

74986-5

08/13/2007

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460



United States
Environmental Protection
Agency

Office of Pesticide Programs

August 13, 2007

Michael T. Novak
Keller and Heckman, LLP
1001 G Street, NW
Suite 500 West
Washington, DC 20001

Subject: Selective Micro Technologies, LLC
Selectroicide 5G
EPA Registration No. 74986-5
Application Dated: March 22, 2007
Receipt Date: March 23, 2007

Dear Mr. Novak:

The following amendment, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is accepted with conditions.

- Addition of Organisms under Disinfection, Virucidal, and Sanitizing Use Patterns.
- Changing the Brand name of this product from "Selective Micro Clean IG-1" to "Selectroicide 5G"
- Replace, Delete, and Add Alternate Brand Names
- Modifications to Language on Labels and Technical Bulletins
- Additional Instructions for Wineries, and Additional Use Patterns (No Public Health Claims).

Conditions

1. The proposed label claims that a 100 ppm use solution of the product, Selective Micro Clean-Alpha (aka Selectroicide 2L500), is an effective disinfectant for use on hard, non-porous surfaces against the following microorganisms for a contact time of 10 minutes:

Listeria monocytogenes *Candida albicans* Adenovirus Canine parvovirus
Herpes simplex-2 Influenza A Norovirus Rhinovirus Vaccinia

Data provided by the applicant support these claims. Claims for Norovirus must include organism "Feline Calicivirus" as the tested organism.

2. The newly added instructions for using the product in antimicrobial applications for water-based cutting fluids/ oils [see page 5 of the proposed label] differ from the newly added instructions provided on the label for the product, Selective Micro Clean 1G-1. Please confirm that this difference is intentional.

3. ATCC designation numbers should include tested organisms on the Data Matrix (EPA Form 8570-35), Technical Bulletin, and the proposed label.

4. Claims "to extend shelf-life and freshness of fruits and vegetables in food processing facilities" by the application of the product to fruits and vegetables are **not acceptable**. The Agency has not accepted any test protocols, nor developed a performance standard for this claim. Only claims for the use in "processing water" are acceptable.

5. On page 15 of the Technical Bulletin, include a contact time, representative of the test system, for "Sanitizing Final Rinse of Pre-Cleaned or New returnable or Non-returnable Containers."

6. The following changes are required on the proposed label:

- On page 3 of the proposed label, change "Rotavirus Influenza-A" to read "Rotavirus, Influenza A virus."

- On page 3 of the proposed label, change "Rhinovirus" to read "Rhinovirus type 37" and change "Adenovirus" to read "Adenovirus type 5."

- On page 3 of the proposed label, add a description of the composition of surfaces on which the product may be used (e.g., stainless steel, chrome, glass, vinyl) to satisfy DIS/TSS-15 standards.

- On page 3 of the proposed label, add a statement that "Heavily soiled surfaces must be pre-cleaned prior to treatment." Note also that the label no longer includes the following statement, which was previously included on the last-accepted label (dated December 14, 2005): "For all applications, clean surfaces before using the product."

7. The following changes are required on the Technical Bulletin:

- In the footer to all pages, change "Instruction Bulletin" to read "Technical Bulletin."

- In the footer to all pages, add a date reference or version reference so that consumers and regulatory agencies can readily identify whether the Technical Bulletin is the most recent.

- On page 4 of the Technical Bulletin, change "contact intact mucous membranes" to read "contacts intact mucous membranes."

- On page 7 of the Technical Bulletin, re-number the instructions. Currently, there is no #5.
 - On page 8 of the Technical Bulletin, change "wood" to "finished wood".
 - On pages 9, 10, and 11 of the Technical Bulletin, sections C, D, and G, respectively, include in parentheses the bacteria and fungi associated with rooted and unrooted cuttings and cut flowers. As it is currently stated, "bacteria" and "fungi" may include any of the tested bacteria on the label.
 - On page 12 of the Technical Bulletin, change "once-though or recycled" to read "once-through or recycled."
 - On page 16 of the Technical Bulletin, change "mimimizes turbulence" to read "minimizes turbulence."
 - On page 17 of the Technical Bulletin, within the CAUTION text box, change "may not compatible" to read "may not be compatible."
 - On page 18 of the Technical Bulletin, remove cutting boards, as these surfaces are considered porous.
 - On page 19 of the Technical Bulletin, delete the word "circulate" or revise the following sentence so that it reads more clearly: "Apply to target surfaces with mop, sponge, circulate, or spray until visibly wet" The Technical Bulletin for the Selectroicide G-series product line states the following for some applications: "Spray, mop, sponge or swab surfaces or fill, flush, immerse or circulate in tanks, lines, and equipment, ensuring the target surfaces remain visibly wet"
8. The following alternate brand names will be deleted: Selective Micro Clean 1G-1, Selective Micro Clean 5G-1, Selective Micro Clean 12G-1, Selectroicide Micro Clean 1G-1, Selectroicide Micro Clean 5G-1, Selectroicide Micro Clean 12G-1.
- It is noted that the name Selectroicide is now registered ® and all Selective Micro Technologies, trademarked (™) alternate brand names have been deleted.
9. Addition of two alternate brand names Selectroicide 10G and Selectroicide 15G, is acceptable.
10. The activated solution precautionary language has been removed from the label until such time as data has been submitted and accepted by the Agency.

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General Comments

A stamped copy of the labeling accepted with conditions is enclosed. Submit one copy of your final printed labeling before distributing or selling the product bearing the revised labeling.

If you have any questions about these comments, please feel free to contact Wanda Henson at (703) 308-6435.

Sincerely,

Emily H. Mitchell
Product Manager 32
Regulatory Management Branch II
Antimicrobials Division (7510C)

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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1001 G Street, NW
Suite 500 West
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Subject: Selective Micro Technologies, LLC
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EPA Registration No. 74986-5
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Dear Mr. Novak:

The following amendment, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is accepted with conditions.

General Comments

Please submit the 830 guidelines section 6315, 6317, 6319, 6320, 6321 and 7100 to satisfy the data gaps.

If you have any questions about these comments, please feel free to contact Wanda Henson at (703) 308-6435.

Sincerely,

Emily H. Mitchell
Product Manager 32
Regulatory Management Branch II
Antimicrobials Division (7510C)

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TO OPEN CUT ON DOTTED LINE

Selectroicide®

— 5G —

DISINFECTANT/SANITIZER/TUBERCULOCIDE/VIRUCIDE FUNGICIDE/ALGAECIDE/SLIMICIDE/DEODORIZER

When used as directed, this chlorine dioxide-generating product is proven effective as: a **disinfectant** against *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Salmonella enterica*, methicillin-resistant *S. aureus* (MRSA), vancomycin-resistant *Enterococcus faecalis*, *Mycobacterium bovis* (TB), *Trichophyton mentagrophytes* (athlete's foot), *Listeria monocytogenes*, and *Candida albicans*; a **virucide** against Corona virus, Feline Calicivirus, Hepatitis A, Human Immunodeficiency Virus Type 1 (HIV-1), Poliovirus-1, Rotavirus, Influenza-A, Rhinovirus, Canine Parvovirus, Adenovirus, Herpes Simplex-2, Vaccinia, and Norovirus; a **sanitizer** against *E. coli* (and *E. coli* O157:H7), *S. aureus*, *Salmonella typhimurium* (MDRS), *Klebsiella pneumoniae*, and *Listeria monocytogenes*; a **fungicide** against *Penicillium digitatum*, *Botrytis Sp.*, and *Fusarium solani*; and an **algaecide** (*Phormidium boneri*).

KEEP OUT OF REACH OF CHILDREN

DANGER

(See back panel for other cautions)

Active Ingredient:	
Sodium Chlorite:	30.5%
Other Ingredients:	69.5%
Total:	100.0%

Amount of Chlorine Dioxide generated = 0.05% in 10 liters of water

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: Remove victim to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for treatment advice. Get medical attention.

Have the product container or label with you when calling a poison control center or doctor or going for treatment.

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

EPA Registration No. 74986-5

EPA Establishment No. 071441-OH-004

Manufactured for:

Selective Micro Technologies 5 Cherry Hill Dr., Danvers, MA 01923

www.selectivemicro.com

Net Weight of contents.....2.52 ounces (71.30 grams)

ACCEPTED
with COMMENTS
EPA Letter Dated:

AUG 13 2007

Under the Federal Insecticide,
Fungicide, and Rodenticide Act as
amended, for the pesticide,
registered under EPA Reg. No. 74986-5

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS

DANGER: DRY INGREDIENTS: CORROSIVE. CAUSES IRREVERSIBLE EYE DAMAGE AND CAUSES SKIN BURNS. HARMFUL IF SWALLOWED. WEAR PROTECTIVE EYEWEAR (GOGGLES, FACE SHIELD OR SAFETY GLASSES) WHEN HANDLING DRY INGREDIENTS. WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING AND BEFORE EATING, DRINKING OR USING TOBACCO. REMOVE CONTAMINATED CLOTHING AND WASH BEFORE REUSE.

ACTIVATED SOLUTION: HARMFUL IF SWALLOWED. DO NOT GET IN THE EYES OR ON CLOTHING. AVOID CONTACT WITH SKIN. AVOID BREATHING VAPORS. WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING

PHYSICAL OR CHEMICAL HAZARDS

DRY SODIUM CHLORITE IS INCOMPATIBLE WITH ACIDS, REDUCING AGENTS, COMBUSTIBLE MATERIALS, SULFUR-CONTAINING RUBBER, SOLVENTS AND PAINTS. KEEP ACTIVATED SOLUTION FROM LIGHT AND HEAT. CHLORINE DIOXIDE GAS MAY CONCENTRATE IN OPEN SPACE OF CONTAINER IN WHICH 5G ENVELOPE IS ACTIVATED. ALWAYS DILUTE ACTIVATED PRODUCT IN WELL-VENTILATED AREA. DO NOT REMOVE 5G FROM CONTAINER OF WATER PRIOR TO COMPLETE GENERATION—10 HOURS AFTER IMMERSION IN WATER.

NOTE: For use in the institutional or commercial applications discussed below and in the accompanying Technical Bulletin. Not for use in households or where young children may be present.

DIRECTIONS FOR USE: IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH THE LABELING.

