



U.S. ENVIRONMENTAL PROTECTION AGENCY  
Office of Pesticide Programs  
Antimicrobials Division (7510P)  
1200 Pennsylvania Ave., N.W.  
Washington, D.C. 20460

EPA Reg. Number:

64452-1

Date of Issuance:

11/10/25

NOTICE OF PESTICIDE:

☒ Registration  
☐ Reregistration  
(under FIFRA, as amended)

Term of Issuance:

Unconditional

Name of Pesticide Product:

Sodium Hypochlorite 12.5%

Name and Address of Registrant (include ZIP Code):

David Swain  
Agent for Webb Chemical Service Corp  
2708 Jerman Street  
Muskegon Heights, MI 49444  
Electronic Transmittal: david.swain@srcconsultants.com

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

On the basis of information furnished by the registrant, the above named pesticide is hereby registered under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

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 unconditionally registered in accordance with FIFRA section 3(c)(5) provided that you:

1. Submit and/or cite all data required for registration/reregistration/registration review of your product when the Agency requires all registrants of similar products to submit such data.

Signature of Approving Official:

Jake McFarley, Senior Regulatory Advisor  
Regulatory Management Branch I  
Antimicrobials Division (7510P)  
Office of Pesticide Programs

Date:

11/10/25

2. Make the following label changes before you release the product for shipment:

- Revise the EPA Registration Number to read, "EPA Reg. No. 64452-1."

3. Submit one copy of the revised final printed label for the record before you release the product for shipment.

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 FIFRA and is subject to review by the Agency. See FIFRA section 2(p)(2). 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, FIFRA section 12(a)(1)(B). 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 Assurance.

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6. Your release for shipment of the product constitutes acceptance of these conditions. A stamped copy of the label is enclosed for your records. Please also note that the record for this product currently contains the following CSFs:

- Basic CSF dated 04/19/2024

If you have any questions, please contact Jake McFarley by phone at 202-817-5615, or via email at [McFarley.Jake@epa.gov](mailto:McFarley.Jake@epa.gov).

Sincerely,



Jake McFarley, Senior Regulatory Advisor  
Regulatory Management Branch I  
Antimicrobials Division (7510P)  
Office of Pesticide Programs

Enclosure: Master Label

[Master label including Non Agricultural and Agricultural Uses]\*

**For Institutional/Commercial/Industrial Users Only, Not For Residential/Household Users. Does Not Contain Child Resistant Packaging**

# SODIUM HYPOCHLORITE 12.5%

**ACCEPTED**

Nov 10, 2025

Under the Federal Insecticide, Fungicide  
and Rodenticide Act as amended, for the  
pesticide registered under  
EPA Reg. No. 64452-1

**Active Ingredient:**

Sodium Hypochlorite .....12.5%

Other Ingredients.....87.5%

**Total** .....100.0%

**Available Chlorine 11.9 %**

**KEEP OUT OF REACH OF CHILDREN  
Does Not Contain Child Resistant Packaging**

**DANGER**

*{Note to Reviewer: In accordance with 40 CFR 156.68(d), all first aid statements, as prescribed, will appear on the front panel of the label.}*

**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 eye. Call a 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 a poison control center or doctor for treatment advice.

**If swallowed**, call poison control center or doctor 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 the poison control center or doctor. DO NOT give anything by mouth to an unconscious person.

**If inhaled**, move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

Have the product label with you when calling a poison control center or doctor, or going for treatment. For emergency information call the National Pesticides Information Center at 1-800-858-7378, 7:30 AM to 3:30 PM, Pacific time (PT), Mon. – Fri. During other times, call the poison control center at 1-800-222-1222.

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

*{First Aid may be in bulleted format}*

[See additional precautions on side panel.]

FOR EMERGENCY ASSISTANCE CALL CHEMTREC: (800) 424-9300



UN 179 ,....., PG III

NET CONTENTS: \_\_\_\_\_ GAL

\_\_\_\_\_ LBS

LOT # \_\_\_\_\_



Certified to  
NSF/ANSI 60

[Manufactured by [or for]]  
Webb Chemical Service Corp  
2708 Jarman Street  
Muskegon Heights, MI 49444  
(231) 733-2181  
EPA Reg. No. 64452-X  
EPA Est. No.

## **PRECAUTIONARY STATEMENTS**

### **HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**DANGER:** Corrosive. Causes irreversible eye damage and skin burns. Harmful if swallowed, inhaled, or absorbed through skin. Do not get in eyes, on skin, or on clothing. Wear safety glasses and rubber gloves when handling this product. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Avoid breathing vapors and use in a well-ventilated area. Remove and wash contaminated clothing before reuse.

*[For use with Irrigation Systems and/or Rice Seed Treatments:]*

#### **PERSONAL PROTECTIVE EQUIPMENT (PPE): Applicators and other handlers must wear:**

Goggles or face shield, long-sleeved shirt and long pants, waterproof gloves and shoes plus socks.

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.

**DISCHARGE DIRECTIONS FOR INDUSTRIAL/COMMERCIAL POOL, SPA, AND HOT TUB USES** - Before draining a treated pool, spa, or hot tub, contact your local sanitary sewer and storm drain authorities and follow their discharge instructions. Do not discharge treated pool or spa water to any location that flows to a gutter, storm drain or natural water body unless discharge is allowed by state and local authorities.

### **PHYSICAL OR CHEMICAL HAZARDS**

**Strong Oxidizing Agent:** Mix only with water according to label directions. Mixing this product with chemicals (e.g. ammonia, acids, detergents, etc.) or organic matter (e.g. urine, feces, etc) will release chlorine gas which is irritating to eyes, lungs and mucous membrane.

*{The following is for use only on marketplace labels that include the directions "Disinfection of Drinking Water (Emergency/Public/Individual Systems)."}*

#### **Drinking Water Disinfection**

The following practices help to minimize degradant formation in drinking water disinfection:

- It is recommended to minimize storage time.
- It is recommended that the pH solution be in the range of 11-13.
- It is recommended to minimize sunlight exposure by storing in opaque containers and / or in a covered area. Solutions should be stored at lower temperatures. Every 5°C reduction in storage temperature will reduce degradant formation by a factor of two.
- Dilution significantly reduces degradant formation. For products with higher concentrations, it is recommended to dilute hypochlorite solutions with cool, softened water upon delivery, if practical for the application.

OR

*{The following may be used on marketplace labels with space issues or separate service bulletins with directions}*

[For drinking water uses, see additional precautions on [service bulletin, product bulletin, other use label, side [back] panel]]

## **STORAGE AND DISPOSAL**

Do not contaminate food or feed by storage, disposal, or cleaning of equipment.

**STORAGE:** Store this product in a cool dry area, away from direct sunlight and heat to avoid deterioration. In case of spill, flood areas with large quantities of water.

