# ALGIMYCIN® PWF
## Algaecide/Cyanobacteriocide

**CONTROLS ALGAE and CYANOBACTERIA IN POTABLE WATER RESERVOIRS, PONDS, LAKES, IRRIGATION CONVEYANCE SYSTEMS, DITCHES, CANALS, & LATERALS**

ACTIVE INGREDIENTS:

| | |
|---|---|
| Chelates of copper gluconate (CAS# 527-09-3j) | 12.5% |
| Chelates of copper citrate (CAS# 10402-15-0) | 12.9% |
| OTHER INGREDIENTS: | 74.6% |
| Total: | 100.0% |

Contains 5% copper, 0.512 lbs. of copper per gallon (62 g/l)

KEEP OUT OF REACH OF CHILDREN

# CAUTION

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.)

See Additional Precautions on Back Panel
Read Entire Label Before Using This Product

NSF®
Certified to NSF / ANSI 60

Manufactured for:
Applied Biochemists
1200 Bluegrass Lakes Pkwy
Alpharetta, GA 30004
1-800-558-5106

EPA Reg. No. 7364-9-8959
EPA Est. No. 42291-GA-1

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## FIRST AID

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

If in eyes:
- Hold eyelids open and rinse slowly with water for 15 – 20 minutes.
- Remove contact lenses if present after 5 minutes then continue rinsing eye.
- Call poison control center or doctor for treatment advice.

If on Skin or Clothing:
- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15 – 20 minutes.
- Call poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center, doctor, or going for treatment.
IN CASE OF EMERGENCY CALL 1-800-654-6911

Note to Physician: Probable mucosal damage may contraindicate the use of gastric lavage. Measure against circulatory shock, respiratory depression and convulsions may be needed.

## PRODUCT INFORMATION

This product is a liquid, water soluble copper formulation designed to effectively control a broad range of algae and cyanobacteria growth in potable water sources including reservoirs, lakes, ponds and related water conveyance systems. Citric and gluconic acids in the formulation provide added chemical stability to the copper when used in alkaline waters. Control of certain forms of algae and cyanobacteria in these water sources can aid in the reduction of taste and odor problems associated with 2-methylisoborneol and geosmin production from these organisms. Dosage rates and frequency of treatment should be based upon the sensitivity of species present, the extent/biomass of the bloom and the depth of the growth present in the water column.

## DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Read entire label and use strictly in accordance with precautionary statements and directions.

APPLICATION RESTRICTIONS:

[For end-use products in containers ≥5 gallons or ≥50 pounds.]

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.

[For end-use consumer products in containers less than 5 gallons or less than 50 pounds]

Do not apply this product in a way that will contact adults, children, or pets, either directly or through drift. Some states may require permits for the application of this product to public waters. Check with your local authorities.

[For all sizes]

Do not enter or allow others to enter until application of product has been completed in the area.

PRE-TREATMENT CONSIDERATIONS:

Consult your proper state authorities such as Dept. of Natural Resources, Fisheries Commission, Health Dept. or Environmental Agency to obtain necessary permits. Initial treatment with this product should be considered at the onset of nuisance bloom conditions as evidenced by initial taste and odor complaints; high cell counts or chlorophyll *a* concentrations; high MIB or geosmin concentrations; visible surface scum formations; low Secchi disk readings; significant daily fluctuations in dissolved oxygen; and/or sudden increases in pH. Monitoring of several of these parameters on a regular basis will assist in optimizing the timing of treatments and reducing the amounts of this product needed for seasonal control. Identification of primary nuisance species or genera may also be helpful in determining and refining dosage rates.

Identify Target Organism(s): If target species or genera are known, determine dosage from Table 1 for the corresponding organism(s) and the level of growth present. If multiple target organisms are present, select the higher rate. If positive identification cannot be made, treatment rates should be determined based upon the algae growth form as indicated in Table 2.

Table 1. PPM COPPER REQUIRED FOR CONTROL OF SOME GENERA OF ALGAE AND CYANOBACTERIA WITH THIS PRODUCT

(Use lower range concentrations in soft waters where algae growth is light to moderate. Use higher range concentrations in moderate to hard waters where algae growth is moderate to heavy.)

| 0.06 to 0.12 ppm | 0.12 to 0.25 ppm | 0.25 to .40 ppm | 0.40 – 0.5 ppm | 0.6 to 0.75 ppm |
|---|---|---|---|---|
| Anabaena | Ceratium | Chlorella | Ankistrodemus | Desmidium |
| Microcystis | Euglena | Cymbella | Pithophora | Eudorina |
| Aphanizomenon | Microspora | Haematococcus | Chara | Nostoc |
| Fragilaria | Oscillatoria | Palmella | Nitella | |
| Spirogyra | Synedra | Phormidium | Pandorina | |
| Ulothrix | Tabellaria | Cladophora | Scenedesmus | |
| Uroglena | Zygnema | | Hydrodictyon | |