1. Open the package, ensuring the 5G envelope inside is not cut. Discard desiccant.
2. To achieve an aqueous solution of 500 ppm chlorine dioxide, immerse (submerge) the 5G envelope in container with 24 liters of water. Close/seal container tightly. Container interior should be dark and resistant to oxidation. See Technical Bulletin for recommendations regarding amount of water, contact times and dilutions for specific applications, and recommended container specifications.
3. **WAIT AT LEAST 10 HOURS BEFORE USE TO ENSURE SOLUTION REACHES FULL STRENGTH.** DO NOT REMOVE 5G FROM CONTAINER OF WATER PRIOR TO 10 HOURS.
4. Remove 5G from container and mix gently before use. Work in well-ventilated area and avoid inhaling fumes. Wear protective gloves if hands will come into contact with activated solution during dilution or application; wear NIOSH/MHSA-approved respirator for chlorine dioxide if working with stock (500 ppm) solution in open container. Remove envelope from container within 48 hours after activation. Do not reuse the 5G. Discard envelope according to instructions below. Before use, verify concentration with *Selective Micro® Chlorine Dioxide Test Strips* to ensure appropriate concentration (see Technical Bulletin for directions if *Test Strips* indicate lower-than-desired concentration).
5. Activate prior to expiration date stamped on package. Store unused solution (and/or subsequent dilutions) in a dark, oxidation-resistant closed or sealed container. Record activation date and concentration on stick-on label shipped with the product, and affix to storage container. Store activated solution in cool place out of direct sunlight (do not store in refrigerator dedicated to food storage). Use solution and/or subsequent dilutions within 15 days of activation.

STORAGE AND DISPOSAL

DO NOT CONTAMINATE WATER, FOOD OR FEED BY STORAGE AND DISPOSAL. STORE IN COOL, DRY, VENTILATED AREA. STORE BELOW 50° C (122° F). KEEP PRODUCT OUT OF DIRECT SUNLIGHT. STORE SEPARATELY FROM WATER AND ACIDS. IF PACKAGE RUPTURES AND CONTENTS SPILL, DO NOT PERMIT CONTACT OF CONTENTS WITH ORGANIC MATERIALS (FOR EXAMPLE: CLOTHING OR COMBUSTIBLE MATERIALS) OR ACIDS. PESTICIDE WASTES ARE TOXIC. IMPROPER DISPOSAL OF EXCESS DRY PESTICIDE IS A VIOLATION OF FEDERAL LAW. IF THIS PRODUCT CANNOT BE USED 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. DISPOSE OF SPENT ENVELOPE IN A SANITARY LANDFILL OR BY INCINERATION, OR IF ALLOWED BY STATE AND LOCAL AUTHORITIES, BY BURNING. IF BURNED, STAY OUT OF SMOKE.

WARRANTY STATEMENT: The Company warrants the product to be free from defects in material and workmanship. THE COMPANY MAKES NO WARRANTY THAT THE GOODS SHALL BE MERCHANTABLE. THE COMPANY MAKES NO WARRANTY, EXPRESSED OR IMPLIED, EXCEPT SUCH AS IS EXPRESSLY SET FORTH HEREIN. The Company shall not be liable for any incidental or consequential damages for any breach of warranty. The Company's liability for any breach of warranty shall be limited to the purchase price of the product.

When used as directed, this product is an effective sanitizer, disinfectant, tuberculocide, virucide, fungicide, algacide, general-purpose antimicrobial and cleaner for use in a wide range of applications, including but not limited to: hospitals; medical & veterinary facilities; pharmaceutical production facilities, including equipment (e.g., ultracentrifuges); wineries, breweries, and beverage / bottling plants; laboratories and other clinical settings; potable and non-potable water systems and attendant equipment & tubing; restaurants and food processing plants; and greenhouses/horticultural settings." Apply by mop, sponge, or sprayer, ensuring visible wetness for times specified for these applications, or apply through immersion or clean-in-place application. Wear a NIOSH/MHSA-approved respirator appropriate for chlorine dioxide when using a high-pressurized sprayer and under other circumstances detailed in the Technical Bulletin.

General Dilution Instructions: All dilutions begin with a stock solution at a nominal concentration of 500 ppm, except when the product is activated directly to the application concentration (see technical bulletin). Except where otherwise directed, or for other use concentrations (see technical bulletin), use the following dilution instructions to achieve the use concentration indicated:

To Achieve Use Concentration of:	Use Dilution Device or Sprayer With a Dilution Ratio of:
100 ppm	1:5 (one part 500 ppm solution to 4 parts water)
50 ppm	1:10 (one part 500 ppm solution to 9 parts water)
20 ppm	1:25 (one part 500 ppm solution to 24 parts water)
5 ppm	1:100 (one part 500 ppm solution to 99 parts water)
0.25 ppm	1:2,000 (one part 500 ppm solution to 1,999 parts water)

SANITIZER FOR HARD, NON-POROUS, FOOD-CONTACT SURFACES. Effective food contact surface sanitizer at 5 ppm against *E. coli* and *E. coli* O157:H7, *Salmonella typhimurium* (MDRS), and *Staphylococcus aureus* with an exposure time of 1 minute. Product may be used on previously cleaned food preparation surfaces; fountain drink and beverage dispensers; glassware, plates and eating utensils; food processing equipment, including beer processing equipment and lines, and food conveyor belts. Dilute to 5 ppm as table above specifies. See Technical Bulletin for alternative dilution instructions and application specifics.

SANITIZER FOR HARD, NON-POROUS, NON-FOOD-CONTACT SURFACES. Effective non-food contact surface sanitizer at 20 ppm against *Staphylococcus aureus*, *Klebsiella pneumoniae*, and *Listeria monocytogenes* with an exposure time of 5 minutes. Product may be used on non-food contact surfaces, including floors, walls, furnishings, and equipment. Dilute to 20 ppm as table above specifies. See Technical Bulletin for alternative dilution instructions and application specifics.

DISINFECTANT OR VIRUCIDE FOR HARD, NON-POROUS SURFACES: Product may be used at 100 ppm with an exposure time of 10 minutes to disinfect hard surfaces in medical facilities or veterinary clinics that may be contaminated with *Staphylococcus aureus*, *Salmonella enterica*, *Pseudomonas aeruginosa*, methicillin-resistant *S. aureus* (MRSA), vancomycin-resistant *Enterococcus faecalis*, *Mycobacterium bovis* (TB), *Trichophyton mentagrophytes* (athlete's foot), *Listeria monocytogenes*, *Candida albicans*, *Corona virus*, *Feline Calicivirus*, *Hepatitis A*, *Human Immunodeficiency Virus Type 1 (HIV-1)*, *Poliovirus-1*, *Rotavirus*, *Influenza-A*, *Rhinovirus*, *Canine Parvovirus*, *Adenovirus*, *Herpes Simplex-2*, *Vaccinia*, and *Norovirus*. This product may be used as a disinfectant or virucide on general environmental surfaces. Dilute to 100 ppm as table above specifies. See Technical Bulletin for detailed directions and other dilution and application specifics.

SPECIAL INSTRUCTIONS FOR CLEANING AND DECONTAMINATING SURFACES AND OBJECTS PREVIOUSLY SOILED WITH BLOOD/BODY FLUIDS POTENTIALLY CONTAINING HUMAN IMMUNODEFICIENCY VIRUS TYPE-1 (HIV-1)

- Wear protective barriers such as disposable latex gloves, gowns, masks, and eye coverings when handling items soiled with blood or body fluids.
- Blood and other body fluids must be thoroughly cleaned from surfaces and objects before application of activated solution.
- Blood, other body fluids, and contaminated cleaning materials should be autoclaved and disposed of according to local regulations for infectious waste disposal.

DISINFECTANT FOR CLEAN-IN-PLACE APPLICATIONS FOR POTABLE WATER SYSTEMS:

Product may be used to disinfect lines (contaminated with *Staphylococcus aureus*, *Salmonella enterica*, *Pseudomonas aeruginosa*, methicillin-resistant *S. aureus* (MRSA), vancomycin-resistant *Enterococcus faecalis*, and *Candida albicans*) used in fountain drink or other beverage preparation, storage, transfer and dispensing. Dilute as table above specifies to either 100 ppm for a 10-minute exposure time or to 50 ppm for a 20-minute exposure time. See Technical Bulletin for preparation directions and other dilution and application specifics.

ANTIMICROBIAL AND GENERAL CLEANING APPLICATIONS FOR POTABLE WATER SYSTEMS:

This product will reduce microbial populations in the potable water holding tanks and lines of recreational vehicles (RV) and boats, in marine and RV wastewater tanks and lines; and fountain drink or other beverage preparation, storage, transfer and dispensing lines and equipment. In addition, it will clean, eliminate odors, and remove organic matter. These uses must be followed by a potable water rinse. For 50 ppm, use one 5G for every 250 gallons of capacity, rounding to the next higher number of 5Gs (for example, use two 5Gs to treat an 500-gallon-tank; for four 250-gallon tanks-total capacity of 1000 gallons-use four). See Technical Bulletin for detailed directions and other dilution and application specifics.

ANTIMICROBIAL APPLICATIONS FOR NON-POTABLE WATER SYSTEMS IN HORTICULTURAL SETTINGS:

This product may be used to reduce microbial populations in non-potable water used with cut flowers to minimize microbial transfer from water to flower, thereby maintaining freshness and extending shelf-life of cut flowers. Dilute to 5 ppm as table above specifies. See Technical Bulletin for detailed directions and other dilution and application specifics.

GENERAL DISINFECTANT, SANITIZER, ALGAECIDE AND FUNGICIDE FOR HORTICULTURAL AND GREENHOUSE APPLICATIONS:

For horticultural applications, this product may be used to disinfect (100 ppm/10 minutes or 50 ppm/20 minutes) and sanitize (20 ppm/5 minutes) hard, non-porous surfaces; to treat, control, and prevent funguses (5 ppm/1hour) (*Penicillium digitatum*, *Botrytis Sp*, *Fusarium solani* & *oxysporum f. sp. Basilicum* (Fob), and *Pythium irregulare* & *aphanidermatum*), bacteria (*Erwinia chrysanthemi*), algae (*Phormidium boneri*), attendant slimes, rusts, leaf spot and mildews; and to remove slimes (50 ppm/12 hours-overnight) & inhibit reemergence (0.25 ppm/continuous treatment) in irrigation and other non-potable water systems. Concentrations and contact times are application-specific; dilute to use concentrations as table above specifies. See Technical Bulletin for detailed directions and other dilution and application specifics.

FRUIT AND VEGETABLE WASH TO EXTEND FRESHNESS AND SHELF-LIFE.