**PRODUCT DISPOSAL:** Product or rinsates that cannot be used should be diluted with water before disposal in a sanitary sewer.

### **CONTAINER HANDLING:**

*{Non refillable containers 5 gallons or less:}*

Nonrefillable container. Do not reuse or refill this container. Clean container promptly after emptying. Triple rinse as follows: Fill container with water and recap. Shake for 10 seconds. Drain for 10 seconds after the flow begins to drip. Follow Product Disposal instructions for rinsate disposal. Repeat procedure two more times. Offer for recycling if available or reconditioning if appropriate or place in trash.

*{Non refillable containers > 5 gallons:}*

Nonrefillable container. Do not reuse or refill this container. Clean container promptly after emptying. Triple Rinse as follows: Fill the container  $\frac{1}{4}$  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. Follow Pesticide Disposal instructions for rinsate disposal. Repeat this procedure two more times. Offer for recycling if available or reconditioning if appropriate or place in trash.

*{Refillable containers:}*

Refillable container: Totes and drums: Refill this container with sodium hypochlorite 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, fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Follow Pesticide Disposal instructions for rinsate disposal. Repeat procedure two more times. Offer container for recycling if available or reconditioning if appropriate or place in trash.

*[Bulk Shipment Transport Vehicles: In accordance with 40 CFR 156.140 (e) "Exemption for transport vehicles" transport vehicles are exempt from the requirements to provide refillable or nonrefillable container instructions.]*

## **DIRECTIONS FOR USE**

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.  
This product may be applied only by the methods specified on the label.

NOTE: This product degrades with age. Use a chlorine test kit and increase dosage, as necessary, to obtain the required level of available chlorine.

*\*[Due to label size limitations, a subset of directions may be placed on the container, with the remaining directions referenced as follows:]*

[ADDITIONAL DIRECTIONS FOR USE: See Webb Chemical Service Corp Master label. Master label need not accompany shipment.]

## **NON AGRICULTURAL USES**

### **INDUSTRIAL/COMMERCIAL SWIMMING POOL WATER DISINFECTION**

For a new pool or spring start-up, superchlorinate with 52-104 oz. of product for each 10,000 gallons of water to yield 5 to 10 ppm available chlorine by weight. Check the level of available chlorine with a test kit. Re-entry into treated pools is prohibited above levels of 4 ppm due to risk of bodily harm. Adjust and maintain pool water pH to between 7.2 to 7.6. Adjust and maintain the alkalinity of the pool to between 50 to 100 ppm.

To maintain the pool, add manually or by a feeder device 11 oz. of this product for each 10,000 gallons of water to yield an available chlorine residual between 0.6 to 1.0 ppm by weight. Stabilized pools should maintain a residual of 1.0 to 1.5 ppm available chlorine. Test the pH, available chlorine residual and alkalinity of the water frequently with appropriate test kits. Frequency of water treatment will depend upon temperature and number of swimmers.

Every 7 days, or as necessary, superchlorinate the pool with 52-104 oz. of product for each 10,000 gallons of water to yield 5 to 10 ppm available chlorine by weight. Check the level of available chlorine with a test kit. Do not re-enter pool until the chlorine residual is between 1.0 and 4.0 ppm.

At the end of the swimming pool season or when water is to be drained from the pool, chlorine must be allowed to dissipate from treated pool water before discharge. Do not chlorinate the pool within 24 hours prior to discharge.

WINTERIZING POOLS: While water is still clear and clean, apply 3 oz. of product per 1000 gallons, while filter is running, to obtain a 3 ppm available chlorine residual, as determined by a suitable test kit. Cover pool, prepare heater, filter and heater components for winter by following manufacturer's instructions.

### **INDUSTRIAL/COMMERCIAL SPAS, HOT-TUBS, IMMERSION TANKS, ETC.**

SPAS/HOT-TUBS: Apply 5 oz of product per 1000 gallons of water to obtain a free available chlorine concentration of 5 ppm, as determined by a suitable chlorine test kit. Re-entry into treated pools is prohibited above levels of 4 ppm due to risk of bodily harm. Adjust and maintain pool water pH to between 7.2 and 7.8. Some oils, lotions, fragrances, cleaners, etc. may cause foaming or cloudy water as well as reduce the efficiency of the product.

To maintain the water, apply 5 oz. of this product per 1000 gallons of water over the surface to maintain a chlorine concentration of 5 ppm.

After each use, shock treat with 8 oz. of this product per 500 gallons of water to control odor and algae.

During extended periods of disuse, add 3 oz. of product daily per 1000 gallons of water to maintain a 3 ppm chlorine concentration.

HUBBARD AND IMMERSION TANKS: Add 5 oz. of this product per 200 gallons of water before patient use to obtain a chlorine residual of 25 ppm, as determined by a suitable test kit. Adjust and maintain the water pH to between 7.2 and 7.6. After each use drain the tank. Add 5 oz. to a bucket of water and circulate this solution through the agitator of the tank for 15 minutes and then rinse out the solution. Clean tank thoroughly and dry with clean cloths.

HYDROTHERAPY TANKS: Add 1 oz. of this product per 1000 gallons of water to obtain a chlorine residual of 1 ppm, as determined by a suitable chlorine test kit. Pool should not be entered until the chlorine residual is below 3 ppm. Adjust and maintain the water pH to between 7.2 and 7.6. Operate pool filter continuously. Drain pool weekly and clean before refilling.

### **SANITIZATION OF NONPOROUS FOOD CONTACT SURFACES**

**RINSE METHOD:** A solution of 100 ppm available chlorine may be used in the sanitizing solution if a chlorine test kit is available. Solution containing an initial concentration of 100 ppm available chlorine must be tested and adjusted periodically to ensure that the available chlorine does not drop below 50 ppm. Prepare a 100 ppm sanitizing solution by thoroughly mixing 1.5 oz. of this product with 10 gallons of water. If no test kit is available, prepare a sanitizing solution by thoroughly mixing 3 oz. of this product with 10 gallons of water to provide approximately 200 ppm available chlorine by weight.

Clean equipment surfaces in the normal manner. Prior to use, rinse all surfaces thoroughly with the sanitizing solution, maintaining contact with the sanitizer for at least 2 minutes. If solution contains less than 50 ppm of available chlorine, as determined by an available test kit, either discard the solution or add sufficient product to reestablish a 200 ppm residual. Do not rinse equipment with water after treatment and do not soak equipment overnight.

Sanitizers used in automated systems may be used for general cleaning may not be reused for sanitizing purposes.

