



Clearigate®

GENERAL GUIDELINES:

Clearigate® is a chelated copper formulation containing an emulsified surfactant / penetrant for highly effective control of coarse (thick cell-walled) filamentous algae, muscilaginous (colonial) planktonic algae, Chara and a variety of emergent, floating and submerged aquatic plants. Vegetation controlled includes: Cladophora, Pithophora, Lyngbya, Microcystis, Hydrilla, pondweeds, water milfoil, naiad and other species having a sensitivity to copper absorption in conjunction with a penetrant.

DIRECTIONS FOR USE:

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read entire label. Use strictly in accordance with precautionary statements and directions and with applicable State and Federal Regulations.

STATIC WATER TREATMENT SURFACE SPRAY / INJECTION APPLICATION

For effective control, proper chemical concentration contact should be maintained for a minimum of three hours. Application rates in the chart below are based upon static or minimum flow situations in lakes, ponds, reservoirs and inactive irrigation conveyance systems or drainage systems. Where significant inflow occurs (greater than 10% of total water volume in 24 hours), it is recommended that flow be stopped for 24 hours during and following treatment. If this is not possible, treat inflowing water in accordance with Flowing Water Treatment instructions.

Due to the potential toxicity to fish at dosages in excess of 0.5 ppm copper, the use of Clearigate above this level is suggested only by experienced applicators. In areas where fish are not present or where some fish kill is not objectionable, total volume treatments can be made. In all other areas, treatments above 0.5 ppm copper should not exceed $\frac{1}{3}$ to $\frac{1}{2}$ of the entire water body, allowing one to two weeks between consecutive treatments.

Select dosage rate based upon species/type of plants being controlled. Choose a dilution which will allow relatively even application throughout the intended treatment area with the type of equipment being used. Avoid drift by using coarse spray droplets, applying close to the water surface and/or injecting solution below the water surface through submersed hoses for treatment of submersed growth.

Aquatic Vegetation Type of Species	Dosage PPM Copper	Rates Gallons Per Acre-Foot	Dilution % Spray Solution V/V	Treatment Comments
ALGAE				
Planktonic	0.1 - 0.5	0.9 - 4.4	1.5% - 5%	Apply lower dosage rates on light infestations. Use higher rates on heavy blooms and where algae masses are clumped and accumulated.
Filamentous	0.2 - 0.6	1.8 - 5.3	5% - 10%	Apply lower dosage rates on early season, light infestations or treatment of regrowth. Apply higher rates on surface mats and coarse species such as Pithophora, Cladophora, Lyngbya.
Chara/Nitella	0.4 - 0.8	3.6 - 7.1	10% - 15%	Apply lower dosage rates on new infestations or early season growth. Apply higher rates on older, established calcified plants. Apply as close to top of plant growth as possible.

FOR USE IN CROP AND NON-CROP IRRIGATION CONVEYANCE SYSTEMS: DITCHES, CANALS AND LATERALS; POTABLE WATER RESERVOIRS; LAKES; FARM, FISH, GOLF COURSE, INDUSTRIAL AND SWIMMING PONDS

EPA Reg. No. 8959-51
Pat. # 5,407,899
EPA Est. No. 42291-GA-1

ACTIVE INGREDIENT:
COPPER AS ELEMENTAL.....3.825%
INERT INGREDIENTS:.....96.175%
TOTAL.....100.00%

From mixed Copper Ethanolamines in an Emulsified Formulation
Clearigate® contains 0.31 lbs. of copper per gallon

 **applied biochemists**

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Aquatic Vegetation Type of Species	Dosage PPM Copper	Rates Gallons Per Acre-Foot	Dilution % Spray Solution V/V	Treatment Comments
SUBMERGED PLANTS				
<i>Egeria densa</i> (Brazilian Elodea)	0.6 - 1.0	5.4 - 8.7	10% - 20%	Apply lower dose on early season, low density growth. Apply higher rates in thicker stands of plants. Product should be applied as close to the top of the plants as possible. Underwater injection is recommended when plants are more than 1 ft. below water surface.
<i>Elodea canadensis</i>	0.8 - 1.0	7.1 - 8.7	10% - 20%	
<i>Hydrilla verticillata</i>	0.4 - 1.0	3.6 - 8.7	10% - 20%	
<i>Myriophyllum spp.</i> (Water Milfoil)	0.8 - 1.0	7.1 - 8.7	10% - 20%	
<i>Najas spp.</i> (Naiad)	0.5 - 1.0	4.4 - 8.7	10% - 20%	
<i>Potamogeton spp.</i> (Pondweeds)	0.5 - 1.0	4.4 - 8.7	10% - 20%	
FLOATING PLANTS		Gallons Per Surface Acre		
<i>Lemna spp.</i> (Duckweed)		4.4 - 8.7	20% - 25%	Apply lower rates to shallow (less than 1 ft.) infestations. Use higher rates for large infestations in deeper water (1 ft. or greater). Use a fine spray and wet plants thoroughly. Do not disturb with motor wake or paddles after treatment.
<i>Eichornia crassipes</i> (Water Hyacinth)		4.4 - 8.7	20% - 25%	

