

73020-2

09/14/2000

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U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Pesticide Programs
Registration Division (7505C)
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

EPA Reg. Number:
73020-2

Date of Issuance:
SEP 14 2000

NOTICE OF PESTICIDE:
 X Registration
 Reregistration

Term of Issuance:
Conditional

Name of Pesticide Product:
Copper Sulfate
Pentahydrate

(Under FIFRA, as amended)

Name and Address of Registrant (Include ZIP Code):

Emron Corporation
P.O. Box 6656
Bridgewater, NJ 08807

Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Registration Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.

In the basis of information furnished by the registrant, the above named pesticide is hereby registered/reregistered under the Federal Insecticide, Fungicide and Rodenticide Act.

Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is conditionally registered in accordance with FIFRA sec. 3(c)(7)(A) provided that you:

1. Submit and/or cite all data required for registration/reregistration of your product when the Agency requires all registrants of similar products to submit such data.
2. Make the following label changes before you release the product for shipment:
 - a. Revise the EPA Registration Number to read, "EPA Reg. No. 73020-2".

Signature of Approving Official:

Daniel C. Kenny, Acting Product Manager (22)
Fungicide Branch, Registration Division (7505C)

Date:

SEP 14 2000

- b. Replace the text that follows the Signal Word "Danger" with the following: Corrosive - Causes irreversible eye damage. May be fatal if inhaled. Harmful if swallowed or absorbed through skin. Do not get in eyes or inhale dust. Wear goggles or face shield and dust mask while handling, mixing or loading. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.
- c. At the beginning of the list of Personal Protective Equipment (PPE) within the Precautionary Statements, add the statements "Some of the materials that are chemical resistant to this product are listed below. If you want more options, follow the instructions for category A on an EPA chemical-resistance category selection chart." In addition, revise the requirement for "waterproof gloves" to a requirement for "chemical resistant gloves made of any waterproof material such as polyethylene or polyvinyl chloride."
- d. Within the list of PPE for early re-entry in the Agricultural Use Requirements box, revise the requirement for "waterproof gloves" to a requirement for "chemical-resistant gloves made of any waterproof material."

4. Submit one (1) copy of your final printed labeling before you release the product for shipment.

This information should be submitted to:

U.S. Environmental Protection Agency
 Office of Pesticide Programs (H7504C)
 Document Processing Desk (RSB)
 1200 Pennsylvania Ave. N.W.
 Washington, DC 20460

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6(e). Your release for shipment of the product constitutes acceptance of these conditions.

Enclosure

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**EMRON
COPPER SULFATE PENTAHYDRATE**

ACTIVE INGREDIENT:

Copper Sulfate Pentahydrate 99%
(Metallic Copper Equivalent 25.05%)

INERT INGREDIENTS: 1%

TOTAL: 100%

**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.)

FIRST AID

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

IF IN EYES: Immediately flush eyes with plenty of water. Get medical attention.

IF ON SKIN: Immediately wash skin with soap and warm water. Get medical attention.

IF INHALED: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.

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

**ACCEPTED
with COMMENTS
In EPA Letter Dated:**

SEP 14 2000
Under the Federal Insecticide,
Fungicide, and Rodenticide Act,
as amended, for the pesticide
registered under EPA Reg. No.

Manufactured by
Emron Corporation
P.O. Box 6656
Bridgewater, NJ 08807

73020-2
NET WEIGHT 50 LBS. (22.7 kg.)

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PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

DANGER - PELIGRO: Causes severe eye and skin irritation. Harmful if absorbed through the skin or inhaled. May cause skin sensitization in certain individuals. Avoid contact with the skin, eyes and clothing. Avoid breathing dust.

Personal Protective Equipment

Applicators and other handlers must wear:

Long-sleeved shirt and long pants

Shoes plus socks

Protective eyewear

Waterproof gloves

Dust mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C)

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

ENVIRONMENTAL HAZARDS

This product is toxic to fish and aquatic organisms. Do not apply directly to water except as directed under the specific instructions section. Drift and runoff from treated areas may be hazardous to fish and aquatic organisms in adjacent aquatic sites. Direct application of copper sulfate to water may cause a significant reduction in populations of aquatic invertebrates, plants and fish. Do not treat more than one-half of lake or pond at one time in order to avoid depletion of oxygen levels due to decaying vegetation. Allow one to two weeks between treatments for oxygen levels to recover.