**IMMERSION METHOD:** A solution of 100 ppm available chlorine may be used in the sanitizing solution if a chlorine test kit is available. Solutions containing an initial concentration of 100 ppm available chlorine must be tested and adjusted periodically to ensure that the available chlorine does not drop below 50 ppm. Prepare a 100 ppm sanitizing solution by thoroughly mixing 1.5 oz. of this product with 10 gallons water. If no test kit is available, prepare a sanitizing solution by thoroughly mixing 3 oz. of this product with 10 gallons of water to provide approximately 200 ppm available chlorine by weight.

Clean equipment in the normal manner. Prior to use, immerse equipment in the sanitizing solution for at least 2 minutes and allow the sanitizer to drain. If solution contains less than 50 ppm available chlorine, as determined by a suitable test kit, either discard the solution or add sufficient product to reestablish a 200 ppm residual. Do not rinse equipment with water after treatment.

Sanitizers used in automated systems may be used for general cleaning but may not be reused for sanitizing purposes.

**FLOW/PRESSURE METHOD:** Disassemble equipment and thoroughly clean after use.

Assemble equipment in operating position prior to use. Prepare a volume of 200 ppm available chlorine sanitizing solution equal to 110% of volume capacity of the equipment by mixing the product in a ratio of 3 oz. product with 10 gallons of water. Pump solution through the system until full flow is obtained at all extremities, the system is completely filled with the sanitizer and all air is removed from the system. Close drain valves and hold under pressure for at least 2 minutes to ensure contact with all internal surfaces. Remove some cleaning solution from drain valve and test with a chlorine test kit. Repeat entire cleaning/sanitizing process if effluent contains less than 50 ppm available chlorine. Rinse with potable water prior to use.



**CLEAN-IN-PLACE METHOD** - Thoroughly clean equipment after use. Prepare a volume of 200 ppm available chlorine sanitizing solution equal to 110% of volume capacity of the equipment by mixing the product in a ratio of 2 oz. product with 10 gallons of water. Pump solution through the system until full flow is obtained at all extremities, the system is completely filled with the sanitizer and all air is removed from the system. Close drain valves and hold under pressure for a least 10 minutes to insure contact with all internal surfaces. Remove some cleaning solution from drain valve and test with a chlorine test kit. Repeat entire cleaning/sanitizing process if effluent contains less than 50 ppm available chlorine.

#### **SANITIZATION OF POROUS FOOD CONTACT SURFACES**

**RINSE METHOD:** Prepare a 600 ppm solution by thoroughly mixing 8 oz. of this product with 10 gallons of water. Clean surfaces in the normal manner. Rinse all surfaces thoroughly with the 600 ppm solution, maintaining contact with the sanitizer for at least 2 minutes. Prepare a 200 ppm sanitizing solution by thoroughly mixing 3 oz. of this product with 10 gallons of water. Prior to using equipment; rinse all surfaces with a 200 ppm available chlorine solution. Do not rinse and do not soak equipment overnight.

**IMMERSION METHOD:** Prepare a 600 ppm solution by thoroughly mixing, in an immersion tank, 8 oz. of this product with 10 gallons of water. Clean equipment in the normal manner. Immerse equipment in the 600 ppm solution for at least 2 minutes. Prepare a 200 ppm sanitizing solution by thoroughly mixing 3 oz. of this product with 10 gallons of water. Prior to using equipment, immerse all surfaces with a 200 ppm available chlorine solution. Do not rinse and do not soak equipment overnight.

#### **SANITIZATION OF NONPOROUS NON-FOOD CONTACT SURFACES**

**RINSE METHOD:** Prepare a sanitizing solution by thoroughly mixing 3 oz. of this product with 10 gallons of water to provide approximately 200 ppm available chlorine by weight. Clean equipment surfaces in the normal manner. Prior to use, rinse all surfaces thoroughly with the sanitizing solution, maintaining contact with the sanitizer for at least 2 minutes. Do not rinse equipment with water after treatment and do not soak equipment overnight.

**IMMERSION METHOD:** Prepare a sanitizing solution by thoroughly mixing, in an immersion tank, 3 oz. of this product with 10 gallons of water to provide approximately 200 ppm available chlorine by weight. Prior to use, immerse equipment in the sanitizing solution for at least 2 minutes and allow the sanitizer to drain. Do not rinse equipment with water after treatment.

#### **DISINFECTION OF NONPOROUS NON-FOOD CONTACT SURFACES**

**RINSE METHOD:** Prepare a disinfecting solution by thoroughly mixing 8 oz. of this product with 10 gallons of water to provide approximately 600 ppm available chlorine by weight. Clean equipment surfaces in the normal manner. Prior to use, rinse all surfaces thoroughly with the disinfecting solution, maintaining contact with the solution for at least 10 minutes. Do not rinse equipment with water after treatment and do not soak overnight.

**IMMERSION METHOD:** Prepare a disinfecting solution by thoroughly mixing, in an immersion tank, 8 oz. of this product with 10 gallons of water to provide approximately 600 ppm available chlorine by weight. Prior to use, immerse equipment in the disinfecting solution for at least 10 minutes and allow the sanitizer to drain. Do not rinse equipment with water after treatment.

#### **SANITIZATION OF POROUS NON-FOOD CONTACT SURFACE**

**RINSE METHOD:** Prepare a sanitizing solution by thoroughly mixing 8 oz. of this product with 10 gallons of water to provide approximately 600 ppm available chlorine by weight. Clean surfaces in the normal matter. Prior to use, rinse surfaces thoroughly with the sanitizing solution, maintaining contact with the sanitizer for at least 2 minutes. Do not rinse equipment with water after treatment and do not soak equipment overnight.

**IMMERSION METHOD:** Prepare a sanitizing solution by thoroughly mixing, in an immersion tank, 8 oz. of this product with 10 gallons of water to provide approximately 600 ppm available chlorine by weight. Clean equipment in the normal manner. Prior to use, immerse equipment in the



sanitizing solution for at least 2 minutes and allow the sanitizer to drain. Do not rinse equipment with water after treatment.

### **WAREWASHING**

**FOR SANITIZING TABLEWARE IN LOW TEMPERATURE DISHWASHING MACHINE:** Dispense this product into the final rinse water at 100 ppm available chlorine. Do not allow concentration to fall below 50 ppm. Air dry. Dispenser should be set to deliver a sanitizing solution of 1 OZ. per 10 gallons of water to give 100 ppm of available chlorine. Only a qualified service representative should set or adjust dispenser on the machine.

**EATING AND DRINKING UTENSILS:** Prepare sanitizing solution immediately prior to use. Scrape and pre-wash utensils and glass whenever possible with clean water. Wash with good detergent or compatible cleaner. Sanitize by thoroughly mixing 2 OZ. of this product with 10 gallons of water to provide 200 ppm available chlorine. Immerse utensils and glassware at least 2 minutes or for contact time specified by governing sanitary code. Do not reuse sanitizing solution.

