 40 ppm alkalinity without first testing for fish toxicity in a separate container.

Treatment of algae can result in oxygen loss from the decomposition of dead algae, which may cause fish suffocation. Treat one-third to one-half of the water area in a single operation and wait 14 days between treatments. Begin treatment along the shore and proceed outward in bands to allow fish to move into untreated areas. In regions where ponds freeze in Winter, treatment should be done 6 to 8 weeks before expected freeze time to prevent masses of decaying algae under an ice cover.

The following are useful formula for calculating water volume and flow rates:

- To find the capacity of water storage containment in gallons, use the following formula:

$$\text{Capacity of Water Storage Containment} = \text{Water Volume (cu. ft.)} \times 7.5$$

Note: 1 Cubic Foot per Second of Flow = 27,000 gallons per hour  
1 Acre Foot = 326,000 gallons

- Calculate the Acre Foot of water in the body of water to be treated by calculating the surface area in square feet. Then divide by 43,560 (sq.ft./acre) and then multiply by the average depth in feet.

1 Acre Foot of Water = an area of water measuring 43,560 sq. ft. x 1 foot deep  
1 Acre Foot of Water = 43,560 cubic feet = 325,851.6 gallons  
1 Cubic Foot of Water = 62.4 pounds  
1 Acre Foot of Water = 43,560 x 62.4 = 2,720,000 pounds

**Maintenance Treatments Targeting Parasites in Aquaculture:** Applicators must administer copper at a rate of 0.1 to 0.25 mg/L [0.27 to 0.69 lbs metallic copper (0.5 to 1.4 gals. of this product) per acre foot = 0.1 to 0.25 ppm]. Applicators must monitor the copper concentration and when it falls below the desired concentration, apply additional copper to bring the concentration back up to the desired concentration. Copper can be applied once daily for 5 to 11 consecutive days. Do not apply to water more than 11 days before waiting at least 14 days before retreating. Do not apply more than 46.6 lbs. metallic copper (95.1 gals. of this product) per acre foot in one year.

#### **Application Directions for Applying Copper to Water Mold of Eggs in the Hatchery**

Water molds on Catfish eggs are treated inside the hatchery using a flow-through hatching trough. Administer a rate of 6.9 pounds metallic copper (14 gals. of this product) per acre foot (2.5 ppm or mg/L based on metallic copper = 10 ppm or mg/L by product) to the water of a flow-through hatching trough once daily until the embryos (eggs) develop eyes; flow rate should allow for 1 exchange every 30 minutes.

#### **Use Restrictions for Ponds, Lakes and Reservoirs**

Maximum annual application rate of 21.9 pounds of metallic copper (44.6 gals. of this product) per acre-foot (8 applications per year at up to 1 ppm). This rate/frequency is calculated based on staggering the treatment of each half of the water body every 14 days [at a rate of 2.74 lbs. metallic copper (5.5 gals. of this product) per acre-foot = 1 ppm] for eight months (244 days). In situations where rapidly reproducing toxic algal species pose a public health threat to drinking or recreational water resources, applicators must receive authorization from applicable state, local or tribal water resources authorities to apply copper in excess of 21.9 lbs. of metallic copper (44.6 gals. of this product) per acre-foot (8 applications per year at up to 1 ppm).



## DIRECT AQUATIC RATES\*\*

Target	Use Instructions
Algae, Cyanobacteria, Aquatic Weeds ( <i>Elodea</i> spp., Hydrilla, <i>Potamogeton</i> spp., Irrigation canal weeds, Annual Naiads) for all aquatic application sites	No more than one-half of the water body may be treated at one time. If the treated water is to be used as a source of potable water, the metallic copper concentration must not exceed 1 ppm.
Control of Schistosome infected freshwater Snail	
Leech control	

### Use Restrictions for Direct Applications

The maximum annual application rate of 46.6 pounds of metallic copper (95.1 gals. of this product) per acre-foot per year based on 17 applications per year at up to 1 ppm per application. This rate/frequency is calculated based on the maximum number of possible applications allowed based on a 14 day minimum at a rate of 2.74 lbs. metallic copper (5.5 gals. of this product) per acre foot = 1 ppm] retreatment interval for 8 months (244 days).

Do not apply more than 46.6 pounds of metallic copper (95.1 gals. of this product) to a water management unit regardless of the pest(s) targeted by applications. In situations where rapidly reproducing toxic algal species pose a public health threat to drinking or recreational water resources, applicators must receive authorization from applicable state, local or tribal water resources authorities to apply copper in excess of 46.6 pounds of metallic copper (95.1 gals. of this product) per acre foot per year for a single water management unit.