Trout and other species of fish may be killed at application rates recommended on this label, especially in soft or acid waters. However, fish toxicity generally decreases when the hardness of water increases. For terrestrial uses, do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water by disposal of equipment washwaters. Do not contaminate water by cleaning of equipment or disposal of wastes. Consult your State Fish and Game Agency before applying this product to public waters. Permits may be required before treating such waters.

Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to the discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

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DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

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.

STORAGE AND DISPOSAL

Store in a cool, dry place. Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited. Do not reuse empty container. If container is damaged, place container in a plastic bag. Shovel any spills into plastic bag and seal with tape. 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 disposal: Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment. Then dispose of liner in a sanitary landfill or by incineration if allowed by State and local authorities.

AGRICULTURAL USE REQUIREMENTS

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

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

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

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

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Written or oral warnings must be given to workers who are expected to be in a treated area or in an area about to be treated with this product. When oral warnings are given, warnings shall be given in a language customarily understood by workers. Written and oral warnings must include the following information. **DANGER:** Area treated with Copper Sulfate on (date of application). Do not enter without appropriate protective clothing until sprays have dried.

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ALGAE CONTROL

When using copper sulfate pentahydrate to control algae, there are many factors to consider, such as water hardness, temperature of the water, type and quantity of vegetation to be controlled, and the amount of water flow. Algae can be controlled more easily and effectively if treatment with copper sulfate is made soon after plant growth has started. Under such circumstances, small amounts of copper sulfate can effectively control algae in water. However, if treatment is delayed until large amounts of algae are present, larger quantities of copper sulfate will be required. Control of algae in water systems is not always permanent. Usually algae is more difficult to control with copper sulfate when water temperatures are low. The dose rates for copper sulfate are based on a water temperature of 60°F or higher. Larger quantities of copper sulfate will be required in hard water. Normally, larger quantities of copper sulfate will be required to kill algae in water that is flowing than in a body of stagnant water. If possible, curtail the flow of water before treatment and hold dormant for about three days after treatment or until plants have begun to die. When preparing a copper sulfate solution in water, it is best that the mixing vessel be made of plastic or glass. Metal containers lined with plastic or painted or enameled are permissible. Galvanized containers are to be avoided. It is usually best to treat algae on calm sunny days when heavy mats of filamentary algae are most likely to be floating on the surface where it can be sprayed directly. When in doubt about the concentration to be used, it is recommended to start with a lower concentration and gradually increase the concentration until the algae is killed.

CALCULATIONS FOR AMOUNT OF WATER AND COPPER SULFATE PENTAHYDRATE TO BE USED:

A. Calculate water volume as follows:

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

B. Calculate weight of water to be treated as follows:

- 1) Multiply volume in cubic feet by 62.44 to obtain total pounds of water, or
- 2) Multiply volume in acre feet by 2,720,000 to obtain total pounds of water.

C. Calculate amount of copper sulfate pentahydrate to add:

- 1) To calculate the weight of copper sulfate pentahydrate needed to achieve the desired concentration, multiply the weight of water in pounds by the recommended concentration. Since the recommended concentrations are given in parts per million (ppm), first convert the value to a decimal equivalent. A value of 1 ppm is equivalent to 0.000001 as a decimal value. Thus the amount of copper sulfate pentahydrate required to treat 1 acre-foot (2,720,000 pounds) of water with 1 ppm of copper sulfate pentahydrate would be: $0.000001 \times 2,720,000 = 2.72$ lbs. copper sulfate pentahydrate.

Treatment of algae can result in oxygen loss from decomposition of dead algae. This loss can cause fish suffocation. Therefore, to minimize this hazard, treat $\frac{1}{3}$ to $\frac{1}{2}$ of the water area in a single operation and wait 7 to 14 days between treatments. Begin treatments along the shore and proceed outward in bands to allow fish to move into untreated water.