### **SEWAGE & WASTEWATER EFFLUENT TREATMENT**

The disinfection of sewage effluent must be evaluated by determining the total number of coliform bacteria and/or fecal coliform bacteria, as determined by the Most Probable Number (MPN) procedure, to ensure that the chlorinated effluent that has been reduced to or below the maximum permitted by the controlling regulatory jurisdiction.

On the average, satisfactory disinfection of secondary wastewater effluent can be obtained when the chlorine residual is 0.5 ppm after 15 minutes contact. Although the chlorine residual is the critical factor in disinfection, the importance of correlating chlorine residual with bacterial kill must be emphasized. The MPN of the effluent, which is directly related to the water quality standards requirements, should be the final and primary standard and the chlorine residual should be considered an operating standard valid only to the extent verified by the coliform quality of the effluent.

The following are critical factors affecting wastewater disinfection.

1. **Mixing:** It is imperative that the product and the wastewater be instantaneously and completely flash mixed to assure reaction with every chemically active soluble and particulate component of the wastewater.
2. **Contacting:** Upon flash mixing, the flow through the system must be maintained.
3. **Dosage/Residual Control:** Successful disinfection is extremely dependent on response to fluctuating chlorine demand to maintain a predetermined desirable chlorine level. Secondary effluent should contain 0.2 to 1.0 ppm chlorine residual after a 15 to 30 minute contact time. A reasonable average of residual chlorine is 0.5 ppm after 15 minutes contact time.

### **SEWAGE & WASTEWATER TREATMENT**

**EFFLUENT SLIME CONTROL:** Apply a 100 to 1000 ppm available chlorine solution at a location, which will allow complete mixing. Prepare this solution by mixing 10 to 100 oz. of this product with 100 gallons of water. Once control is evident, apply a 15 ppm available chlorine solution by mixing 4 oz. of this product with 100 gallons of water.

**FILTER BEDS SLIME CONTROL:** Remove filter from service, drain to a depth of 1 foot above filter, and add 80 oz. of product per 20 sq. ft. evenly over the surface. Wait 30 minutes before draining water to a level that is even with the top of the filter. Wait for 4 to 6 hours before completely draining and back washing filter.

### **DISINFECTION OF DRINKING WATER (PUBLIC/INDIVIDUAL SYSTEMS)**

**PUBLIC SYSTEMS:** Mix a ratio of 1 oz. of this product to 100 gallons of water. Begin feeding solution with a hypo chlorinator until a free available chlorine residual of at least 0.2 ppm and no more than 0.6 ppm is attained throughout the distribution system. Check water frequently with a chlorine test kit. Bacteriological sampling must be conducted at a frequency no less than that prescribed by the National Primary Drinking Water Regulations. Contact your local Health Department for further details.

**INDIVIDUAL SYSTEMS: DUG WELLS:** Upon completion of the casing (lining) wash the interior of the casing (lining) with a 100 ppm available chlorine solution using a stiff brush. This solution can be made by thoroughly mixing 1.5 oz. of this product with 20 gallons of water. After covering the

well, pour the sanitizing solution into the well through both the pipe sleeve opening and the pipeline. Wash the exterior of the pump cylinder also with the sanitizing solution. Start pump and pump water until strong odor of chlorine water is noted. Stop pump and wait at least 24 hours. After 24 hours, flush well until all traces of chlorine have been removed from the water. Consult your local Health Department for further details.

**INDIVIDUAL SYSTEMS: DRILLED, DRIVEN & BORED WELLS:** Run pump until water is free from turbidity as possible. Pour a 100 ppm available chlorine sanitizing solution into the well. This solution can be made by thoroughly mixing 1.5 oz. of this product with 10 gallons of water. Add 5 to 10 gallons of clean, chlorinated water to the well in order to force the sanitizer into the rock formation. Wash the exterior of the pump cylinder with the sanitizer. Drop the pipeline into well, start pump and pump water until strong odor of chlorine in water is noted. Stop pump and wait at least 24 hours. After 24 hours flush well until all traces of chlorine have been removed from the water. Deep wells with high water levels may necessitate the use of special methods for introduction of the sanitizer into the well. Consult your local Health Department for further details.

**INDIVIDUAL SYSTEMS: FLOWING ARTESIAN WELLS:** Artesian wells generally do not require disinfection. If analysis indicates persistent contamination, the well should be disinfected. Consult your local Health Department for further details.

**EMERGENCY DISINFECTION** - When boiling of water for 1 minute is not practical, water can be made potable by using this product. Prior to addition of the sanitizer, remove all suspended material by filtration or by allowing it to settle to the bottom. Decant the clarified, contaminated water to a clean container and add 1 drop of this product to 20 gallons of water. Allow the treated water to stand for 30 minutes. Properly treated water should have a slight chlorine odor, if not, repeat dosage and allow the water to stand an additional 15 minutes. The treated water can then be made palatable by pouring it between clean containers for several times.

### **PUBLIC WATER SYSTEMS**

**RESERVOIRS: ALGAE CONTROL:** Hypo chlorinate streams feeding the reservoir. Suitable feeding points should be selected on each stream at least 50 yards upstream from the points of entry into the reservoir.

**MAINS:** Thoroughly flush section to be sanitized by discharging hydrants. Permit a flow of at least 2.5 feet per minute to continue under pressure while injecting this product by means of a hypo chlorinator. Stop water flow when a chlorine residual test of 50 ppm is obtained at the low pressure end of the main section after a 24 hour retention time. When chlorination is completed, the system must be flushed free of all heavily chlorinated water.

**NEW TANKS, BASINS, ETC.:** Remove all physical soil from surfaces. Place 25 oz. of this product for each 5 cubic feet of working capacity (500 ppm available chlorine). Fill to working capacity and allow to stand for at least 4 hours. Drain and flush with potable water and return to surface.

**NEW FILTER SAND:** Apply 100 oz. of this product for each 150 to 200 cubic feet of sand. The action of the product dissolving as the water passes through the bed will aid in sanitizing the new sand.

**NEW WELLS:** Flush the casing with 50 ppm available chlorine solution of water containing 5 oz. of this product for each 100 gallons of water. The solution should be pumped or fed by gravity into the well after thorough mixing with agitation. The well should stand for several hours or overnight under chlorination. It may be pumped until a representative raw water sample is obtained. Bacterial examination of the water will indicate whether further treatment is necessary.

**EXISTING EQUIPMENT:** Remove equipment from service and thoroughly clean surfaces of all physical soil. Sanitize by placing 26 oz. of this product for each 5 cubic feet capacity (approximately 500 ppm available chlorine). Fill to working capacity and let stand at least 4 hours. Drain and place in service. If the previous treatment is not practical, surfaces may be sprayed

with a solution containing 6 oz. of this product for each 5 gallons of water (approximately 1000 ppm available chlorine). After drying, flush with water and return to service.