\*\*Not registered for use in California.

### CONTROL OF QUAGGA AND ZEBRA MUSSELS IN LAKES, PONDS, LAGOONS, RESERVOIRS, SEDIMENTATION BASINS, CANALS AND DITCHES (EXCEPT CA)

Treat Mussels only as a curative measure. Treat one-half of the surface of the body of water at a time.

**To control adult and juvenile Mussels:** Apply 1 gallon of this product per 60,000 gallons of water to yield a rate of 1.0 ppm metallic copper.

**To control of Veligers in the larval mollusk stage:** Apply 3 gallons of this product per 1,000,000 gallons of water to yield a concentration of 0.18 ppm metallic copper.

**Maintenance Treatments:** For treatments to whole waterbodies, administer copper at a rate of up to 1 ppm [2.74 lbs. metallic copper (5.5 gals. of this product) per acre-foot] at a maximum annual rate of 21.9 pounds metallic copper (44.6 gals. of this product) per acre foot. Monitor the copper concentration and when it falls below the desired concentration, apply additional copper to bring the concentration back up to the desired concentration. Monitor mussel populations and terminate the additional applications once mussels are dead or 14 days have passed since the initial application. Applicators must wait at least 14 days after the last application before making any additional applications.

**Use Restrictions for Direct Applications to Whole Water Bodies (Ponds, Lakes and Reservoirs)**

The maximum annual application rate is 21.9 pounds of metallic copper (44.6 gals. of this product) per acre foot based on 8 applications per year at up to 1 ppm per application. This rate/frequency is calculated based on staggering the treatment of each half of the water body every 14 days [at a rate of 2.74 lbs. metallic copper (5.5 gals. of this product) per acre-foot = 1 ppm] for 8 months (244 days). In situations where rapidly reproducing toxic algal species pose a public health threat to drinking or recreational water resources, applicators must receive authorization from applicable state, local or tribal water resources authorities to apply copper in excess of 21.9 pounds of metallic copper (44.6 gals. of this product) per acre-foot (8 applications per year at up to 1 ppm).

**CONTROL OF ALGAE / BACTERIA\* IN RESERVOIRS AND TANKS FOR WATER DESTINED FOR USE AS DRINKING WATER**

This product may be used in waters destined for use as drinking water. These waters must receive additional and separate potable water treatment. DO NOT apply more than 1.0 ppm as metallic copper.

**Water intended for human use in municipal water reservoirs and tanks:** To control algae/bacteria\* in municipal water supplies before they are purified for drinking, apply 2 fluid ounces per 125 cubic feet (1/4 tsp./20 gals.) of water for 1 ppm of copper. Apply by boat or from side of reservoir/ tank at equal intervals.

**Reservoirs of water intended for drinking water use:** To control of algae/bacteria\* in water reservoirs destined for use as drinking water, refer to the following table for specific application rates. Treated water must receive additional and separate potable water treatment. Applications may be repeated in 14 days. Apply by boat or from side of reservoir at equal intervals.

<b>This Product (Gals./Ac./Ft.)</b>	<b>Equivalent Metallic Copper (ppm)</b>
0.33	0.06
0.50	0.09
3.30	0.60
5.50	1.00

**Stock watering ponds, tanks, and troughs:** To control of algae/bacteria\* in stock water ponds, tanks, and troughs, add one-fourth teaspoon of this product to 30 gallons of water for a final ppm of 0.7 ppm. Do not exceed 1 ppm (1/4 tsp./20 gals). Apply by boat or from side of tank or trough at equal intervals.

**For drip-system use in livestock watering tanks:** Tanks fed by a continuous flow of spring or well water may be equipped with a chemical drip-system designed to meter-in this product based upon water flow rates. Adjust the systems to maintain a concentration of 0.7 ppm copper in incoming stock water (0.15 fl. oz. of product per minute to a water flow of 100 gallons per minute). Treat continuously or as needed to control and prevent algae regrowth.

**Use Restrictions**

Maximum annual application rate of 21.9 pounds of metallic copper (44.6 gals. of this product) per acre-foot (8 applications per year at up to 1 ppm). This rate/frequency is calculated based on staggering the treatment of each half of the water body every 14 days [at a rate of 2.74 lbs. metallic copper (5.5 gals. of this product) per acre-foot = 1 ppm] for eight months (244 days). In situations where rapidly reproducing toxic algal species pose a public health threat to drinking or recreational water resources, applicators must receive authorization from

applicable state, local or tribal water resources authorities to apply copper in excess of 21.9 lbs. of metallic copper (44.6 gals. of this product) per acre-foot (8 applications per year at up to 1 ppm).