Table 2. PPM COPPER REQUIRED FOR CONTROL OF ALGAE GROWTH FORMS/BIOMASS (Abundance) WITH THIS PRODUCT

(Use the following concentrations in areas where algae genera have not been positively identified. Use lower range concentrations in soft waters and higher range concentrations in mod-erate to hard waters.)

| | Growth Form | |
|---|---|---|
| Abundance | Planktonic | Filamentous |
| Light | 0.06 – 0.12 | 0.2 – 0.3 |
| Moderate | 0.12 – 0.25 | 0.3 – 0.5 |
| Heavy | 0.30 – 0.40 | 0.4 – 0.5 |
| Severe | 0.50 – 1.00 | 0.6 – 1.0 |

| Table 3. Dosage Rate (Gallons of Product) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PPM copper | 0.06 | 0.10 | 0.12 | 0.20 | 0.25 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 1.00 |
| Per Acre-Foot | 0.32 | 0.53 | 0.64 | 1.06 | 1.33 | 1.59 | 2.13 | 2.66 | 3.19 | 3.72 | 4.25 | 4.78 | 5.31 |
| Per Million Gallons | 0.97 | 1.63 | 1.96 | 3.26 | 4.08 | 4.89 | 6.52 | 8.15 | 9.78 | 11.4 | 13.0 | 14.7 | 16.3 |
| Total quantity of this product required can be determined by multiplying Dosage Rate times Total Volume of Water to be Treated. Do not exceed 1.0 ppm copper dosage rate. | | | | | | | | | | | | | |

Calculate Volume of Water to be Treated: Treatment volume should be calculated based upon the surface area and depth of growth. Surface mats of filamentous algae often extend underwater and may be attached to bottom substrates. Similarly, planktonic cells are dispersed within the water column depending upon light or temperature conditions. Measure Average Depth of Growth at several locations within the targeted treatment area and calculate Volume of Water to be Treated as follows:

Avg. Length (ft.) x Avg. Width (ft.) x Avg. Depth of Growth = Cubic Feet of Water

$$\frac{\text{Cubic Feet of Water}}{43{,}560} = \text{Acre-Feet}$$

-or-

Cubic Feet of Water X 7.48 = Gallons

Note: 1 acre foot = 326,000 gallons

Determine Dosage Rate: Use the PPM Copper Concentration selected from Table 1 or Table 2 to determine Dosage Rate from Table 3.

METHOD OF APPLICATION:

For Reservoirs, Lakes, Ponds:

If treated water is destined for use as drinking water, the applied metallic copper must not exceed 1 ppm.

- For best results, begin applications early in the season when algae and/or cyanobacteria problems become evident and water temperature above 60°F or 15.6°C.
- Before applying, dilute this product with enough water to ensure even distribution with the type of equipment being used. Break up floating mats of filamentous algae or scum formations before spraying or while application is being made.
- Use rain-sized droplets (0.5 mm or larger) for spraying surface algae mats and cyanobacterial scum formations. Subsurface injection should be used where growth extends into deeper water. This product will disperse within the water column, however, apply as evenly as possible throughout the target area.
- Spray shoreline areas first to avoid trapping fish. In areas of heavy infestation, treat only one-third to one-half of the water volume at one time to avoid fish suffocation caused by oxygen depletion from decaying algae. Allow sufficient time between treatments to allow for oxygen recovery as indicated by D.O. measurements in the water column. In regions where ponds freeze in winter, treatment should be done six (6) to eight (8) weeks before expected freeze time to prevent masses of decaying algae under an ice cover.

For applications in waters destined for use as drinking water, those waters must receive additional and separate potable water treatment. Do not apply more than 1.0 ppm as metallic copper in any waters.

Irrigation Conveyance and Drainage Canal Systems:

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

Avg. Width (ft.) x Avg. Depth (ft.) x Velocity* (ft./sec) x 0.9 = Cubic Feet per Second (C.F.S.)

*Velocity is the time it takes a floating object to travel a given distance downstream. Dividing the distance traveled (feet) by the time (seconds) will yield Velocity (ft./sec.). This measurement should be repeated at least three times at the intended application site and then averaged.