### **EMERGENCY DISINFECTION AFTER FLOODS**

**WELLS:** Thoroughly flush contaminated casing with a 500 ppm available chlorine solution. Prepare this solution by mixing 6.5 oz. of this product with 10,000 gallons of water. Backwash the well to increase yield and reduce turbidity, adding sufficient chlorinating solution to the backwash to produce a 10 ppm available chlorine residual, as determined by a chlorine test kit. After the turbidity has been reduced and the casing has been treated, add sufficient chlorinating solution to produce a 50 ppm available chlorine residual. Agitate the well water for several hours and take a representative water sample. Retreat well if water samples are biologically unacceptable.

**RESERVOIRS:** In case of contamination by overflowing streams, establish hypo-chlorinating stations upstream of reservoir. Chlorinate the inlet water until the entire reservoir obtains a 0.2 ppm available chlorine residual, as determined by a chlorine test kit. In case of contamination from surface drainage, apply sufficient product directly to the reservoir to obtain a 0.2 ppm available chlorine residual in all parts of the reservoir.

**BASINS, TANKS, FLUMES, ETC.:** Thoroughly clean all equipment, then apply 25 oz. of product per cu. Ft. of water to obtain a 500 ppm available chlorine, as determined by a suitable test kit. After 24 hours, drain, flush, and return to service. If the previous method is not suitable, spray or flush the equipment with a solution containing 6.5 oz. of this product for each 5 gallons of water (1000 ppm available chlorine). Allow to stand for 2 to 4 hours, flush, and return to service.

**FILTERS:** When the sand filter needs replacement, apply 100 oz. of this product for each 150 to 200 cubic feet of sand. When the filter is severely contaminated, additional product should be distributed over the surface at the rate of 100 oz. per 20 sq. feet. Water should stand at a depth of 1 foot above the surface of the filter bed for 4 to 24 hours. When filter beds can be backwashed of mud and silt, apply 100 oz. of this product per each 50 sq. ft., allowing the water to stand at a depth of 1 foot above the filter sand.

**DISTRIBUTION SYSTEM:** Flush repaired or replaced section with water. Establish a hypo chlorinating station and apply sufficient product until consistent available chlorine residual of at least 100 ppm remains after a 24-hour retention time. Use a chlorine test kit.

### **EMERGENCY DISINFECTION AFTER FIRES**

**CROSS CONNECTIONS OR EMERGENCY CONNECTIONS:** Hypo chlorination, or gravity feed equipment should be set up near the intake of the untreated water supply. Apply sufficient product to give a chlorine residual of at least 0.1 to 0.2 ppm at the point where the untreated supply enters the regular distribution system. Use a chlorine test kit.

### **EMERGENCY DISINFECTION AFTER DROUGHT**

**SUPPLEMENTARY WATER SUPPLIES:** Gravity or mechanical hypo chlorite feeders should be set up on a supplementary line to dose the water to a minimum chlorine residual of 0.2 ppm after a 20 minute contact time. Use a chlorine test kit.

**WATER SHIPPED IN BY TANKS, TANK CARS, TRUCKS, ETC.:** Thoroughly clean all containers and equipment. Spray with a 500 ppm available chlorine solution and rinse with potable water after 5 minutes. This solution is made by mixing 6 oz. of this product for each 10 gallons of water. During the filling of the containers, dose with sufficient amounts of this product to provide at least a 0.2 ppm chlorine residual. Use a chlorine test kit.

### **EMERGENCY DISINFECTION AFTER MAIN BREAK**

**MAINS:** Before assembly of the repaired section, flush out mud and soil. Permit a water flow of at least 2.5 feet per minute to continue under pressure while injecting this product by means of a hypo chlorinator. Stop water flow when a chlorine residual test of 50 ppm is obtained at the low pressure end of the new main section after a 24 hour retention time. When chlorination is completed, the system must be flushed free of all heavily chlorinated water.

### **COOLING TOWER/EVAPORATIVE CONDENSER WATER**

**SLUG FEED METHOD:** Initial dose: When system is noticeably fouled, apply 54 to 108 oz. of this product per 10,000 gallons of water in the system to obtain from 5 to 10 ppm available chlorine. Repeat until control is achieved.

Subsequent Dose: When microbial control is evident, add 12 oz. of this product per 10,000 gallons of water in the system daily, or as needed to maintain control and keep the chlorine residual at 1 ppm. Badly fouled systems must be cleaned before treatment is begun.

**INTERMITTENT FEED METHOD:** Initial Dose: When system is noticeably fouled apply 54 to 108 oz. of this product per 10,000 gallons of water in the system to obtain 5 to 10 ppm available chlorine. Apply half (or 1/3, 1/4, or 1/5) of this initial dose when half (or 1/3, 1/4, or 1/5) of the water in the system has been lost by blow down.

Subsequent Dose: When microbial control is evident, add 12 oz. of this product per 10,000 gallons of water in the system to obtain a 1 ppm residual. Apply half (or 1/3, 1/4, or 1/5) of this initial dose when half (or 1/3, 1/4, or 1/5) of the water in the system has been lost by blow down.

**CONTINUOUS FEED METHOD:** Initial Dose: When system is noticeably fouled, apply 54 to 108 oz. of this product per 10,000 gallons of water in the system to obtain 5 to 10 ppm available chlorine.

Subsequent Dose: Maintain this treatment level by starting a continuous feed of 1 oz. of this product per 1,000 gallons of water lost by blow down to maintain a 1 ppm residual. Badly fouled systems must be cleaned before treatment is begun.

### **PULP AND PAPER MILL PROCESS WATER SYSTEMS**

**SLUG FEED METHOD:** Initial Dose: When system is noticeably fouled, apply 52 to 104 oz. of this product per 10,000 gallons of water in the system to obtain from 5 to 10 ppm available chlorine. Repeat until control is achieved.

Subsequent Dose: When microbial control is evident, add 11 oz. of this product per 10,000 gallons of water in the system daily, or as needed to maintain control and keep the chlorine residual at 1 ppm. Badly fouled systems must be cleaned before treatment is begun.

**INTERMITTENT FEED METHOD:** Initial Dose: When system is noticeably fouled, apply 52 to 104 oz. of this product per 10,000 gallons of water in the system to obtain 5 to 10 ppm available chlorine. Apply half (or 1/3, 1/4, or 1/5) of this initial dose when half (or 1/3, 1/4, or 1/5) of the water in the system has been lost by blow down.

Subsequent Dose: When microbial control is evident, add 11 oz. of this product per 10,000 gallons of water in the system to obtain a 1 ppm residual. Apply half (or 1/3, 1/4, or 1/5) of this initial dose when half (or 1/3, 1/4, or 1/5) of the water in the system has been lost by blow down.