This product may be used at 5 ppm for 1 minute to reduce spoilage microorganisms on raw agricultural commodities in food processing facilities. Spray or dip RACs, and follow with a potable water rinse or by canning, blanching, or cooking. Dilute to 5 ppm as table above specifies. See Technical Bulletin for detailed directions and other dilution and application specifics.

ANTIMICROBIAL APPLICATIONS TO CONTROL THE BUILDUP OF MICROBES IN PROCESS WATERS FOR FRUIT AND VEGETABLE RINSE AND ASSOCIATED TANKS, FLUMES, AND LINES.

This product will inhibit the build-up of microbes in water used in the processing of fruits and vegetables. Target residual concentrations of chlorine dioxide between 0.25 ppm and 5.0 ppm are recommended to control microbial buildup. Dilute to 0.25 ppm or 5 ppm as table above specifies, or follow directions in Technical Bulletin. Inject chlorine dioxide continuously or intermittently to the system to maintain desired concentration. The frequency and volume of replenishment will vary with the degree of contamination in the fruits and vegetables being processed, target concentration, and process design. See Technical Bulletin for preparation directions and other dilution and application specifics.

ANTIMICROBIAL TREATMENT FOR POULTRY DRINKING WATER.

This product may be used at up to 5 ppm to control microorganisms in drinking water intended for poultry. Dilute to 5 ppm as specified above, or use directly in system with automatic, on-demand injection system metered to produce end concentration at up to 5 ppm. Application particulars will depend upon metering system, frequency of replenishment, and capacity of drinking container. See Technical Bulletin for activation instructions and other dilution and application specifics.

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SANITIZING FINAL RINSE OF PRE-CLEANED OR NEW RETURNABLE OR NON-RETURNABLE CONTAINERS. This product may be used as a final sanitizing rinse for plastic, glass or metal returnable and non-returnable bottles, cans, caps, kegs, and beverage containers. Beginning with a 500 ppm solution, use a device with a 6:100 dilution ratio (six parts solution to 94 parts water) to produce an end application concentration of 30 ppm. Alternatively, activate directly to the end concentration of 30 ppm using directions in the Technical Bulletin. Rinse bottles, cans, or other containers with the use solution, ensuring visible wetness. Allow to drain dry. See Technical Bulletin for preparation directions and other dilution and application specifics.

ANTIMICROBIAL AND GENERAL CLEANING USES FOR NON-POTABLE WATER APPLICATIONS INVOLVING RECIRCULATING WATER SYSTEMS (E.G., COOLING TOWERS, PAPER MILLS, AND DECORATIVE OR ORNAMENTAL FOUNTAINS): This product will help remove, control and inhibit reemergence of slimes, algae, fungi, and other organic buildups in recirculating water systems. For initial or remedial treatment in cases of visually-obvious build-up of slime, algae, or organic matter: beginning with a 500 ppm solution, for each 1,000 gallons of cooling or fountain water, add 10 gallons of the 500 ppm solution to achieve a residual concentration of chlorine dioxide of approximately 5 ppm. Circulate water in normal system operation. Repeat daily until desired results are achieved. For continuous or periodic treatment: beginning with a 500 ppm solution, for each 1,000 gallons of cooling or fountain water, add one gallon of the 500 ppm solution to achieve a residual concentration of chlorine dioxide of approximately 0.5 ppm. Circulate water in normal system operation. See Technical Bulletin for activation instructions and other dilution and application specifics.

ANTIMICROBIAL APPLICATIONS FOR WATER-BASED CUTTING FLUIDS/OILS: This product will help remove, control and inhibit reemergence of slimes, odor-causing bacteria, and other organic growth in water-based cutting oils and attendant systems. The chlorine dioxide can be generated externally to the system or directly in the cutting oil for batch treatments, continuous operation, or shock (for heavily contaminated systems). For solutions generated externally: beginning with a 500 ppm solution, for each 1,000 gallons of cutting oil in the system, add between 2 and 20 gallons of the 500 ppm solution, depending on the amount of contamination and frequency of treatment. To generate Selectocide® directly in the cutting oil, immerse envelope(s) in the oil for at least 10 hours (but no more than 48 hours) to achieve a chlorine dioxide concentration of between 1 ppm and 10 ppm in accordance with activation instructions in the Technical Bulletin. See Technical Bulletin for dilution and application specifics.

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Selectrocide® G Series

5G | 10G | 12G | 15G | 12G MultiPack-15

Technical Bulletin

**Disinfectant/Sanitizer/Tuberculocide/Virucide
Fungicide/Algaecide/Slimicide/Deodorizer**

EPA Registration No. 74986-5 EPA Establishment No. 071441-OH-004

To activate: See "Directions for Use" on package label

Use the following number of envelopes to prepare a 500 ppm solution of chlorine dioxide in the indicated volume of water inside a closed container:

For this concentration of chlorine dioxide	In this Volume of Water:		Immerse this number of Selectrocide® 5G envelopes for at least ten (10) hours	Immerse this number of Selectrocide® 10G envelopes for at least ten (10) hours	Immerse this number of Selectrocide® 12G envelopes for at least ten (10) hours	Immerse this number of Selectrocide® 15G envelopes for at least ten (10) hours	Immerse this number of Selectrocide® 12G MultiPack-15s for at least ten (10) hours
	Gallons	Liters					
500 ppm	2.5	10	1				
500 ppm	5	20	2				
500 ppm	6	24			1		
500 ppm	7.5	30				1	
500 ppm	10	40	4	2			
500 ppm	12	48			2		
500 ppm	15	60	6	3		2	
500 ppm	18	72			3		
500 ppm	23	90			4	3	
500 ppm	30	120		6	5	4	
500 ppm	50*	190		10	8	7	
500 ppm	95**	360					1
500 ppm	190	720					2

*For use especially in a 55-gallon drum

**For use especially in a 100-gallon container

Remove envelope from activation vessel within 48 hours.

(Alternative dilution concentrations to targeted end-concentrations appear on the next page.)

Selective Micro Technologies believes the information contained on this Instruction Bulletin is accurate. The suggested procedures are based on experience as of the date of publication. They are not necessarily all-inclusive nor fully adequate in every circumstance. Also, the suggestions should not be confused with nor followed in violation of applicable laws, regulations, rules, or insurance requirements.

NO WARRANTY IS MADE, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.

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Alternatively, use the following volumes of water to achieve the desired concentrations of chlorine dioxide inside a closed container:

NOTE: Activating the *Selectrocid*[®] 12G MultiPack-15 product directly to end-use concentrations (100 ppm or less) is generally impractical due to container volume limitations (e.g., diluting directly to 100 ppm would require a container of nearly 500-gallon capacity). Unless adequate large-capacity containers for mixing/storing are available, the 12G MultiPack-15 should be activated to 500 ppm as specified on the previous page and diluted subsequently to the required application concentration. Contact Selective Micro Technologies for further details.

For this concentration of chlorine dioxide	Immerse the <i>Selectrocid</i> [®] 5G in this amount of clean, potable water for at least ten (10) hours; remove within 48 hrs.	Immerse the <i>Selectrocid</i> [®] 10G in this amount of clean, potable water for at least ten (10) hours; remove within 48 hrs.	Immerse the <i>Selectrocid</i> [®] 12G in this amount of clean, potable water for at least ten (10) hours; remove within 48 hrs.	Immerse the <i>Selectrocid</i> [®] 15G in this amount of clean, potable water for at least ten (10) hours; remove within 48 hrs.
100 ppm	50 liters	100 liters	120 liters	150 liters
100 ppm	13.0 gallons	26 gallons	31 gallons	39 gallons
50 ppm	100 liters	200 liters	240 liters	300 liters
50 ppm	26.0 gallons	52 gallons	63 gallons	79 gallons
20 ppm	250 liters	500 liters	600 liters	750 liters
20 ppm	65.5 gallons	132 gallons	158 gallons	198 gallons
5 ppm	1,000 liters	2,000 liters	2,400 liters	3,000 liters
5 ppm	260 gallons	528 gallons	630 gallons	790 gallons
0.25 ppm	20,000 liters	40,000 liters	48,000 liters	60,000 liters
0.25 ppm	5,275 gallons	10,560 gallons	12,675 gallons	15,850 gallons

Do not remove 5G envelope from container of water prior to 10 hours.

[10G, 12G, 15G and 12G MultiPack-15—10 hours]

Discard the spent 5G [10G, 12G, 15G] envelope or 12G MultiPack-15 and mesh bag (follow disposal instructions on package label), and mix solution gently prior to use.

Do not reuse 5G [10G, 12G, 15G] envelope or 12G MultiPack-15.

Check concentration of solution using *Selective Micro*[®] Chlorine Dioxide Test Strips.

(See box below for instructions if check indicates concentration lower than desired)

Record activation date and concentration on stick-on label and affix to storage container.

Use solution within 15 days of activation.

Storage: Store unused solution according to "Directions for Use" on package label.

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- DURING USE (DILUTING, APPLYING, OR WORKING WITH ACTIVATED PRODUCT):**
1. Always work in well-ventilated area and avoid inhaling fumes of activated solution.
 2. Wear protective gloves if hands will come in contact with activated solution.
 3. Respiratory protection is not required under the limited exposure conditions of most normal use patterns. However, wear a NIOSH/MSHA-approved respirator under the following conditions:
 - a. when applying activated solution with a high-pressure sprayer
 - b. when working with the activated solution for an extended period of time in a closed facility or in a poorly-ventilated area
 - c. when normal workshift duties entail uninterrupted periods of applying the activated solution with mop, sponge, or sprayer
 - d. when opening vessel containing stock activated solution (at 500 ppm) generated using G-series products
 - e. if OSHA inhalation exposure limits are reached or exceeded (see MSDS).
 4. Do not use product in a manner inconsistent with the label.

- IF TEST STRIPS INDICATE CONCENTRATION (PPM) LOWER THAN DESIRED:**
1. Check expiration date on *Test Strips* container. If expired, then recheck using fresh *Test Strip* from a container that has not reached its expiration date.
 2. If the original container has not expired OR if the recheck indicates a lower-than-desired concentration, THEN DO ONE OF THE FOLLOWING:
 - 2a. If the application solution was prepared directly to the end-concentration (not diluted from a higher concentration), discard the solution and activate a fresh (unused) *Selectocide*® 5G [10G, 12G, 15G]. Recheck concentration after waiting the prescribed time to activation.

OR

 - 2b. If the application solution was prepared by diluting a solution of higher concentration, add small amounts of the higher-concentration solution to the application solution—about 10% of the volume of the application solution at a time—until the *Selective Micro*® Chlorine Dioxide *Test Strip* indicates the desired concentration. Stir or mix the solution gently after each addition. Use a fresh (unused) *Test Strip* for each test.