**CONTROL OF ROOTED AND SUBMERGED PLANTS (EXCEPT CA)**

Rooted and submerged plants such as Hydrilla and Potamogeton can be controlled using 0.4 to 1.0 ppm of this product which is equal to 0.22 to 5.5 gallons per acre per foot. Application rates are dependent on the density, stage of growth, and depth of the water. Only treat one-half of the body of water at one time. Start at the edge and spray towards the center of the body of water. Applications may be repeated in 14 days.

**CONTROL OF FLOATING AQUATIC PLANTS (EXCEPT CA)**

Water hyacinth and other floating aquatic vegetation can be suppressed BUT NOT ERADICATED by using a mixture of 1.03 gallons of this product per 7 gallons of water. Apply this solution as a coverage spray to thoroughly wet all exposed vegetation. Only treat one-half of the body of water at one time. In areas of heavy infestation, multiple applications may be required. Applications may be repeated in 14 days. Do not exceed 5.46 gallons of this product per acre foot of water.

**IN NON-SPRINKLER, NON-DRIP IRRIGATION CONVEYANCE SYSTEMS AND CHEMIGATION SYSTEMS, DITCHES, CANALS, AND SIMILAR OPEN IRRIGATION CONVEYANCES**

For continuous addition, add 2 fluid ounces of this product for each 1,000 gallons of water per hour. For conveyance systems longer than 30 miles, dispense this rate among injection points every 30 miles. Do not exceed the total dosage of 1 gallon of this product in 60,000 gallons of water (1 ppm metallic Cu).

This method may only be used in constructed irrigation conveyance systems, laterals and aqueducts.

**Use Restrictions:** The maximum annual application rate is 13 pounds metallic copper (26.5 gals. of this product) per year per 5 miles of conveyance per cubic foot per second (CFS). Apply this product into irrigation conveyance system or lateral at up to a maximum rate of 0.5 pound metallic copper (1 gal. of this product) per cubic foot per second of water per 5 to 30 mile treatment depending on water hardness, alkalinity and algae concentration.

**TO CONTROL ALGAE / BACTERIA\* IN SPRINKLER, DRIP OR OTHER TYPES OF CLOSED IRRIGATION EQUIPMENT**

Use 16 pints of this product per 7,500 to 300,000 gallons of water. Agitation is not required. Do not mix with basic substances. This product must be applied continuously for the duration of the water application.

**EXAMPLE CALCULATIONS**

**CHEMIGATION AND IRRIGATION FLOW RATES (0.06 ppm metallic Cu)**

Water Flow Rate (Gals./Min./Ac./ft.) (gpm)	Water Flow Rate (Cu. Ft./Min.) (cfm)	Dosage Rate (ppm Metallic Cu)	This Product (Fl. Oz./Min.)	Feeder Pump Setting (This Product mL/Min.)
3,000	400	0.06	0.4	11.3
6,000	800	0.06	0.8	22.6
9,000	1,200	0.06	1.1	34.0
12,000	1,600	0.06	1.5	45.3

**CHEMIGATION AND IRRIGATION FLOW RATES (1.0 ppm metallic Cu)**

Water Flow Rate (Gals./Min./Ac./ft.) (gpm)	Water Flow Rate (Cu. Ft./Min.) (cfm)	Dosage Rate (ppm Metallic Cu)	This Product (Fl. Oz./Min.)	Feeder Pump Setting (This Product, mL/Min.)
3,000	400	1.0	6.4	188.7
6,000	800	1.0	12.8	377.5
9,000	1,200	1.0	19.1	566.2
12,000	1,600	1.0	25.5	755.0

**BIOLOGICAL FISH PONDS AND AQUACULTURE SYSTEMS (EXCEPT CALIFORNIA)**

Before treating ponds containing fish with this product, measure total alkalinity (not hardness or pH). The toxicity of copper to fish increases as the total alkalinity decreases. Sensitivity to copper varies between fish species. For copper sensitive species, do not exceed 0.06 ppm metallic copper. When algae concentrations are high, to avoid suffocation of fish after treatment, either treat in a series of smaller doses over time or have emergency aeration available. Apply at the rate of 2 to 4 pints of this product per acre foot (326,000 gallons) of water to yield concentrations ranging from 0.05 ppm to .09 ppm metallic copper, respectively. Metallic copper concentration is directly proportional to amount of this product added per acre foot. A maintenance dose of 4 to 8 ounces per acre foot may be used every 14 days. The rate is dependent on water temperature, fish density and the degree of suppression targeted.