After accurately determining the water flow rate in C.F.S. or gallons per minute, find the corresponding this product drip rate on the chart below:

| Water Flow Rate | | THIS PRODUCT Drip Rate | | |
|---|---|---|---|---|
| C.F.S. | Gal./Min | Qts/Hr | mL/min. | Fl. Oz./Min |
| 1 | 450 | 1.75 | 28 | 0.9 |
| 2 | 900 | 3.50 | 56 | 1.8 |
| 3 | 1350 | 5.25 | 84 | 2.7 |
| 4 | 1800 | 7.00 | 112 | 3.6 |
| 5 | 2250 | 8.75 | 140 | 4.5 |

Calculate the amount of this product needed to maintain the drip rate for a minimum of 3 hours by multiplying Qts./Hr. x 3; ml/min. x 180 or Fl. Oz./Min. x 180. Dosage will maintain 1.0 ppm Copper concentration in the treated water for a 3 hour

contact period. Treatment should continue until waters at the downstream portion of the treatment area reach desired copper concentration. This can be determined by testing for total copper or by calculating turnover time for that section of the canal based upon its flow rates and volume. Introduction of this product should be made in the channel at weir or other turbulence-creating structures to promote chemical dispersion.

Equip this product container with a vented, adjustable valve system constructed to maintain a constant drip or other suitable metering device. Use a stop watch and appropriate measuring container to set the desired drip rate. Readjust accordingly if channel flow rate changes during the treatment period.
Distance of control down the waterway will vary depending upon density of growth. Treatments of longer duration or at more frequent intervals along the channel may be necessary. Do not exceed 1.0 ppm copper in the water at any point along the treatment zone. Periodic maintenance treatments may be required for seasonal control.

Sprinkler, Drip, or Other Types of Irrigation Equipment: This product must be applied continuously for the duration of the water application. Mixing instructions for dilutions of this product are 1 pint for each 7,500 to 300,000 gallons of water. Do not mix with basic substances. No agitation is required.

Drip Irrigation & Injection Instructions: For light algae growth use rates resulting in 0.2 ppm copper. For moderate to heavy algae growth use rates resulting in 1.0 ppm copper. Calculate the amount of [brand {or} this product] needed to maintain the drip rate for a period of 4 hours by multiplying Pints/Hour by 4 OR Fluid Ounces/Minute by 240. This dosage will maintain the copper level at the required ppm for 4 hours. [brand {or} This product] must be introduced at a point of turbulence to insure proper dispersion. Place the required amount of [brand {or} this product] into a tank equipped with a needle valve and set the drip rate as required using a stop watch and a measuring device. Alternatively, use a chemigation or dosing device calibrated and adjusted to inject the desired amounts of [brand {or} this product]. Readjust as required if flow rates change. Distance of control will vary. Treatment points should be determined in the field and placed at required intervals for control. Periodic maintenance treatments may be required.

| INJECTION OR DRIP RATE ACCORDING TO ALGAE GROWTH | | | | | |
|---|---|---|---|---|---|
| Water Flow Rate | | Water Flow Rate | | Water Flow Rate | |
| CFS | Gal./ Min. | Pints/ Hour | Fl.Oz./ Min. | Pints/ Hr. | Fl.Oz./ Min. |
| 1 | 450 | 3.5 | 0.9 | 0.7 | 0.18 |
| 2 | 900 | 7.0 | 1.8 | 1.4 | 0.36 |
| 3 | 1,350 | 10.5 | 2.7 | 2.2 | 0.54 |
| 4 | 1,800 | 14.0 | 3.6 | 2.9 | 0.72 |
| 5 | 2,250 | 17.5 | 4.5 | 3.6 | 0.90 |

GENERAL TREATMENT FACTORS AND CONSIDERATIONS:
The following suggestions apply to the use of this product as an algaecide or cyanobacteriocide in all labeled sites:

Begin applications early in the day under calm, bright conditions when water temperatures are at least 60°F (15.5°C).
Treat when growth first begins to appear and create a nuisance, if possible.
Apply in a manner that will ensure even distribution of the chemical within the treatment area.
Re-treat areas if regrowth begins to appear and seasonal control is desired. Allow dissolved oxygen levels to recover between consecutive treatments.
Visible reduction in algae growth should be observed in 24 to 48 hours following application with full effects of treatments sometimes taking 7 – 10 days depending upon algae forms, weather, degree of infestation and water temperatures.
Before applying, dilute this product with enough water to ensure even distribution with the type of equipment being used. Break up floating mats of filamentous algae or scum formations before spraying or while application is being made.
Use rain-sized droplets for spraying surface algae mats and cyanobacterial scum formations. Subsurface injection should be used where growth extends into deeper water. This product will disperse within the water column, however, apply as evenly as possible throughout the target area.
Spray shoreline areas first to avoid trapping fish.
Allow sufficient time between treatments to allow for oxygen recovery as indicated by D.O. measurements in the water column.
In regions where ponds freeze in winter, treatment should be done six (6) to eight (8) weeks before expected freeze time to prevent masses of decaying algae under an ice cover.