FOR OPTIMUM EFFECTIVENESS:

- Apply Clearigate early in the day under bright or sunny conditions when water temperatures are at least 60°F(15.5°C).
- Apply when growth first begins to appear or create a nuisance.
- Apply in a manner which will ensure even distribution of product within treatment area.
- Repeat application, as needed, if regrowth begins to appear and seasonal control is desired. Allow one to two weeks between consecutive treatments.

FLOWING WATER TREATMENT

DRIP SYSTEM/METERING PUMP APPLICATION

Effective aquatic plant control in flowing water (canals, ditches, laterals, etc.) is dependent upon maintaining suitable contact time with sufficient chemical concentrations. Other factors to consider include: type of growth present, degree of infestation, water temperature and weather conditions during and following treatment. Fish may be killed at dosages in excess of 0.5 ppm copper in flowing water. Use dosages over 0.5 ppm only in areas where some fish kill is not objectionable or where fish have access to downstream avoidance of these concentration levels.

1. Prior to treatment, it is important to accurately determine water flow rates. In the absence of weirs, orifices or similar devices which provide accurate water flow measurements, volume of flow may be estimated via the following formula:

$$\text{Average Width (ft.)} \times \text{Average Depth (ft.)} \times \text{Velocity}^*(\text{ft}/\text{sec}) \times 0.9 = \text{Cubic Feet per Second (CFS)}$$

*Velocity is the time it takes a floating object to travel a given distance. Dividing the distance traveled (ft) by the time (seconds) will yield velocity (ft/sec). Repeat measurement at least 3 times at the intended application site and use the average of these measurements.

2. Calculate volume of ditch, canal, lateral or receiving pond in cubic feet based upon water levels at the time of treatment by using the following formula:

$$\text{Length (ft)} \times \text{Average width (ft)} \times \text{Average depth (ft)} = \text{Cubic Feet of Water}$$

3. Calculate turnover time (the amount of time it takes for the water in the system to be replaced by new water). Convert to hours using the following formula:

$$\frac{\text{Canal Volume (ft}^3\text{)}}{\text{Flow Rate (CFS)}} \div 3600 = \text{Turnover Time (hrs.)}$$

4. Select dosage rate from the chart to the right and calculate total Clearigate requirements by using the formula following the chart.

NOTE: Use higher dosage range in cooler water (60°F - 70°F), under conditions of heavy growth and/or on matured plant growth. Lower dosage ranges may be used on maintenance control treatments, young plants and/or under minimal growth conditions in warmer waters (>70°F).

Aquatic Vegetation Type	PPM Copper	Dosage Rate Qt. Per CFS/Hour*
Planktonic Algae	0.1 - 0.5	0.3 - 1.4
Filamentous Algae	0.2 - 0.6	0.6 - 1.7
Chara/Nitella	0.4 - 0.8	1.2 - 2.3
Submerged Weeds	0.5 - 1.0	1.4 - 2.8

$$\text{Clearigate Required (qts)} = \text{Dosage Rate (qt/CFS/hr)} \times \text{Flow Rate (CFS)} \times \text{Turnover Time (hrs)}^*$$

*NOTE: If turnover time is less than 3 hrs., substitute 3 hrs. into this calculation.

5. For ditches, canals and laterals determine the number of drip/metering application sites required (based upon turnover time) by referring to the chart below:

TURNOVER TIME (Hrs)	NUMBER OF DRIP/METERING SITES
Less than 4.5	1
4.6–7.5	2
7.6–10.5	3
10.6–13.5	4
13.6–16.5	5
Etc.	

Sewage treatment ponds and other sites where water is stored for a calculated retention time and are fed by a single input source will require a single dripper/metering system. Inflowing water should be treated at the appropriate dosage rate from the chart in #4 for the duration of the entire turnover time calculated in #3.