- RECOMMENDED SPECIFICATIONS FOR CONTAINERS
USED WITH SELECTIVE MICRO PRODUCTS:**
- FOR USE IN GENERATING OR STORING ACTIVATED SOLUTIONS**
- The container should be—or be comparable to—a UN-approved, liquid-resealable containment incorporating a gasket-sealing surface and locking mechanism.
 - Construction should be of dark or opaque/UV-blocking (preferred) oxidation-resistant plastic or glass. Some materials recommended include:
 - High Density Polyethylene (HDPE)
 - Polypropylene (PP)
 - Polyethylene Terephthalate (PET)(PETE)
 - Polyvinyl Chloride (PVC)
 - Polycarbonate (PC)
 - Glass (UV-blocking preferred)
 - Gasket materials; silicone, viton or EPDM
- Users without containers comparable to the above may contact Selective Micro Technologies for recommendations or to purchase containers for their applications.

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GENERAL USES

A. SANITIZER

FOR HARD, NON-POROUS FOOD CONTACT SURFACES

As a sanitizer for stainless steel and other hard, non-porous food contact surfaces such as tanks, transfer lines and other food processing equipment in food processing plants such as poultry, fish & meat and in restaurants, dairies, beverage and bottling plants, breweries, wineries and commissaries:

1. Activate *Selectrocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.
2. Remove all gross food particles and soil prior to sanitizing using a pre-flush, pre-scrape or pre-soak treatment.
3. Clean tank, line or surface thoroughly using a suitable detergent and rinse with clean, potable water before sanitizing.
4. Prepare a 5 ppm solution of activated *Selectrocide*® 5G [10G, 12G, 15G] in accordance with instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:100 dilution device (one part 500 ppm solution to 99 parts water).
5. To apply: spray, mop, sponge or swab surfaces or fill, flush, immerse or circulate in tanks, lines, and equipment, ensuring the target surfaces remain visibly wet for at least one minute. When applying these solutions using a high-pressure sprayer, wear a NIOSH/MSHA-approved respirator appropriate for chlorine dioxide.
6. After sanitizing, allow surfaces or equipment to air dry. Do not reuse solution. Do not rinse sanitized surface.
7. Dispose of package and spent envelope according to instructions on package label.

FOR HARD, NON-POROUS, NON-FOOD CONTACT SURFACES

As a sanitizer for non-porous, non-food contact surfaces and equipment such as sealed concrete and wood, backsplashes, bench and counter tops, stainless steel or hard-surface equipment, tile floors, walls, and ceilings:

- glazed*
1. Activate *Selectrocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.
 2. Clean all surfaces thoroughly with a suitable detergent and rinse with water prior to sanitizing.
 3. Prepare a 20 ppm solution of activated *Selectrocide*® 5G [10G, 12G, 15G] in accordance with instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:25 dilution device (one part 500 ppm solution to 24 parts water).
 4. To apply: spray, mop, sponge or swab onto the surfaces to be sanitized, ensuring the target surfaces remain visibly wet for at least five minutes. When applying these solutions using a high-pressure sprayer, wear a NIOSH/MSHA-approved respirator appropriate for chlorine dioxide.
 5. After sanitizing, allow surfaces or equipment to air dry. Do not reuse solution. Do not rinse sanitized surfaces.
 6. Dispose of package and spent envelope according to instructions on package label.

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B. DISINFECTANT

To disinfect stainless steel and other hard, non-porous surfaces such as tanks, transfer lines and other food processing equipment in food processing plants such as poultry, fish & meat and in restaurants, dairies, beverage and bottling plants, breweries, wineries and commissaries and to disinfect walls, floors and ceilings:

1. Activate *Selectrocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.
2. Remove all gross food particles and soil prior to disinfecting using a pre-flush, pre-scrape or pre-soak treatment.
3. Clean tank, line or surface thoroughly using a suitable detergent and rinse with clean, potable water before disinfecting.
4. Prepare a 100 ppm solution of activated *Selectrocide*® 5G [10G, 12G, 15G] in accordance with instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:5 dilution device (one part 500 ppm solution to four parts water).
5. To apply: spray, mop, sponge or swab surfaces or fill; flush, immerse or circulate in tanks, lines, and equipment, ensuring the target surfaces remain visibly wet for at least ten (10) minutes. When applying these solutions using a high-pressure sprayer, wear a NIOSH/MSHA-approved respirator appropriate for chlorine dioxide.
6. After disinfecting, allow surfaces or equipment to air dry. Do not reuse solution. Do not rinse disinfected surfaces.
7. Dispose of package and spent envelope according to instructions on package label.

DISINFECTANT USES IN MEDICAL AND DENTAL OFFICES, LABORATORIES, HOSPITALS, CLINICS, MORGUES AND INSTITUTIONS

NOTE: This product is not to be used as a terminal sterilant/high-level disinfectant on any surface or instrument that (1) is introduced directly into the human body, either into or in contact with the blood stream or normally sterile areas of the body or (2) contact intact mucous membranes but which does not ordinarily penetrate the blood barrier or otherwise enter normally sterile areas of the body. This product may be used to pre-clean or decontaminate critical or semi-critical medical devices prior to sterilization or high-level disinfection.

A. To disinfect non-porous, hard surfaces such as stainless steel or hard-surface equipment, tile floors, walls, ceilings, stainless steel cold rooms and walk-in incubators:

1. Activate *Selectrocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.
2. Clean all surfaces thoroughly with a suitable detergent and rinse with water prior to disinfection.
3. Prepare a 100 ppm solution of activated *Selectrocide*® 5G [10G, 12G, 15G] in accordance with instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:5 dilution device (one part 500 ppm solution to four parts water).
4. Spray, mop or sponge the 100 ppm solution onto surfaces to be disinfected. All surfaces must be visibly wet for at least ten (10) minutes. When spraying disinfectant solution, use an appropriate spraying device. When applying these solutions using a high-pressure sprayer, wear a NIOSH/MSHA-approved respirator appropriate for chlorine dioxide.
5. After disinfecting, allow surfaces or equipment to air dry. Do not reuse solution. Do not rinse disinfected surfaces.
6. Dispose of package and spent envelope according to instructions on package label.

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B. To disinfect equipment tops, bench tops, biological hoods, incubators, stainless steel equipment and instruments.

1. Activate *Selectrocid*[®] 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.
2. Clean all surfaces thoroughly with a suitable detergent and rinse with water prior to disinfection.
3. Prepare a 100 ppm solution of activated *Selectrocid*[®] 5G [10G, 12G, 15G] in accordance with instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:5 dilution device (one part 500 ppm solution to four parts water).
4. Spray, mop or sponge the 100 ppm solution onto surfaces to be disinfected. All surfaces must be visibly wet for at least ten (10) minutes. When spraying disinfectant solution, use an appropriate spraying device. When applying these solutions using a high-pressure sprayer, wear a NIOSH/MSHA-approved respirator appropriate for chlorine dioxide.
5. After disinfecting, allow surfaces or equipment to air dry. Do not reuse solution. Do not rinse disinfected surfaces.
6. Dispose of package and spent envelope according to instructions on package label.

C. To disinfect commercial animal confinement facilities such as poultry houses, swine pens, calf barns and kennels:

1. Activate *Selectrocid*[®] 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.
2. Remove all animals and feed from facility to be disinfected.
3. Remove all litter and manure from floors, walls and surfaces of barns, pens, stalls, chutes and other structures occupied or traversed by animals.
4. Empty all troughs, racks and other feeding and watering appliances.
5. Prepare a 100 ppm solution of activated *Selectrocid*[®] 5G [10G, 12G, 15G] in accordance with instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:5 dilution device (one part 500 ppm solution to four parts water).

FOR GENERAL APPLICATION WITH SPRAYER:

6. With soap or detergent, thoroughly clean all surfaces and rinse with water.
7. Using a commercial sprayer, saturate all surfaces with the solution keeping visibly wet for a period of at least ten (10) minutes. When applying these solutions using a high-pressure sprayer, wear a NIOSH/MSHA-approved respirator appropriate for chlorine dioxide.
8. After treatment, ventilate buildings, coops or other enclosed spaces before reentering. Do not house poultry or employ equipment until treatment has been absorbed, set, or dried.

AS A DISINFECTING SOAK:

6. With soap or detergent, thoroughly clean halters, ropes or other types of equipment used in handling and restraining animals and forks, shovels and scrapers used in removing litter and manure. Rinse with water.
7. Fill container or vat with 100 ppm solution, and immerse items for a period of at least ten (10) minutes.
8. Discard solution in sanitary drain or as ordinary non-hazardous waste. Do not reuse solution.
9. Thoroughly scrub treated feed racks, troughs, automatic feeders, fountains and waterers with soap or detergent and rinse with potable water before reuse.
10. Dispose of package and spent envelope according to instructions on package label.

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DISINFECTANT FOR BEVERAGE AND WATER SYSTEMS AND LINES

To disinfect lines, holding tanks and other equipment used in fountain drink or other beverage preparation, storage, transfer and dispensing operations or to disinfect the lines and storage tanks of potable water storage systems aboard aircraft, boats and RVs (clean-in-place applications):

Prior to disinfecting, tanks should be cleaned and then flushed thoroughly with clean, potable water.

FOR A TEN (10) MINUTE OR LONGER DISINFECTION

1. Activate *Selectocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.
2. Prepare a 100 ppm solution of activated *Selectocide*® 5G [10G, 12G, 15G] in accordance with instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:5 dilution device (one part 500 ppm solution to four parts water).
3. Fill tank completely with 100 ppm solution (filling the tank completely may require activation of several 5G [10G, 12G, 15G] envelopes, or a single 12G MultiPack-15). Run solution through transfer lines and appliances until green solution appears at the outlets. Top-off tank with solution. Circulate or let stand in tank and lines for at least ten (10) minutes.
4. Drain tanks and lines. Rinse with potable water.
5. Dispose of package and spent envelope according to instructions on package label.

FOR A TWENTY (20) MINUTE OR LONGER DISINFECTION

1. Activate *Selectocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.
2. Prepare a 50 ppm solution of activated *Selectocide*® 5G [10G, 12G, 15G] in accordance with instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:10 dilution device (one part 500 ppm solution to nine parts water).
3. Fill tank completely with 50 ppm solution (filling the tank completely may require activation of several 5G [10G, 12G, 15G] envelopes or a single 12G MultiPack-15). Run solution through transfer lines and appliances until green solution appears at the outlets. Top-off tank with solution. Circulate or let stand in tank and lines for at least twenty (20) minutes.
4. Drain tanks and lines. Rinse with potable water.
5. Dispose of package and spent envelope according to instructions on package label.