<b>Amount of This Product in Aquacultural Ponds Applied One Acre Foot (12 Inches Deep)</b>		
<b>This Product (Gals.)</b>	<b>Water (Gals.)</b>	<b>Metallic Copper (ppm)</b>
0.25	326,000	0.05
0.50	326,000	0.09

**Maintenance Treatments Targeting Parasites in Aquaculture:** Applicators must administer copper at a rate of 0.1 to 0.25 mg/L [0.27 to 0.69 lbs. metallic copper (0.5 to 1.4 gals. of this product) per acre foot = 0.1 to 0.25 ppm]. Applicators must monitor the copper concentration and when it falls below the desired concentration, apply additional copper to bring the concentration back up to the desired concentration. Copper can be applied once daily for 5 to 11 consecutive days. Do not apply to water more than 11 days before waiting at least 14 days before retreating. Do not apply more than 46.6 lbs. metallic copper (95.1 gals. of this product) per acre foot in one year.

**Application Directions to Control Algae in Catfish Ponds**

Applications are no longer needed in the Fall after fish are harvested or the average water temperatures fall below 70°F. Apply mid-morning at a rate of 0.31 pounds metallic copper (0.6 gals. of this product) per acre foot (0.11 ppm metallic copper). Place copper crystals in a cloth bag and then put the filled bag into another cloth bag to slow the rate at which the copper dissolves. Suspend the double bagged unit of copper about 20 feet in front of a paddlewheel aerator. Run the aerator until all the copper sulfate is dissolved; this usually requires an hour or two. Use copper only if you plan to harvest fish before fall and anticipate problems with off-flavoring algae.

Do not make routine copper treatments for Algae control in fingerling ponds or in broodfish ponds because off-flavors are not a problem in those fish. Do not use this treatment regimen in waters of low hardness and alkalinity (less than 50 ppm as CaCO<sub>3</sub>) because copper may stress or kill fish.

### **Application Directions to Control Ich in Earthen Catfish Ponds**

To apply copper to control Ich in earthen Catfish ponds as static batch treatment, administer 0.27 to 0.69 pounds metallic copper (0.5 to 1.4 gals. of this product) per acre foot (0.1 to 0.25 ppm or mg/L based on metallic copper = 0.4 to 1 ppm or mg/L by product) per 100 mg/L total alkalinity (as CaCO<sub>3</sub>) as an indefinite exposure once daily for 5 to 11 consecutive days.

### **Application Directions for Applying Copper to Water Mold of Eggs in the Hatchery**

Water molds on Catfish eggs are treated inside the hatchery using a flow-through hatching trough. Administer a rate of 6.9 pounds metallic copper (14 gals. of this product) per acre foot (2.5 ppm or mg/L based on metallic copper = 10 ppm or mg/L by product) to the water of a flow-through hatching trough once daily until the embryos (eggs) develop eyes; flow rate should allow for 1 exchange every 30 minutes.

## **STORAGE AND DISPOSAL**

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

**PESTICIDE STORAGE:** Store in original container. Keep container tightly closed. Store this product above 30°F. If this product freezes, allow to thaw and thoroughly agitate before use. Keep away from galvanized pipe and any nylon storage handling equipment. In the event of a spill, neutralize with limestone or baking soda before disposal. Concentrate may deteriorate concrete.

**PESTICIDE 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.

### **CONTAINER HANDLING:**

**Nonrefillable Container (rigid material; ≤ 5 gallons):** Nonrefillable container. Do not reuse or refill this container. Clean container 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 one-fourth 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. Then, offer for recycling if available or dispose of empty container in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

**Nonrefillable Container (rigid material; > 5 gallons up to < 250 gallons):** Nonrefillable container. Do not reuse or refill this container. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container one-fourth 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. Then, offer for recycling if available or dispose of empty container in a sanitary landfill or by incineration, or if allowed by State and local authorities, by burning. If burned, stay out of smoke.

**Refillable Container (≥ 250 gallons & Bulk):** 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% 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.

Then offer for recycling if available or reconditioning if appropriate or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

## **WARRANTY—CONDITIONS OF SALE**

OUR DIRECTIONS FOR USE of this product are based upon tests believed reliable. Follow directions carefully. Timing and method of application, weather and crop conditions, mixture with other chemicals not specifically directed and other influencing factors in the use of this product are beyond the control of the Seller. To the extent consistent with applicable laws, Buyer assumes all risks of use, storage and handling of this material not in strict accordance with directions given herewith. To the extent consistent with applicable laws, in no case shall the Manufacturer or the Seller be liable for consequential, special or indirect damages resulting from the use or handling of this product when such use and/or handling is not in strict accordance with directions given herewith. The foregoing is a condition of sale by the Seller and is accepted as such by the Buyer.

Manufactured By:



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