## PRECAUTIONARY STATEMENTS

### Hazards to Humans and Domestic Animals

CAUTION: Harmful if swallowed. Causes moderate eye irritation. Avoid contact with eyes or clothing. Wear long sleeved shirt, long pants, shoes, and socks.

### PERSONAL PROTECTIVE EQUIPMENT (PPE)

Mixers, loaders, applicators, and other handlers must wear the following:

- Long-sleeve shirt
- Long pants
- Shoes and socks
- Gloves

### User Safety Recommendations

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

### 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 ½ of the water body to avoid depletion of oxygen due to decaying vegetation. Wait at least 10 to 14 days between treatments.

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 ($\leq$ 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.

Do not use in water containing trout if the carbonate hardness of water does not exceed 50 ppm. Do not use in water containing Koi and hybrid goldfish. Not intended for use in small volume, garden pond systems.

### SPRAY DRIFT MANAGEMENT

A variety of factors including weather conditions (e.g., wind direction, wind speed, temperature, relative humidity) and the method of application (e.g., water surface sprayer, aerial) can influence pesticide drift. The applicator must evaluate all factors and make appropriate adjustments when applying this product.

### Droplet Size

Apply only as a medium or coarser spray (ASAE standard 572) or a volume mean diameter of 300 microns or greater for spinning atomizer nozzles.

### Wind Speed

Do not apply at wind speeds greater than 15 mph. Only apply this product if the wind direction favors on-target deposition (approximately 3 to 10 mph), and there are no sensitive areas within 250 feet downwind.

### Temperature Inversions

If applying at wind speeds less than 3 mph, the applicator must determine if a) conditions of temperature inversion exist, or b) stable atmospheric conditions exist at or below nozzle height. Do not make applications into areas of temperature inversions or stable atmospheric conditions.

### Other State and Local Requirements

Applicators must follow all state and local pesticide drift requirements regarding application of copper compounds. Where states have more stringent regulations, they must be observed.

### Equipment

All aerial and water surface application equipment must be properly maintained and calibrated using appropriate carriers or surrogates.

### If applied by air:

The boom length must not exceed 75% of the wingspan or 90% of the rotor blade diameter.

Release spray at the lowest height consistent with efficacy and flight safety. Do not release spray at a height greater than 10 feet above the water surface unless a greater height is required for aircraft safety.

When applications are made with a crosswind, the swath must be displaced downwind. The applicator must compensate for this displacement at the up and downwind edge of the application area by adjusting the path of the aircraft upwind.

### If applied by water surface sprayer:

Do not apply with a nozzle height greater than 4 feet above the water surface.

### APPLICATION AND HANDLING EQUIPMENT:

Application, handling or storage equipment must consist of either fiberglass, PVC, polypropylene, Viton, most plastic, aluminum or stainless steel. Never use mild steel, nylon, brass or copper around full strength of this product. Always rinse equipment free and clean of this product each night with plenty of fresh, clean water. Concentrate will destroy cotton and nylon materials. Seller makes no warranty for the performance of product that has been frozen.

## STORAGE & DISPOSAL:

Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited.

PESTICIDE STORAGE: Keep pesticide in original container. Keep container closed when not in use. Do not contaminate feed, feedstuffs, or drinking water. Store at temperatures above 32°F. This product will freeze. Keep away from galvanized pipe and nylon storage handling equipment. If container is damaged, place the container in a plastic bag. 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.

*{For <5 gallon non-refillable containers only}:*
CONTAINER DISPOSAL: Nonrefillable container. Do not reuse container. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling or reconditioning if available or puncture and dispose of in approved landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. Consult Federal, State or local authorities for approved alternative procedures.

*{For >5 gallon non-refillable containers only}:*
CONTAINER DISPOSAL: Nonrefillable container. Do not reuse container. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ with water and recap. 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 on its 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 or reconditioning if available or puncture and dispose of in approved landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. Consult Federal, State or local authorities for approved alternative procedures.

*{For 275 Gallon refillable container only}:*
CONTAINER DISPOSAL: Refillable container. 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 container about 10 percent full with water. Agitate vigorously or recirculate water with pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat rinsing procedure two more times. Then offer for recycling or reconditioning if available or puncture and dispose of in approved landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. Consult Federal, State or local authorities for approved alternative procedures.