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ANTIMICROBIAL AND GENERAL CLEANING APPLICATIONS FOR WATER LINES AND TANKS IN POTABLE WATER SYSTEMS

This product will reduce microbial populations in the potable water holding tanks and lines of recreational vehicles (RV) and boats; in marine and RV wastewater tanks and lines; and fountain drink or other beverage preparation, storage, transfer and dispensing lines and equipment, and in coolers, thermoses, plastic water bottles, and other water-storing and dispensing systems used for picnics, camping, and other recreational activities. In addition, it will clean, eliminate odors, and remove organic matter. These uses must be followed by a potable water rinse.

- Determine the number of *Selectrocid*[®] 5G envelopes necessary to clean the drinking water system. Use approximately one envelope for every 250 gallons, or fraction thereof, of capacity. Example: Two 250-gallon tanks = 500 gallon capacity. Therefore, to clean two 250-gallon tanks requires two *Selectrocid*[®] 5G envelopes.

THEN, EITHER FOLLOW STEPS 2 and 3 OR STEPS 4 and 5

- Drain all water tanks completely. Then, refill tanks with water to approximately 10% of capacity (for example, a 250-gallon tank should be filled with 25 gallons of water).
- Activate the appropriate number of *Selectrocid*[®] 5G envelopes (see instruction 1 above, and note there is one envelope within each package) according to "Directions for Use" on package label by immersing the envelopes in the water tank, closing the tanks, and waiting ten (10) hours. Remove spent 5G envelopes from water, and close the tank.

OR

- Activate the appropriate number of *Selectrocid*[®] 5G envelopes (one envelope within each package) in water according to the "Directions for Use" on package label and according to the following table:

5G PRODUCT

FOR TANKS OF THIS OVERALL SIZE		IMMERSE THIS NUMBER OF 5G ENVELOPES	IN THIS MUCH WATER
More than 50 gallons	Less Than 250 gallons	1	90 liters/25 gallons
250 gallons	500 gallons	2	185 liters/50 gallons
500 gallons	800 gallons	3	300 liters/80 gallons
800 gallons	1100 gallons	4	415 liters/110 gallons
1100 gallons	1300 gallons	5	490 liters/130 gallons
1300 gallons	1600 gallons	6	600 liters/160 gallons
1600 gallons	2000 gallons	8	750 liters/200 gallons

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- After ten (10) hours, remove and discard spent 5G envelopes according to package instructions, and add solution into the water tank. Do not add additional water. Do not refill tank. Close the tank.

THEN:

- Circulate the *Selectrocide*® 5G solution through all lines and within or between tanks using the system's pumps.
- Run approximately 6 ounces of the *Selectrocide*® 5G solution through each outlet (faucet, shower etc.) and let the solution stand in the tanks and lines **OVERNIGHT** (or approximately 12 hours).
- The next day, or after 12 hours, flush the *Selectrocide*® 5G solution through all faucets and outlets until the tanks are empty.
- Refill the tanks with rinse water to approximately 10% of their capacity (e.g., 25 gallons per 250-gallon capacity).
- Circulate the water and flush rinse water through all faucets and outlets until tanks are empty.
- Tanks are now cleaned and can be refilled for use or left empty for storage.
- Dispose of package(s) and spent 5G envelope(s) according to instructions on package label.

FOR APPLICATIONS INVOLVING LARGER TANKS (UP TO 4,000 GALLON CAPACITY), USE THE 10G, 12G OR 15G PRODUCTS AND FOLLOW THESE STEPS:

- Determine the number of *Selectrocide*® 10G [12G, or 15G]-envelopes necessary to clean the tanks and lines in the water system according to the following tables (or, use one 10G for every 500 gallons in tank capacity or fraction thereof, one 12G for every 600 gallons in tank capacity, or one 15G for every 800 gallons in tank capacity):

10G, 12G, and 15G PRODUCTS

FOR TANKS OF THIS OVERALL SIZE		FILL WITH APPROXIMATELY THIS MUCH WATER (≈ 10% of capacity)	IMMERSE THIS NUMBER OF G-SERIES ENVELOPES		
More than:	Less Than:		10G	12G	15G
50 gallons	500 gallons	185 liters/50 gallons	1	1	1
500 gallons	1,000 gallons	375 liters/100 gallons	2	2	2
1,000 gallons	1,500 gallons	560 liters/150 gallons	3	3	3
1,500 gallons	2,000 gallons	750 liters/200 gallons	4	4	4
2,000 gallons	2,500 gallons	940 liters/250 gallons	5	4	4
2,500 gallons	3,000 gallons	1,130 liters/300 gallons	6	5	4
3,000 gallons	3,500 gallons	1,320 liters/350 gallons	7	6	5
3,500 gallons	4,000 gallons	1,510 liters/400 gallons	8	7	6

- Drain all water tanks completely. Then, refill tanks to approximately 10% of capacity with potable water. For example, put 50 gallons (approximately 185 liters) of water in a tank of 500-gallon capacity and 250 gallons (approximately 945 liters) of water in a tank of 2,500-gallon capacity. Immerse the number of 10G [12G, 15G] envelopes determined in step 1 above in the water tank, and close the tank.
- Wait 10 hours for the 10G [12G, 15G] to generate, and then remove the spent envelopes. Close the tank. Discard envelopes according to the instructions on the package label.
- Circulate the *Selectrocide*® 10G [12G, 15G] solution through all lines and within or between tanks using the system's pumps.
- Run approximately 6 ounces of the *Selectrocide*® 10G [12G, 15G] solution through each outlet (faucet, shower etc.) and let the solution stand in the tanks and lines **OVERNIGHT** (approximately 12 hours).
- The next day, or after twelve hours, flush the *Selectrocide*® 10G [12G, 15G] solution through all faucets and outlets until the tanks are empty.
- Refill the tanks with rinse water to approximately 10% of their capacity.
- Circulate the water and flush rinse water through all faucets and outlets until tanks are empty.
- Tanks are now cleaned and can be refilled for use or left empty for storage

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10. Dispose of package(s) and spent 10G [12G, 15G] envelope(s) according to instructions on package label.

FOR APPLICATIONS INVOLVING TANKS WITH CAPACITIES GREATER THAN 4,000 GALLONS, USE THE SELECTROCIDE® 12G MULTIPACK-15 AND FOLLOW THESE STEPS:

- Determine the number of *Selectrocide*® 12G MultiPack-15s necessary to clean the tanks and lines in the water system according to the following table (use one 12G MultiPack-15 for tanks below 5,000 gallon capacity, and one additional MultiPack-15 for every additional 5,000 gallons in tank capacity above 5,000).

12G MULTIPACK-15 PRODUCT

FOR TANKS OF THIS OVERALL SIZE		IMMERSE THIS NUMBER OF 12G MultiPack-15s	IN THIS AMOUNT OF WATER	
More than:	Less Than:		Liters	Gallons
4,000 gallons.	5,000 gallons	1	7,200	1,900
5,000 gallons	10,000 gallons	2	14,400	3,800
10,000 gallons	15,000 gallons	3	21,600	5,700
15,000 gallons	20,000 gallons	4	28,800	7,600
20,000 gallons	25,000 gallons	5	36,000	9,500
25,000 gallons	30,000 gallons	6	43,200	11,400

- Drain all water tanks completely. Then, refill tanks with 7,200 liters (1,900 gallons) of potable water for every MultiPack-15 required. (Four MultiPack-15s, for example, would require 4 x 7,200 liters = 28,800 liters (7,600 gallons) of water). This will achieve a 25 ppm solution. Immerse the number of mesh bags of MultiPack-15s determined in step 1 above in the water tank, and close the tank.
- Wait 10 hours, and then remove the mesh bag(s) containing the MultiPack-15(s). Close the tank. Discard bag and spent MultiPack-15(s) contents according to the instructions on the package label.
- Circulate the *Selectrocide*® 12G MultiPack-15 solution through all lines and within or between tanks using the system's pumps.
- Run approximately 6 ounces of the *Selectrocide*® 12G MultiPack-15 solution through each outlet (faucet, shower etc.) and let the solution stand in the tanks and lines OVERNIGHT (approximately 12 hours).
- The next day, or after twelve hours, flush the *Selectrocide*® 12G MultiPack-15 solution through all faucets and outlets until the tanks are empty.
- Refill the tanks with rinse water to approximately 10% of their capacity.
- Circulate the water and flush rinse water through all faucets and outlets until tanks are empty.
- Tanks are now cleaned and can be refilled for use or left empty for storage
- Dispose of bag and spent 12G MultiPack-15 according to instructions on package label.

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HORTICULTURAL DISINFECTANT, SANITIZER, ALGAEICIDE, FUNGICIDE AND SLIME REMOVER/INHIBITER

Treats/Controls/Inhibits: Algae (*Phormidium boneri*) and Fungi (*Penicillium digitatum*, *Botrytis sp.*, *Fusarium solani*, *Pythium aphanidermatum*, *Pythium irregulare*, *Fusarium oxysporum f. sp. basilicum* (Fob))

This product, when used as directed:

- (1) disinfects non-porous hard surfaces, pots, flats, flower buckets and cutting tools;
- (2) sanitizes non-porous hard surfaces, racks, stands, work areas, benches and cutting tools;
- (3) removes or inhibits (under continuous treatment) re-establishment of slime in irrigation/transfer lines and systems;
- (4) treats, controls and prevents build-ups of soil-borne plant diseases and other algae, fungi and attendant slimes, on: soils used to grow nursery stocks, bedding plants, flowering plants and ornamentals; on cut flowers and other cuttings, seedlings and seeds; and on and within greenhouse equipment and structures such as irrigation/transfer lines and systems, pots, floors, ventilation ducts and equipment, storage rooms, growing tables, evaporative coolers, plastics, benches and flower pots; and
- (5) controls bacterial counts, maintains freshness, and extends shelf life for cut flowers.

NOTE: Do not use at concentrations higher than those recommended for each application. When applied directly to plants, seeds, cuttings or flowers as directed, *Selectrocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] does not cause adverse cosmetic effects, as testing has demonstrated. However, testing has not been performed on EVERY plant species, and users are advised to spot-test *Selectrocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] before applying it widely.

Active solution may be irritating if breathed. If applying solution inside greenhouse or enclosed area using a high-pressure sprayer, wear a NIOSH/MSHA-approved respirator appropriate for chlorine dioxide: after treatment, ventilate greenhouse before reentering.