6. Calculate distance between drip/metering sites by using the following formula:

$$\frac{\text{Canal/Ditch/Lateral Length (ft)}}{\text{No. of Drip/Metering Sites}} = \text{Distance Between Drip/Metering Systems (ft)}$$

7. Calculate amount of Clearigate required per drip/metering site by using the following formula:

$$\frac{\text{Total Clearigate Required (qts)}}{\text{No. of Drip/Metering Sites}} = \text{Clearigate Required Per Site (qts.)}$$

8. Calculate drip/metering duration per site by using the following formula:

$$\frac{\text{Clearigate Required Per Site (qts)}}{\text{Dosage Rate (qt/CFS/hr) x Flow Rate (CFS)}} = \text{Drip Metering Duration (hrs) Per Site}$$

9. Calculate Drip/Metering Rate by using the following formula to convert to oz./min or ml/min.

$$\text{Flow Rate (CFS) x Drip Rate (qt/CFS/hr) x 0.533*} = \text{Drip Rate (oz/min)}$$

**NOTE: 0.533 is a constant used to convert qt/hr to oz/min*

$$\text{METRIC CONVERSION: Drip Rate (oz/min) x 29.57} = \text{Drip Rate (ml/min)}$$

Calibrate drip system, metering pump or similar dosage device to establish output rate determined in #9. This can be done using a watch with a second hand and a calibrated measuring cup, graduated cylinder or similar vessel. If possible, calibrate all drip/metering devices prior to beginning actual treatment. Turn them on as simultaneously as possible, beginning with the device furthest upstream. Begin with only the amount of product required at each site or record your start-up time and shut down drip/metering systems after the drip/metering duration time period determined in #8.

Remove containers from application sites following treatment. Triple rinse application equipment. Dispose of empty containers in accordance with container disposal instructions on this label. Partially used containers should be resealed with original closures and stored in accordance with storage instructions on this label.

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

FIRST AID

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes. Then continue rinsing. Call Poison Control Center or doctor for treatment advice.

IF ON SKIN: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Poison Control Center or doctor for treatment advice.

IF SWALLOWED: Call Poison Control Center or doctor immediately for treatment advice. Have the person sip a glass of water if able to swallow. Do not induce vomiting unless told to by a Poison Control Center or doctor.

IF INHALED: Move person to fresh air. If person is not breathing call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call Poison Control Center or doctor for further treatment advice. Have the product container or label with you when calling a poison control center or doctor, or going for treatment. If a medical emergency arises contact Arch Chemicals Emergency Action Network in the US call 1-800-654-6911 or outside the US call 423-780-2970. For help with a spill, leak, fire or exposure involving this material call CHEMTREC 1-800-424-9300.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock as well as oxygen and measures to support breathing manually or mechanically may be needed. If persistent, convulsions may be controlled by the cautious intravenous injection of a short-acting barbiturate drug.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER

CORROSIVE. Causes skin burns and irreversible eye damage. May be fatal if absorbed through skin. Harmful if swallowed or inhaled. Do not get in eyes, on skin or on clothing. Wear protective clothing, protective eyewear, and rubber gloves. Avoid breathing dust or spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, using tobacco or using toilet. Remove contaminated clothing and wash before reuse.

ENVIRONMENT HAZARDS - Fish toxicity is dependent upon hardness of water. May be toxic to trout and other species of fish in soft water. Do not use in waters containing trout, koi, goldfish or other sensitive species if the carbonate hardness of the water is less than 50 ppm. Fish may be killed by dosage in excess of 0.5ppm copper in flowing water or systems where total water volume treatments are made.

Avoid contact with drift to desirable plants or crops as injury may result.

Clean out application equipment after each operation. Do not apply under conditions of high wind or wave action.

Treatment of dense weed growth and algae blooms in static ponds and lakes can result in oxygen loss from decomposition of dead vegetation. This loss can cause fish suffocation. Therefore, treat only 1/3 to 1/2 of the dense growth at a time and wait one to two weeks between treatments.

Some states may require permits for application of this product to public water. Check with local authorities.

PHYSICAL/CHEMICAL HAZARDS - Do not use or store near heat or open flame.

STORAGE AND DISPOSAL -

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

STORAGE: Keep pesticide in original container. Do not store in a manner where cross-contamination with other pesticides, fertilizers, food or feed could occur. Store at temperatures above 32°F. Do not store near heat or flame.

In the event of spillage during handling or storage, absorb with sand clay or other inert material and dispose of absorbent in accordance with pesticide disposal instructions listed below. For help with spill, leak, fire or exposure involving this material, call CHEMTREC 1-800-424-9300.

PESTICIDE DISPOSAL: This product is 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: Do not reuse container. Triple rinse (or equivalent). Incinerate, burn or puncture and dispose of in a sanitary landfill, or dispose of by other procedures allowed by State and local authorities. If burned stay out of smoke.

WARRANTY

To the extent consistent with applicable law neither the manufacturer nor the seller makes any warranty, expressed or implied concerning the use of this product other than indicated on the label.

To the extent consistent with applicable law buyer assumes risk of use of this material when such use is contrary to label instructions. Read and follow the label directions.