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

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SPECIFIC INSTRUCTIONS

To control algae in impounded water, lakes, ponds and reservoirs: There are several methods by which to apply copper sulfate to impounded water. Probably the simplest and most satisfactory method is to dissolve the copper sulfate crystals in water and to spray this solution over the body of water. A small pump mounted in the boat can easily be used for this purpose. Fine crystals may be broadcast directly on the water surface from a properly equipped boat. Copper sulfate ag crystals, feed grade or powder are preferred for this particular method of application. A specially equipped air blower can be used to discharge these size crystals at a specific rate over the surface of the water. When using this method, the wind direction is an important factor. Do not use this method unless completely familiar with this type of application. Copper sulfate ag crystals and granular grades are also designed to be used as a dry application from airplanes, using a maximum of 5.3 pounds per acre. Where the situation permits, copper sulfate may be applied under the water by dragging burlap bags containing copper sulfate. The crystals are placed in burlap bags and dragged through the water by means of a boat. Begin treatment along the shoreline and proceed outward until one-third to one-half of the total has been treated. Care should be taken that the course of the boat is such as to cause even distribution of the chemical. In large lakes it is customary for the boat to travel in parallel lines about 20 to 100 feet apart. Continue dragging the burlap bags over the treated area until the minimum dosage is achieved and all crystals have been dissolved. Copper sulfate large crystals or small crystals should be used with this method since they dissolve slowly and evenly.

To control algae in rice fields (domestic and wild): Application should be made when algae has formed on the soil surface in the flooding field. Applications are most effective when made prior to the algae's leaving the soil surface and rising to the water surface. Apply 10-15 pounds copper sulfate pentahydrate to the water surface or dissolve in water and make a surface spray. Apply higher rate in deep water (6 inches or greater).

Control of tadpole shrimp in flooded rice fields (domestic and wild): Copper sulfate pentahydrate is recommended for the control of tadpole shrimp in rice fields. Copper sulfate should be applied at a rate of 10 to 15 lbs. per acre by mixing with 60 gals. of water and applying as a uniform surface spray using boat, plane or other professional means and pressurized spray device. This product is also designed to be used as a dry application from airplanes using 10 to 15 lbs. per acre. Use at the first indication of infestation after the field has been flooded to a depth of 6 to 8 inches. Copper sulfate pentahydrate is especially made for maximum solubility in this volume of water.

Copper Sulfate required for treatment of different genera of algae: The genera of algae listed below are commonly found in waters of the United States. Use the lower recommended rate in soft waters (less than 50 ppm methyl orange alkalinity) and the higher concentration in hard water (above 50 ppm alkalinity). Always consult State Fish and Game Agency before applying this product to municipal waters.

Organism	¼ to ½ ppm ¹	½ to 1 ppm ²	1 to 1½ ppm ³	1½ to 2 ppm ⁴
Cyanophyceae (Blue Green)	Anabaena Anacystis Aphanizomenon Gloeotricha Gomphosphaena Polycystis Rivularia	Cylindrospermum Osoilatoris Plectonema	Nostoc Phormidium	Calothrix Symploca

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Organism	¼ to ½ ppm ¹	½ to 1 ppm ²	1 to 1½ ppm ³	1½ to 2 ppm ⁴
Chlorophyceae (Green)	Closterium Hydrodictyon Spirogyra Ulothrix	Botryococcus Cladophora Coelastrum Draparnaldia Erteromorpha Gloeocystis Microspora Tribonema Zygnema	Chlorella Crucigenia Desmidium Golenkinia Oocystis Palemella Pitophora Staurestrum Tetraedron	Anustroedesimus Chara, Nitrella Senedesmus
Diatomaceae (Diatoms)	Asterionella Fragilaria Melorisa Navicula	Gomphonema Nazscha Stephanodiscus Synedra, Tabellana	Achnanthes Cymbella Neidium	
Protozoa (Flagellates)	Dinobryon Synura Uroglena Volvox	Cerabum Cryptomonas Euglena Glenodinium Mallomonas	Chlamydomonas Hawmatococcus Peridinium	Eudonia Pandorina
¹ ¼-½ ppm = .67-1.3 lbs./acre ft. ² ½-1 ppm = 1.3-2.6 lbs./acre ft. ³ 1-1½ ppm = 2.6-3.9 lbs./acre ft. ⁴ 1½-2 ppm = 3.9-5.32 lbs./acre ft.				

Sewer Treatment – Root Destroyer:

- A. For partial stoppage – Add ½ pound of copper sulfate to sewer or drain and flush toward blockage with 5 gallons of water. Repeat at 6 month intervals to prevent growth of new roots.
- B. For complete stoppage – Physically remove the root blockage and repeat as above.

Wood Treatment (green peeled posts) – fungus decay rot:

Prepare a solution of 18.0 pounds of sodium chromate in each 26 gallons of water to be used and a separate second solution of 18.0 lbs. of copper sulfate in each 24 gallons of water to be used. Soak the peeled, green posts, butt end down, first in the copper sulfate solution for 3 days, then butt end down in sodium chromate solution for 2 days, and finally, turn the posts upside down in the sodium chromate solution for 1 additional day. Remove and rinse posts with clear water.