OPTIONAL DILUTION INSTRUCTIONS FOR HORTICULTURAL SETTINGS: The following dilution chart is consistent with the other dilution instructions contained in this technical bulletin. It is tailored to the typical dilution ratios of 1:10 and 1:200 necessary for some horticultural applications. Use this chart, or dilution instructions presented elsewhere, most compatible with available dilution devices.

OPTIONAL DILUTION INSTRUCTIONS DESIGNED FOR DILUTION RATIOS REQUIRED TYPICALLY IN GREENHOUSES AND HORTICULTURAL SETTINGS			
To achieve a final chlorine dioxide concentration of :	Use a single Selective Micro Envelope of this size:	Activated in this many gallons of water:	And apply using a device with an injection ratio of :
100 ppm	5G	12.5 gal	Undiluted
100 ppm	10G	26 gal	Undiluted
100 ppm	12G	30 gal	Undiluted
100 ppm	15G	39 gal	Undiluted
50 ppm	5G	25 gal	Undiluted
50 ppm	5G	2.5 gal	1:10
50 ppm	10G	52 gal	Undiluted
50 ppm	10G	5 gal	1:10
50 ppm	12G	6 gal	1:10
50 ppm	15G	8 gal	1:10
20 ppm	5G	69.5 gal*	Undiluted
20 ppm	10G	12.5 gal	1:10
20 ppm	12G	15.8 gal	1:10

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20 ppm	15G	19.8 gal	1:10
5 ppm	5G	250 gal	Undiluted
0.25 ppm	5G	25 gal	1:200
0.25 ppm	10G	50 gal	1:200
0.25 ppm	12G	60 gal**	1:200
0.25 ppm	12G MultiPack-15	950 gal	1:200

* Exceeds capacity of 55-gallon drum; activating the 5G in a 55-gallon drum will yield an application solution at a concentration of about 24 ppm—effective, but higher than necessary.

** Exceeds capacity of 55-gallon drum; activating in a 55-gallon drum, and diluting with a 1:200 injection device, will yield an application solution at a concentration of about 0.29 ppm—effective, but higher than necessary.

A. To disinfect non-porous hard surfaces, including stainless steel, glazed tile, and sealed concrete & wood used in horticultural applications:

1. Activate *Selectocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] according to “Directions for Use” on package label.
2. Pre-clean all surfaces prior to application of disinfectant solution. Sweep and remove all plant debris. Use power sprayer to wash all surfaces to remove loose dirt.
3. Prepare solutions in indicated concentrations and ensure surfaces are wetted and remain visibly wet for the times noted below in the instruction number 6 associated with the desired application.
4. Dispose of package and spent envelope according to directions on package label.

FOR WORK AREAS, BENCHES AND EVAPORATIVE COOLERS

5. Prepare a 100 ppm solution of *Selectocide*® 5G [10G, 12G, 15G] in accordance with the instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:5 dilution device (one part 500 ppm solution to four parts water).
6. Spray or swab work area and bench surfaces with the 100 ppm solution before each work period and again after each planting is completed to help control the transfer of diseases. Spray or swab evaporative cooler surfaces, ensuring visible wetness for at least ten (10) minutes. When applying these solutions using a high-pressure sprayer, wear a NIOSH/MSHA-approved respirator appropriate for chlorine dioxide.

FOR POTS, FLATS, FLOWER BUCKETS AND CUTTING TOOLS

FOR A TEN (10) MINUTE OR LONGER DISINFECTION

5. Prepare a 100 ppm of *Selectocide*® 5G [10G, 12G, 15G] in accordance with the instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and dilute by adding one part 500 ppm solution to four parts water.
1. Brush or wash used pots and flats, and then soak in the 100 ppm solution for at least ten (10) minutes before reuse to help control transfer of diseases. Soak tools with 100 ppm solution for at least ten (10) minutes to help control the transfer of disease.

At end of workday, dry and oil tools.

FOR A TWENTY (20) MINUTE OR LONGER DISINFECTION

5. Prepare a 50 ppm solution of *Selectocide*® 5G [10G, 12G, 15G] in accordance with the instructions above or prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and dilute by adding one part 500 ppm solution to nine parts water.

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6. Brush or wash used pots and flats and then soak in the 50 ppm solution for at least twenty (20) minutes before reuse to help control transfer of diseases. Soak tools with 50 ppm solution for at least twenty (20) minutes to help control the transfer of disease. At end of workday, dry and oil tools.

B. To sanitize work area non-porous (non-food contact) hard surfaces, hard-surface benches, pots, flats, flower buckets and cutting tools:

1. Activate *Selectrocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.
2. Pre-clean all surfaces prior to application of sanitizing solution. Sweep and remove all plant debris. Use power sprayer to wash all surfaces to remove loose dirt.
3. Prepare a 20 ppm solution of *Selectrocide*® 5G [10G, 12G, 15G] in accordance with the instructions above or prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:25 dilution device or add one part 500 ppm solution to 24 parts water.
4. Brush or wash used pots and flats then swab or soak in the 20 ppm solution for at least five (5) minutes before reuse to help control transfer of diseases. Spray, swab or soak tools with 20 ppm solution for at least five (5) minutes to help control the transfer of disease. Spray or swab work area and bench surfaces before each work period and again after each plant is completed to help control the transfer of diseases.
5. Dispose of package and spent envelope according to instructions on package label.

At end of workday, dry and oil tools.

C. As a dip to control and suppress bacteria, algae (such as *Phormidium boneri*) and fungi (such as *Penicillium digitatum*, *Botrytis sp.*, *Fusarium solani*) on rooted or unrooted cuttings and cut flowers:

1. Activate *Selectrocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label
2. Prepare a 5 ppm solution of *Selectrocide*® 5G [10G, 12G, 15G] in accordance with the instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:100 dilution device or add one part 500 ppm solution to 99 parts water.
3. Briefly dip cuttings or cut flowers in 5 ppm solution, ensuring they remain visibly wet with solution for at least one minute.
4. Dispose of package and spent envelope according to instructions on package label.

D. As a dip or drench to control and suppress bacteria, including algae (*Phormidium boneri*) and fungi (*Penicillium digitatum*, *Botrytis sp.*, *Fusarium solani*, *Pythium aphanidermatum*, *Pythium irregulare*, *Fusarium oxysporum f. sp. Basilicum (Fob)*) in seed-bed soil and planting cubes:

1. Activate *Selectrocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on the package label.
2. Prepare a 5 ppm solution of *Selectrocide*® 5G [10G, 12G, 15G] in accordance with the instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:100 dilution device or add one part 500 ppm solution to 99 parts water.
3. Immerse or drench seed-bed soil or planting cubes and allow to remain visibly wet with solution for ten (10) minutes
4. Dispose of package and spent envelope according to instructions on package label.

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Soil or planting cubes can be seeded or planted immediately after treatment.

E. For removing slime and retarding its reemergence; for antimicrobial applications involving algae (*Phormidium boneri*) and fungi (*Penicillium digitatum*, *Botrytis sp.*, *Fusarium solani*, *Pythium aphanidermatum*, *Pythium irregulare*, *Fusarium oxysporum f. sp. Basilicum (Fob)*); and for continuous treatment to inhibit their re-establishment in irrigation systems, flood floors, flooded benches, misting systems, humidification systems, recycled water systems and capillary mats:

1. Activate *Selectrocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.
2. Pre-clean all surfaces prior to application of disinfectant solution. Sweep and remove all plant debris. Use power sprayer to wash all surfaces to remove loose dirt.
3. Prepare solutions in concentrations indicated below and ensure surfaces are wetted and remain visibly wet for the times or are applied continuously as noted below.
4. Dispose of package(s) and spent envelope(s) according to instructions on package label.

AS AN INITIAL OR REMEDIAL TREATMENT TO DISINFECT WATER HOLDING TANKS AND IRRIGATION/TRANSFER LINES (CLEAN-IN-PLACE APPLICATION)

5. Flush tank thoroughly with clean water. Activate *Selectrocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.
6. Prepare a 50 ppm solution of activated *Selectrocide*® 5G [10G, 12G, 15G] in accordance with instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:10 dilution device (one part 500 ppm solution to nine parts water).
7. Fill tank completely. Run 50 ppm solution through irrigation/transfer lines and appliances until green solution appears at the outlets. Top-off tank with solution. Circulate or let stand in tank and lines for at least twenty (20) minutes.
8. Drain tanks and lines, flush with clean water, and resume normal operation.

AS AN INITIAL OR REMEDIAL TREATMENT TO DISINFECT AND REMOVE SLIME, ALGAE AND FUNGI FROM WATER HOLDING TANKS AND IRRIGATION/TRANSFER LINES (CLEAN-IN-PLACE APPLICATION)

5. Flush tank thoroughly with clean water. Activate *Selectrocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.
6. Prepare a 50 ppm solution of activated *Selectrocide*® 5G [10G, 12G, 15G] in accordance with instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:10 dilution device (one part 500 ppm solution to nine parts water).
7. Fill tank completely. Run 50 ppm solution through irrigation/transfer lines and appliances until green solution appears at the outlets. Top-off tank with solution. Circulate or let stand in tank and lines overnight (12 hours).
8. Drain tanks and lines, flush with clean water, and resume normal operation.

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FOR CONTINUOUS TREATMENT TO INHIBIT THE RE-ESTABLISHMENT OF SLIME, ALGAE, and FUNGI

5. Prepare a 0.25 ppm solution of activated *Selectroicide*® 5G [10G, 12G, 15G] in accordance with instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:2,000 dilution device or add one part 500 ppm solution to 1,999 parts water.
6. Use the prepared 0.25 ppm solution to operate the water system following normal application procedures.

NOTE: Use ultra low-range *Selective Micro Chlorine Dioxide Test Strips* to verify concentration at downstream production points. Organic loads vary across water supplies, and will influence injection level necessary to ensure 0.25 ppm concentrations at emitter hoses, mist nozzles, and drip tubes.

F. As an algaecide and fungicide for treating, preventing, suppressing and controlling horticultural diseases in commercial greenhouses, garden centers and nurseries

1. Activate *Selectroicide* 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.
1. Pre-clean all non-plant surfaces prior to application of solution. Sweep and remove all plant debris. Use power sprayer to wash all surfaces to remove loose dirt.
2. Prepare solutions in indicated concentrations and ensure all plant surfaces are wetted and remain visibly wet for the times noted below.
3. Dispose of package and spent envelope according to instructions on package label.