**CONTINUOUS FEED METHOD:** Initial Dose: When system is noticeably fouled, apply 52 to 104 oz. of this product per 10,000 gallons of water in the system to obtain 5 to 10 ppm available chlorine.

Subsequent Dose: Maintain this treatment level by starting a continuous feed of 1 oz. of this product per 1,000 gallons of water lost by blow down to maintain a 1 ppm residual. Badly fouled systems must be cleaned before treatment is begun.

### **COMMERCIAL LAUNDRY SANITIZERS**

Commercial Laundry Sanitizers:

Wet fabrics or clothes should be spun dry prior to sanitization. Thoroughly mix 3 oz. of this product with 10 gallons of water to provide a 200 ppm available chlorine. Promptly after mixing

the sanitizer, add the solution to the prewash prior to washing fabrics/clothes in the regular wash cycle with a good detergent. Test the level of available chlorine if solution has been allowed to stand. Add more product if the available chlorine level has dropped below 200 ppm.

### **SANITIZATION OF DIALYSIS MACHINE**

Flush equipment thoroughly with water prior to using this product. Thoroughly mix 8 oz. of this product to 10 gallons of water to obtain at least 600 ppm available chlorine. Immediately use this product in the hemodialysate system allowing for a minimum contact time of 15 minutes at 20°C. Drain system of sanitizing solution and thoroughly rinse with water. Discard and do not re-use the spent sanitizer. Rinsate must be monitored with a suitable test kit to ensure that no available chlorine remains in the system.

This product is recommended for decontaminating single and multi patient hemodialysate systems. This product has been shown to be an effective disinfectant (virucide, fungicide, bactericide, pseudomonicide) when tested by AOAC and EPA test methods. This product may not totally eliminate all vegetative microorganisms in hemodialysate delivery systems due to their construction and/or assembly, but can be relied upon to reduce the number of microorganisms to acceptable levels when used as directed. This product should be used in a disinfectant program, which includes bacteriological monitoring of the hemodialysate delivery system. This product is not recommended for use in hemodialysate or reverse osmosis (RO) membranes.

Consult the guidelines for hemodialysate systems, which are available from the Hepatitis Laboratories, CDC, Phoenix, AZ 85021.

### **BOAT BOTTOMS**

To control slime on boat bottoms, sling plastic tarp under boat, retaining enough water to cover the fouled bottom but not allowing water to enter enclosed area. This envelope should contain approximately 500 gallons of water for a 14-foot boat. Add 22.5 oz. of this product to this water to obtain a 35ppm available chlorine concentration. Leave immersed for 8 to 12 hours. Repeat if necessary. Do not discharge the solution until the free chlorine level has dropped to zero, as determined by a swimming pool test kit.

### **ARTIFICIAL SAND BEACHES**

To sanitize the sand, spray a 500 ppm available chlorine solution containing 6.5 oz. of this product per 10 gallons of water at frequent intervals. Small areas can be sprinkled with a watering can.

### **ASPHALT OR SEALED WOOD ROOFS AND SIDING**

To control fungus and mildew, first remove all physical soil by brushing and hosing with clean water, and apply a 5000 ppm available chlorine solution. Mix 6.5 oz. of this product per gallon of water and brush or spray roof or siding. After 30 minutes, rinse by hosing with clean water.

### **FARM PREMISES**

Remove all animals, poultry and feed from premises, vehicles and enclosures. Remove all litter and manure from floors, walls, and surfaces of barns, pens, stalls, chutes, and other facilities occupied or traversed by animals or poultry. Empty all troughs, racks and other feeding and watering appliances. Thoroughly clean all surfaces with soap or detergent and rinse with water. To disinfect, saturate all surfaces with a solution of at least 1000 ppm available chlorine for a period of 10 minutes. A 1000 ppm solution can be made by thoroughly mixing 11 oz. of this product with 10 gallons of water. Immerse all halters, ropes and other types of equipment used in handling and restraining animals or poultry, as well as the cleaned forks, shovels, and scrapers used for removing litter and manure. Ventilate buildings, cars, boats and other closed spaces. Do not house livestock or poultry or employ equipment until chlorine has been dissipated. All treated feed racks, mangers, troughs, automatic feeders, fountains and waterers must be rinsed with potable water before reuse.

### **AQUACULTURAL USES**

FISH PONDS: Remove fish from ponds prior to treatment. Thoroughly mix 103 oz. of this product to 10,000 gallons of water to obtain 10 ppm available chlorine. Add more product to the water if



the available chlorine level is below 1 ppm after 5 minutes. Return fish to pond after the available chlorine level reaches zero.

**FISH POND EQUIPMENT:** Thoroughly clean all equipment prior to treatment. Thoroughly mix 3 oz. of this product to 10 gallons of water to obtain 200 ppm available chlorine. Porous equipment should soak for 1 hour.

**MAINE LOBSTER PONDS:** Remove lobsters, seaweed, etc. from ponds prior to treatment. Drain the pond. Thoroughly mix 7,750 oz. of this product to 10,000 gallons of water to obtain at least 600 ppm available chlorine. Apply so that all barrows, gates, rocks and dams are treated with product. Permit high tide to fill the pond and then close gates. Allow water to stand for 2 to 3 days until the available chlorine level reaches zero. Open gates and allow 2 tidal cycles to flush the pond before returning lobsters to pond.

**CONDITIONING LIVE OYSTERS:** Thoroughly mix 6.5 oz. of this product to 10,000 gallons of water at 50 to 70°F to obtain 0.5 ppm available chlorine. Expose oysters to this solution for at least 15 minutes, monitoring the available level so that it does not fall below 0.05 ppm. Repeat the entire process if the available chlorine level drops below 0.05 ppm or the temperature falls below 50°F.

**CONTROL OF SCAVENGERS IN FISH HATCHERY PONDS:** Prepare a solution containing 200 ppm of available chlorine by mixing 3 oz. of product with 10 gallons of water. Pour into drained pond potholes. Repeat if necessary. Do not put desirable fish back into refilled ponds until chlorine residual has dropped to zero, as determined by a test kit.

#### **OTHER USES**

**BEE DOMICILES:** Disinfect leaf cutting bee cells and bee boards by immersion in a solution containing 1 ppm available chlorine for 3 minutes. Allow cells to drain for 2 minutes and dry for 4 to 5 hours or until no chlorine odor can be detected. This solution is made by thoroughly mixing 1 tsp. of this product to 100 gallons of water. The bee domicile is disinfected by spraying with a 0.1 ppm solution until all surfaces are thoroughly wet. Allow the domicile to dry until all chlorine odor has dissipated.