BORDEAUX MIXTURE

How to understand Bordeaux formulations:

If the Bordeaux Mixture instructions read 10-10-100, the first figure means the number of pounds of copper sulfate pentahydrate. The second figure means the pounds of hydrated spray lime, and the third figure, the gallons of water to be used. Use as a full coverage spray to runoff.

How to prepare Bordeaux Mixture:

To prepare a Bordeaux Mixture, fill a tank with water ¼ full. Then, with an agitator running, mix copper sulfate through a copper, bronze, stainless steel or plastic screen. Add water so the tank is ¾ full. Mix in the hydrated spray lime through the screen, and finish filling with tank with water.

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Chemigation

Refer to supplemental label for Use Directions for Chemigation. Do not apply this product through any irrigation system unless supplemental labeling on chemigation is followed.

CROPS:

Almonds, Apricots, Peaches, Nectarines – Shot Hole Fungus – Prepare a 10-10-100 Bordeaux Mixture and apply as a dormant spray in late fall or early spring.

Almonds, Apricots, Cherries, Peaches, Nectarines, Plums, Prunes – Brown Rot Blossom Blight – Prepare a 10-10-100 Bordeaux Mixture and apply when buds begin to swell.

Sour Cherries – Leaf Spot – Prepare a 10-10-100 Bordeaux Mixture and apply as a full coverage spray after petal fall or as recommended by the State Extension Service.

Lemons, Oranges, Grapefruit – Phytophthora Brown Rot – Prepare a 3-4½-100 Bordeaux Mixture where there is no history of copper injury or a 3-2-6-100 (Zinc Sulfate-Copper Sulfate-Hydrated Lime-Gallons of Water) Bordeaux Mixture. Spray 6 gallons on skirt of tree 3 to 4 feet high, and 2 to 4 gallons on trunk and ground under the tree. If *P. hivernalis* is present, use 10 to 25 gallons to completely cover each tree. Apply in November or December, just before or after first rain. In severe Brown Rot season, apply second application in January or February.

Lemons, Oranges, Grapefruit – Septoria Fruit and Leaf Spot (Central California), Brown Rot, Zinc and Copper deficiencies – Prepare a 3-2-6-100 Bordeaux Mixture (Zinc Sulfate-Copper Sulfate-Hydrated Lime-Gallons of Water) and use 10 to 15 gallons to completely cover each tree. Apply in October, November or December, just before or after first rain.

Walnuts – Walnut Blight – Apply 15 lbs. copper sulfate with 10 lbs. of hydrated lime in 100 gallons of water, plus ½ gallon of summer oil emulsion. Apply in early pre-bloom 10 to 20% pistillate (not when catkin blooms are showing), just before or after rain. Use only if Bordeaux Mixture has proven to be non-phytotoxic in your area.

Olives – Peacock Spot, Olive Knot – Prepare a 10-10-100 Bordeaux Mixture and apply in autumn before heavy winter rains to prevent Peacock Spot. In areas of less than 10 inches rainfall, use a 5-10-100 Bordeaux Mixture. To help protect against Olive Knot, apply as a 10-10-100 Bordeaux before heavy rains and again in the spring. Injury may occur in areas of less than 10 inches of rainfall.

Lilies – Botrytis Blight – Prepare a 10-10-100 Bordeaux Mixture and apply at beginning of emergence. Repeat at 7 to 10 day intervals. Apply more often during frequent rainfalls or when severe disease conditions occur.

WARRANTY – CONDITION OF SALE: DIRECTIONS FOR USE of this product are based on field use and tests believed reliable and should be followed carefully. It is, however, impossible to eliminate all risks associated with use of this product. Because such factors as weather conditions, foreign material and manner of use for application are all beyond the control of the Manufacturer or the Seller of this product, such things as crop injury, ineffectiveness or other unintended consequences may result. ALL SUCH RISKS ARE ASSUMED BY THE BUYER. Manufacturer warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the directions for use. Manufacturer makes no other warranties, expressed or implied, including FITNESS OR MERCHANTABILITY. 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. The foregoing is a condition of sale by Manufacturer and is accepted as such by the Buyer.

Manufactured by
Emron Corporation
P.O. Box 6656, Bridgewater, NJ 08807