AS AN INITIAL OR REMEDIAL TREATMENT TO KILL ALGAE AND FUNGI ON SURFACES, EQUIPMENT, GREENHOUSE STRUCTURES, GLAZING, PLASTIC, BENCHES, WALKWAYS, FLOORS, WALLS, FAN BLADES, VENTILATION DUCTS, WATERING SYSTEMS, COOLERS AND STORAGE ROOMS

5. Prepare a 5 ppm solution of activated *Selectroicide*® 5G [10G, 12G, 15G] in accordance with instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:100 dilution device (one part 500 ppm solution to 99 parts water).
6. Apply the 5 ppm solution with mop, sponge or sprayer. When applying these solutions using a high-pressure sprayer, wear a NIOSH/MSHA-approved respirator appropriate for chlorine dioxide.
7. Visibly wet all surfaces and ensure the surfaces remain visibly wet for at least one hour.

Note: Heavy growths of algae or fungi may require scrubbing to remove dead growth.

AS A WEEKLY PREVENTATIVE TREATMENT TO KILL, CONTROL AND SUPPRESS FUNGI AND CONTROL AND SUPPRESS ALGAE ON SURFACES, EQUIPMENT, GREENHOUSE STRUCTURES, GLAZING, PLASTIC, BENCHES, WALKWAYS, FLOORS, WALLS, FAN BLADES, VENTILATION DUCTS, WATERING SYSTEMS, COOLERS AND STORAGE ROOMS

5. Prepare a 5 ppm solution of activated *Selectroicide*® 5G [10G, 12G, 15G] in accordance with instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:100 dilution device (one part 500 ppm solution to 99 parts water).
6. Apply 5 ppm solution with mop, sponge or sprayer. When applying these solutions using a high-pressure sprayer, wear a NIOSH/MSHA-approved respirator appropriate for chlorine dioxide. Visibly wet all surfaces and ensure the surfaces remain visibly wet for at least one hour (kill/cidal) and at least one minute (suppression).

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G. As a dip to control and suppress bacteria on cuttings and cut flowers:

1. Activate *Selectrocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.
2. Prepare a 5 ppm solution of activated *Selectrocide*® 5G [10G, 12G, 15G] in accordance with the instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:100 dilution device (one part 500 ppm solution to 99 parts water).
3. Briefly dip cuttings or cut flowers in 5 ppm solution and ensure they remain visibly wet with solution for at least one minute.
4. Dispose of package and spent envelope according to instructions on package label.

H. To maintain freshness and extend shelf-life for cut flowers:

1. Activate *Selectrocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.
2. Prepare a 5 ppm solution of *Selectrocide*® 5G [10G, 12G, 15G] in accordance with instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:100 dilution device (one part 500 ppm solution to 99 parts water).
3. Unbundle the flowers to preclude bunching, and place in vase on display or in cold storage in the 5 ppm solution of chlorine dioxide. Solution may include 2% sucrose.
4. Refresh solution every 24 hours.
5. Dispose of package and spent envelope according to instructions on package label.

TO EXTEND SHELF-LIFE AND FRESHNESS OF FRUITS AND VEGETABLES IN FOOD PROCESSING FACILITIES

THIS PRODUCT WILL REDUCE CONCENTRATIONS OF SPOILAGE MICROBES ON RAW AGRICULTURAL COMMODITIES (RACs) INTENDED FOR COMMERCIAL FOOD PROCESSING.

1. Activate *Selectrocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on the package label.
2. Wash and thoroughly rinse fruits and vegetables with clean, potable water.
3. Prepare a 5 ppm solution of activated *Selectrocide*® 5G [10G, 12G, 15G] in accordance with instructions above OR prepare a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and use a 1:100 dilution device (one part 500 ppm solution to 99 parts water).
4. Apply the 5 ppm solution to fruits and vegetables by: either immersing/dipping in a tank of 5 ppm solution for 1 minute OR using an application-specific sprayer (the industry standard fan or cone spray nozzle pattern) to cover all surfaces evenly with a 5 ppm spray; surfaces should remain visibly wet for 1 minute. Replenish immersion solution at the rate of depletion; verify 5 ppm concentration using *Selective Micro*® Chlorine Dioxide Test Strips. Empty and wash immersion tanks with every shift change.
5. Follow application to fruits and vegetables with a potable water rinse or canning, blanching, or cooking.
6. Dispose of package and spent envelope according to instructions on package label.

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ANTIMICROBIAL APPLICATIONS TO CONTROL THE BUILDUP OF MICROBES IN PROCESS WATERS FOR FRUITS AND VEGETABLES AND ASSOCIATED TANKS, FLUMES, AND LINES

This product will inhibit microbial growth in water used to process fruits and vegetables.

- NOTE:**
1. Replacement and replenishment intervals will vary with microbial challenge presented by fruits and vegetables treated. Selective Micro Technologies recommends a beginning concentration of 5 ppm, with adjustments to ensure a residual concentration between 0.25 and 5 ppm depending on microbial challenge and operation/unique factors.
 2. Apply chlorine dioxide solution continuously or intermittently to achieve a residual concentration level between 0.25 - 5.0 ppm.
 3. Regularly confirm concentration of process water using *Selective Micro® Chlorine Dioxide Test Strips* or other measurement means (e.g. Oxidation-Reduction Potential (ORP) metering).

1. At regular intervals or before beginning a shift, clean tanks, flumes, and lines using normal procedures, and follow with potable water-rinse. In conditions of severe microbial accumulation (or when slime is visible), it is advisable to treat the thoroughly cleaned system with an antimicrobial treatment before returning the system to normal operation. See *Selectrocide® 5: Antimicrobial and General Cleaning Applications for Water Lines and Tanks in Potable Water Systems* for recommendations on cleaning tanks that are contaminated severely.

2. Determine the number of *Selectrocide®* envelopes necessary based on the capacity of the tank or system, anticipated replenishment/replacement cycle based on expected microbial loads, and specific application method—once-through or recycled. The optimal concentration necessary to ensure a residual concentration of between 0.25 and 5.0 ppm will vary across operations.

For "once-through" process designs, generate *Selectrocide®* directly to the desired end-concentration in the system's operating tank (recommended) OR generate stock 500 ppm external to the tank and meter the stock solution in adequate volume to raise the volumes of process water to the desired concentration via mechanical injection (recommended) or by batch-loading.

For "recycle" process designs, generate stock 500 ppm solution external to the tank and inject activated solution in sufficient volume to raise the process water to the desired concentration via mechanical injection (recommended) or by batch-loading.

Consult pages 1-2 of this Technical Bulletin for dilution instructions, or scale to application using the table below, which presents, as a starting point, the total volume of stock 5 ppm solution generated using a single package of each product in the G-series product line. For example, with a 1,000-gallon system capacity, two 12Gs would fill the system at 5 ppm and leave an additional 270 gallons at 5 ppm in reserve.

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VOLUME OF 5 PPM SOLUTION USING SINGLE SELECTROCID® G-SERIES PRODUCT

Selectrocid® G-Series Product	Volume of Water Specified To Generate 500 ppm Stock Solution	Volume of 5 ppm Solution Created Using a Single Selectrocid® Envelope	
		Liters	Gallons*
5G	10	1,000	265
10G	20	2,000	530
12G	24	2,400	635
15G	30	3,000	795
12G MultiPack-15	360	36,000	9,510

*rounded to nearest 5 gallons

1. Activate Selectrocid® 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.
2. Prepare a 5 ppm solution of activated Selectrocid® 5G [10G, 12G, 15G] directly in accordance with instructions above OR prepare a 500 ppm solution with any of the G-series products and use a 1:100 dilution device (one part 500 ppm solution to 99 parts water) to achieve target concentration of 5 ppm.
3. Verify concentration of process solution using Selective Micro® Chlorine Dioxide Test Strips or other means. Adjust concentration by adding additional water if the concentration is above 5 ppm or by adding additional concentrate if below 5 ppm (or below desired concentration between 0.25 and 5.0 ppm).
4. Cover or enclose containers holding solution, and operate normally.
5. Check concentration at regular intervals using test strips or other means to ensure target concentration is maintained. Replenish solution as necessary to maintain target concentration.
6. At desired intervals, drain system, clean as necessary, and refill with freshly activated solution.
7. Dispose of package and spent envelope according to instructions on package label.

ANTIMICROBIAL TREATMENT FOR POULTRY DRINKING WATER

This product will help control microorganisms in drinking water intended for poultry.

A. For systems that use automatic, on-demand metering/injection systems designed primarily for poultry (i.e., systems employing nipples or drip wells as the final water delivery device/method, usually situated in enclosed or protected structures):

1. Activate Selectrocid® 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on product label.
2. If activation vessel is different from feeder tank, transfer stock solution (500 ppm) to feeder tank. To maintain concentration, ensure that feeder tank is covered.
3. Operate system according to standard operating protocol, using a 1:100 injection device (one part solution to 99 parts water).

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1. Confirm concentrations of stock solution (500 ppm) and end-use solution (up to 5 ppm) using *Selective Micro® Chlorine Dioxide Test Strips*.
5. Dispose of package and spent envelope according to instructions on package label.

Note: Clean and remove accumulations of organic matter in delivery lines on a regular basis. (See, for example, label and technical bulletin instructions for this product under the heading "Antimicrobial and General Cleaning Applications for Potable Water Systems.")

B. For trough-based systems:

1. Contact Selective Micro Technologies for application specifics.

SANITIZING FINAL RINSE OF PRE-CLEANED OR NEW RETURNABLE OR NON-RETURNABLE CONTAINERS

This product may be used as a final sanitizing rinse for plastic, glass or metal returnable and non-returnable bottles, cans, caps, kegs, and beverage containers.

1. Activate *Selectrocide® 5G* [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.
2. Wash bottles, cans or containers with detergent or cleaning solution and rinse with potable water.
3. Prepare a 30 ppm solution EITHER by activating *Selectrocide® 5G* [10G, 12G, 15G] directly to 30 ppm in accordance with instructions below OR by preparing a 500 ppm solution [5G, 10G, 12G, 15G, or 12G MultiPack-15] and using a 6:100 dilution device (six parts 500 ppm solution to 94 parts water).