**FOOD EGG SANITIZATION:** Thoroughly clean all eggs. Thoroughly mix 3 oz. of this product with 10 gallons of warm water to produce a 200 ppm available chlorine solution. The sanitizer temperature should not exceed 130° F. Spray the warm sanitizer so that the eggs are thoroughly wetted. Allow the eggs to thoroughly dry before casing or breaking. Do not apply potable water rinse. The solution must not be reused to sanitize eggs.

**MEAT & POULTRY PLANTS** - This product may be used in processing water of meat and poultry plants at concentrations up to 5 ppm calculated as available chlorine. Chlorine may be present in poultry chiller intake water, and in carcass wash water at concentrations up to 50 ppm calculated as available chlorine. Use a suitable test kit to adjust to desired available chlorine level. Chlorine must be dispensed at a constant and uniform level and the method or system must be such that a controlled rate is maintained. Thoroughly mix 1 fl. oz. of this product to 200 gallons of water to obtain 5 ppm available chlorine or 10 fl. oz. to 200 gallons of water for 50 ppm available chlorine.

**FRUIT & VEGETABLE WASHING:** Thoroughly clean all fruits and vegetables in a wash tank. Thoroughly mix 5 oz. of this product in 200 gallons of water to make a sanitizing solution of 25 ppm available chlorine. After draining the tank, submerge fruit or vegetables for 2 minutes in a second wash tank containing the re-circulating sanitizing solution prior to packaging. Rinse fruit with potable water only prior to packaging.

**POST-HARVEST PROTECTION** - Use this product to control organisms causing decay of fruits and vegetables after harvest. Prior to use, all fruits and vegetables must be thoroughly washed using an appropriate cleaning solution. Remove all soils and other residues prior to treating with

this product. After washing transfer the fruits and vegetables to a separate tank containing the treatment solution.

Apply at the recommended concentration of available chlorine for various fruits and vegetables as listed in the table below. To obtain a 100 ppm solution of available chlorine, add 20 fl. oz. of this product to 200 gallons of water. Maintain the pH of the solution between 6.0 and 8.0 with a dilute solution of hydrochloric acid or other approved buffer. For other ppm concentrations, use appropriate dilutions. Rinse with potable water after treatment, except as specified in the table.

For citrus canker quarantine, use at 200 ppm at pH 6.0 to 7.5. Apply for two minutes using a suitable spray or dip tank treatment.

Potato Sanitization: Potatoes can be sanitized after cleaning and prior to storage by spraying with a sanitizing solution at a level of 1 gallon of sanitizing solution per ton of potatoes. Thoroughly mix 1 oz. of this product to 2 gallons of water to obtain 500 ppm available chlorine.

## CHLORINE DOSAGE FOR POST-HARVEST PROTECTION OF FRUITS AND VEGETABLES

Available Chlorine Required in Treatment Water

COMMODITY	TREATMENT METHOD	AVAILABLE CHLORINE TO APPLY (ppm)	COMMENTS
Apples	Dump Tank Flume Spray	100 – 150 30 – 50 100 – 150	Submerge the apples for a minimum of 45 seconds. Do not exceed 90 seconds contact time in the dump tank or flume. Spray until thoroughly wet.
Artichokes	Spray	100 – 150	Spray until thoroughly wet.
Asparagus	Spray Hydrocooler	100 – 150 125 – 150	Spray until thoroughly wet. Hydrocool for 20 – 30 minutes.
Brussels Sprouts	Spray	100 – 150	Spray until thoroughly wet.
Cabbage (Chopped)	Spray	80 – 100	Spray until thoroughly wet. After treatment, the adhering moisture must be removed by centrifuging.
Carrots	Dump Tank Flume Spray	100 – 200 100 – 200 50 – 100	Remove the carrots from dump tank or flume after 1 – 5 minutes contact time. Spray until thoroughly wet.
Cauliflower	Spray	300 – 400	Spray until thoroughly wet.
Celery	Spray	100 - 110	Spray until thoroughly wet.
Cherries	Spray	75 – 100	Spray until thoroughly wet.
Cucumbers	Spray	300 - 350	Spray until thoroughly wet.
Garlic	Spray Tank	75 – 100 75 – 150	Spray until thoroughly wet. Remove from tank after 2 - 5 minutes contact.
Grapefruits	Spray Drench	100 – 150 40 – 75	Spray until thoroughly wet. Drench for 3 - 5 minutes. For citrus quarantine treatment, use 200 ppm of available chlorine at pH 6.0- 7.5 in drench tank.
Lemons	Spray Drench Dump Tank	100 – 150 40 – 75 30 – 50	Spray until thoroughly wet. Drench for 3 - 5 minutes. Remove from tank after 2 - 3 minutes contact time.
Lettuce (Whole leaf,	Spray Drench	100 – 150 50 – 150	Thoroughly wet lettuce. After treatment, the adhering moisture must be removed by



shredded, chopped, or baby greens)	Dump Tank / Hydrocooler	50 - 150	centrifuging. Potable water rinse is not required.
Melons (all varieties)	Hydrocooler Spray	100 – 150 100 – 150	Hydrocool for 20 – 30 minutes. Spray until thoroughly wet.
Mushrooms	Spray	100 – 120	After treatment with the chlorinated water, mushrooms must be treated with 0.2% sodium bisulfate (anti-oxidant) to prevent browning.
Nectarines	Hydrocooler Spray	30 – 75 50 – 100	Hydrocool for 20 – 30 minutes. Spray until thoroughly wet.
Onion (Dry)	Spray Tank	75 – 120 75 – 120	Spray until thoroughly wet. Remove from tank after 2 - 3 minutes contact time.
Onions (Green)	Spray	75 – 120	Spray until thoroughly wet.
Oranges	Drench Spray	20 – 30 20 – 30	Drench for 3 - 5 minutes. Spray until thoroughly wet.
Peaches	Hydrocooler Spray	30 – 75 50 – 100	Hydrocool for 20 – 30 minutes. Spray until thoroughly wet.
Pears	Dump Tank	200 – 300	Remove from tank after 2 - 3 minutes contact time.
Peppers	Spray	300 – 400	Spray until thoroughly wet.
Pineapples	Spray Drench Dump Tank	100 -150 40 -100 30 - 100	Spray until thoroughly wet. Drench for 3 - 5 minutes. Remove from tank after 2 - 3 minutes contact time. Potable water rinse is not required for pineapple.
Plums	Hydrocooler Spray	30 – 75 50 – 100	Hydrocool for 20 – 30 minutes. Spray until thoroughly wet.
Potatoes	Dump Tank Flume Spray	65 – 125	Remove from tank and flume after 2 - 5 minutes contact time. Spray until thoroughly wet.
Potatoes (white)	Spray	500 – 600	This concentration of chlorine should be used only if bleaching of potatoes is desirable. Spray until thoroughly wet.
Radishes	Spray Tank	100 – 150 10 – 25	Spray until thoroughly wet. Remove from tank after 1 - 1 1/5 minutes contact time.
Spinach	Spray	75 – 150	Spray until thoroughly wet.
Stone Fruit	Hydrocooler	30 - 75	Hydrocool for 20 – 30 minutes.
Tomatoes	Tank Spray	300 – 350 100 – 150	Remove after 2 - 3 minutes of contact time in the tank. Spray until thoroughly wet.
Yams	Tank	100 – 200	Remove after 2 - 3 minutes of contact time in the tank.

**TABLE OF PROPORTIONS – AVAILABLE CHLORINE**

<b>500 ppm</b>	<b>250 ppm</b>	<b>100 ppm</b>
Use 5 fluid oz. in 10 gal. water	Use 2.5 fluid oz. in 10 gal. water	Use 1 fluid oz. in 10 gal. water
<b>50 ppm</b>	<b>10 ppm</b>	<b>5 ppm</b>
Use 45 fluid oz. in 1000 gal. water	Use 9 fluid oz. in 1000 gal. water	Use 5 fluid oz. in 1000 gal. water

## AGRICULTURAL USES

The following applies to IRRIGATION SYSTEMS and **RICE SEED TREATMENT** only.

### 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 requirement 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. The requirements in this box only apply to uses of this product that are covered by the Workers Protection Standard.

The Restricted-Entry Interval (REI) is 0 days when using this product.

There are no posting or notification requirements when using this product.

Personal Protective Equipment must be worn as described under the "Precautionary Statements" section of this label.

### IRRIGATION SYSTEMS

This product when used properly will control bacterial and algae growth in irrigation water systems, and thereby provide a uniform distribution of water. This product may be applied through irrigation systems such as: sprinkler, including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, or hand move; flood (basin); furrow; border or drip (trickle) or subsurface irrigation systems. Other irrigation systems not listed may be used upon approval or recommendation from the State agency responsible for pesticide regulation, or an authority designated by the pesticide regulatory agency.

**GENERAL** - Do not contaminate ground water or expose humans or animals by the use of irrigation systems to apply pesticide chemicals.

Any chemigation system must include mechanical devices and/or design features adequate to protect the irrigation source water and the general environment from pesticide contamination due to equipment failure, malfunctions or accidents. Such devices or design features must be approved or recommended by the State agency responsible for pesticide regulation, or recommended/approved by an authority designated by the pesticide regulatory agency.

Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless safety devices or protective measures for preventing contamination of public water systems are in place. Such devices or protective measures must be approved or recommended by the State agency responsible for pesticide regulation, or recommended/approved by an authority designated by the pesticide regulatory agency.

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

Some state pesticide agencies may require a person operating a chemigation system to obtain and possess pesticide applicator certification or a license to operate such a system. It is the responsibility of the operator of the chemigation system to determine if certification or licensing is required.

**CALIBRATION** - If the irrigation water has high levels of nutrients causing bacterial, algae, and other biofouling that reduces system performance, continuous chlorination may be necessary.

The recommended level of free residual chlorine for continuous feed is 1 to 2 ppm, measured at the end of the farthest lateral using a good quality test kit for available chlorine. The available chlorine level should be checked periodically. If you have questions about calibration or other technical aspects, you should contact State Extension Service specialists, the equipment manufacturer or other experts.

**SHOCK TREATMENTS** - Periodic shock treatments at a higher available chlorine rate of up to 20 ppm free residual may be appropriate where bacteria and/or algae clogging and build-up are not managed by maintaining a continuous residual. The frequency of the chlorine shock application depends upon the frequency and extent of bio-clogging.

**INJECTION** - The rate of sanitizer injection into the irrigation water flow required to supply the desired available chlorine dosage in ppm can be estimated using the following equation:

$$I = (0.006) \times (\text{ppm desired}) \times (\text{system flow rate in gpm}) / (\text{bleach strength})$$

Where I is the injection rate in gallons per hour.

For example: To obtain 5 ppm available chlorine at a water flow rate of 30 gallons per minute while injecting 12.5% sodium hypochlorite solution, you should inject:

$$I = (0.006) \times (5) \times (30) / 12.5 = 0.072 \text{ gallons per hour of 12.5\% sodium hypochlorite solution.}$$

NOTE: This calculation, when applied to clean water, which is free of amine nitrogen and organic nutrients, will give a result close to the actual product injection rate required. In actual practice, however, contaminants in the water may consume sanitizer such that the available chlorine concentration is less than expected from the calculation. To correctly establish the product dose setting required, it is necessary to measure the available chlorine at the end of the treated increment in the field and adjust the sanitizer dose setting until the desired available chlorine concentration is obtained. Only experience can establish the actual injector settings required to provide the desired level of available chlorine at the end of the farthest lateral.

Injection should be started during irrigation, near the end of the irrigation sequence, but early enough to establish the desired available chlorine concentration throughout the system being treated. Apply the sanitizer upstream of the filter to help keep the filter clean. Determine the level of available chlorine as described in the "Calibration" section, above, using a chlorine test kit. Allow sufficient time to achieve a steady reading.

DO NOT apply sanitizer when fertilizers, herbicides, and insecticides are being injected since they will consume the available chlorine and may produce toxic reaction products.

**SENSITIVE PLANT SPECIES PRECAUTIONS** - Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water. Certain plants, including various species of trees, flowers, shrubs, agronomic crops, fruits and vegetables are adversely affected by chlorinated irrigation. The use of this product can impact the growth, appearance, and health of the plants.

Begonias, geraniums and other ornamental plant species are known to be sensitive to continuous chlorination at levels of 1-2 ppm free chlorine. Plant species such as tomato, lettuce, broccoli, and petunia are sensitive to periodic chlorination levels of 10-20 ppm free chlorine.

If uncertain of a plant's tolerance, consult an agronomist or a support agency such as a University Extension Service or your local agent of the U.S. Department of Agriculture.

### **RICE SEED TREATMENT**

To aid in surface sterilization of rice seed for prevention of bakanae disease *Fusarium fukikuroi* [syn. *F. moniliforme*] or *Gibberella fujikuroi*. Mix 2.5 gallons of this product per 100 gallons of water to make a 3,000 ppm available chlorine solution. Mix solution thoroughly and then immerse seeds in the solution. Allow the seeds to soak for two hours, then drain solution and replace with fresh water. Continue seed soaking and draining as usual. Do not apply undiluted product directly to seed.

Alternatively, make a 1,500 ppm available chlorine solution by mixing 1.3 gallons of this product with 100 gallons of water. Mix solution thoroughly and then immerse seeds in the solution. Soak and drain seed as usual. No rinsing is required. Do not apply undiluted product directly to seed.

Prepare a fresh solution for each batch of seed. Do not use treated seeds for food or feed.

[Manufactured by [or for]]  
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EPA Reg. No. 64452-X  
EPA Est. No.