TO ACTIVATE SELECTROCIDE® G-SERIES PRODUCTS DIRECTLY TO 30 PPM INSIDE A CLOSED CONTAINER:

Immerse the <i>Selectrocide® 5G</i> in this amount of clean, potable water for at least ten (10) hours; remove within 48 hrs.	Immerse the <i>Selectrocide® 10G</i> in this amount of clean, potable water for at least ten (10) hours; remove within 48 hrs.	Immerse the <i>Selectrocide® 12G</i> in this amount of clean, potable water for at least ten (10) hours; remove within 48 hrs.	Immerse the <i>Selectrocide® 15G</i> in this amount of clean, potable water for at least ten (10) hours; remove within 48 hrs.
167 liters (44 gallons)	333 liters (88 gallons)	400 liters (105 gallons)	500 liters (132 gallons)

4. To apply, rinse interior and exterior surfaces with the 30 ppm solutions by spraying, sponging, swabbing, or swirling, or immersing in a manner that ensures the target surfaces become visibly wet. (If applying these solutions using a high-pressure sprayer, wear a NIOSH/MSHA-approved respirator appropriate for chlorine dioxide).
5. Allow to drain dry.

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**ANTIMICROBIAL AND GENERAL CLEANING USES FOR
NON-POTABLE WATER APPLICATIONS INVOLVING
RECIRCULATING WATER SYSTEMS (E.G., COOLING TOWERS,
PAPER MILLS, AND DECORATIVE OR ORNAMENTAL FOUNTAINS)**

This product will help remove, control and inhibit reemergence of slimes, algae, fungi, and other organic buildups in recirculating cooling water systems, including cooling towers and decorative or ornamental fountains. It can be used as a periodic treatment or during continuous operations in antimicrobial applications involving algae, fungi or bacteria.

1. Activate *Selectroocide*® [5G, 10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.
2. Prepare a 500 ppm solution of activated *Selectroocide*® [5G, 10G, 12G, 15G, 12G MultiPack-15] in accordance with label instructions.
3. Where possible, pre-clean surfaces prior to application. Flush tanks or water system with clean water.
4. Apply/add the 500 ppm solution to the tank water or water stream at a point in the system or in a manner which minimizes turbulence and exposure to the air.
5. Dispose of package(s) and spent envelope(s) according to instructions on package label.

**AS AN INITIAL OR REMEDIAL TREATMENT FOR RECIRCULATING COOLING WATER SYSTEMS,
WATER HOLDING TANKS AND DECORATIVE AND ORNAMENTAL FOUNTAINS**

6. For each 1,000 gallons of cooling or fountain water add 10 gallons of the 500 ppm solution to achieve a 5 ppm residual chlorine dioxide level. Circulate water in normal operation of the system.
7. Check residual chlorine dioxide concentration using *Selective Micro*® Chlorine Dioxide Test Strips. If residual chlorine dioxide concentration is below 5 ppm, add additional 500 ppm solution until solution reaches 5 ppm; verify with *Test Strips*.
8. Repeat daily until desired results are achieved.

FOR CONTINUOUS TREATMENT TO INHIBIT THE RE-ESTABLISHMENT OF SLIME, ALGAE, OR FUNGI

6. For each 1,000 gallons of cooling or fountain water add 1 gallon of the 500 ppm solution to achieve approximately 0.5 ppm residual chlorine dioxide concentration. Circulate water in normal operation of the system.
7. Check residual chlorine dioxide concentration using *Selective Micro*® Chlorine Dioxide Test Strips. If residual chlorine dioxide concentration falls below 0.1 ppm, add more 500 ppm solution (about 1 gallon of the 500 ppm solution for each 1,000 gallons of cooling or fountain water) to increase the residual chlorine dioxide concentration to about 0.5 ppm. Verify concentration with *Test Strips*.

**INSTRUCTIONS WHEN USING A DOSING PUMP AS AN INITIAL OR REMEDIAL TREATMENT FOR
RECIRCULATING COOLING WATER SYSTEMS, WATER HOLDING TANKS AND DECORATIVE AND
ORNAMENTAL FOUNTAINS**

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6. For each 1,000 gallons of cooling or fountain water, set the dosing pump to run a sufficient time to deliver approximately 10 gallons of the 500 ppm solution to the system.
7. Check residual chlorine dioxide concentration using *Selective Micro® Chlorine Dioxide Test Strips*. If residual chlorine dioxide concentration is below 5 ppm, add additional 500 ppm solution until solution reaches 5 ppm, verify with *Test Strips*.
8. Repeat daily until desired results are achieved.

INSTRUCTIONS WHEN USING A DOSING PUMP FOR CONTINUOUS TREATMENT TO INHIBIT THE RE-ESTABLISHMENT OF SLIME, ALGAE, OR FUNGI

6. Set the dosing pump to achieve a continuous concentration of chlorine dioxide between 0.25 ppm and 0.5 ppm. In order to maintain this concentration and the appropriate dosing, consider the volume of water in the system, half-life (makeup/blowdown rate), evaporative rate and windage loss of the system.
7. Check residual chlorine dioxide concentration using *Selective Micro® Chlorine Dioxide Test Strips*. If residual chlorine dioxide concentration falls below 0.25 ppm, increase the dosage rate.

FOR PERIODIC TREATMENT TO INHIBIT THE RE-ESTABLISHMENT OF SLIME, ALGAE, OR FUNGI

6. For each 1,000 gallons of cooling or fountain water, add 1 gallon of the 500 ppm solution to achieve approximately 0.5 ppm residual chlorine dioxide concentration. Circulate water in normal operation of the system. Check residual chlorine dioxide concentration using *Selective Micro® Chlorine Dioxide Test Strips*.
7. Repeat weekly, or on first indications of increased slime, algae or fungi.

ANTIMICROBIAL APPLICATIONS TO CONTROL SLIME AND ODOR-CAUSING BACTERIA AND TO REDUCE AND RETARD MICROBIOLOGICAL GROWTH IN WATER-BASED CUTTING OILS AND ATTENDANT SYSTEMS

This product will help remove, control and inhibit reemergence of slimes, odor-causing bacteria, and other microbiological/organic growth in water-based cutting oils and attendant systems. The chlorine dioxide can be generated externally to the system (and added) or directly in the cutting oil for batch treatments, continuous operation, or shock (for heavily contaminated systems).

CAUTION: Chlorine dioxide may not be compatible with some water-based cutting oils. Check with the manufacturer, Selective Micro technical support, and/or conduct a trial if compatibility is in question.

GENERATING SELECTROCIDE® TO ADD TO THE CUTTING OIL:

1. Activate *Selectrocide®* [5G, 10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.

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2. Prepare a 500 ppm solution of activated *Selectrocide*® [5G, 10G, 12G, 15G, 12G MultiPack-15] in accordance with label instructions.
3. Dispose of package(s) and spent envelope(s) according to instructions on package label.

FOR BATCH TREATMENT

4. Add 4 gallons of the 500 ppm solution for each 1,000 gallons in a fresh system (resulting in chlorine dioxide at a concentration of approximately 2 ppm). Repeat weekly or upon the first indication of increased odors, slimes or bacterial contamination.

FOR CONTINUOUS TREATMENT

4. Each day, add 2 gallons of the 500 ppm solution for each 1,000 gallons in a system (resulting in chlorine dioxide at a concentration of approximately 1 ppm).

FOR HEAVILY CONTAMINATED SYSTEMS

4. Slug-dose the system with 20 gallons of the 500 ppm solution for each 1,000 gallons in a system (resulting in chlorine dioxide at a concentration of approximately 10 ppm).

GENERATING SELECTROCIDE® CHLORINE DIOXIDE DIRECTLY IN THE CUTTING OIL

FOR BATCH TREATMENT

1. Immerse one *Selectrocide*® [5G, 10G, 12G, 15G, 12G MultiPack-15] envelope in the water-based cutting oil (in a fresh system, use one 5G per 600 gallons, one 10G per 1,200 gallons, one 12G per 1,500 gallons, and one 15G per 2,000 gallons, and one 12G MultiPack-15 per 22,500 gallons; this generates chlorine dioxide at a concentration of approximately 2 ppm). Allow the [5G, 10G, 12G, 15G, 12G MultiPack-15] envelope to remain immersed in the cutting oil for at least 10 hours but no more than 72 hours. Remove the spent [5G, 10G, 12G, 15G, 12G MultiPack-15] envelope and operate normally. Repeat weekly or on the first indication of increased odor, slime or bacterial contamination.

2. Dispose of package(s) and spent envelope(s) according to instructions on package label.

FOR CONTINUOUS TREATMENT

1. Each day, immerse one *Selectrocide*® [5G, 10G, 12G, 15G, 12G MultiPack-15] envelope in the water-based cutting oil (in a fresh system, use one 5G per 1,200 gallons, one 10G per 2,400 gallons, one 12G per 3,000 gallons, one 15G per 4,000 gallons, and one 12G MultiPack-15 per 45,000 gallons; this generates chlorine dioxide at a concentration of approximately 1 ppm). Allow the [5G, 10G, 12G, 15G, 12G MultiPack-15] to remain immersed in the cutting oil for at least 10 hours but no more than 72 hours. Remove the spent [5G, 10G, 12G, 15G, 12G MultiPack-15] and operate normally.

2. Dispose of package(s) and spent envelope(s) according to instructions on package label.

FOR HEAVILY CONTAMINATED SYSTEMS

1. Slug-dose the system by immersing one *Selectrocide*® [5G, 10G, 12G, 15G, 12G MultiPack-15] envelope in the water-based cutting oil (in a fresh system, use one 5G per 120 gallons, one 10G per 240 gallons, one 12G per 300 gallons, one 15G per 400 gallons, and one 12G MultiPack-15 per 4,500 gallons; this generates chlorine dioxide at a concentration of approximately 10 ppm). Allow the [5G, 10G, 12G, 15G, 12G MultiPack-15] to remain immersed for at least 10 hours but

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no more than 72 hours. Remove the spent [5G, 10G, 12G, 15G, 12G MultiPack-15] envelope and operate normally. Start or resume batch or continuous treatment as described above.

2. Dispose of package(s) and spent envelope(s) according to instructions on package label.

DISINFECTATION, SANITIZING, ANTIMICROBIAL AND GENERAL CLEANING APPLICATIONS FOR WINERIES

This product will disinfect, sanitize, and clean winemaking equipment and environmental surfaces in wineries. It is effective against microbes and spoilage organisms on all non-porous surfaces including: picking bins, crushers, transfer lines/hoses/pipes, tanks, drains, pumps, presses, de-stemmers, sealed concrete floors and walls, cutting boards/surfaces, sumps, valves and tri-clover fittings, pruning shears, and steel wine barrels.

- NOTE:**
1. For applications not covered below or elsewhere in this Technical Bulletin, or to discuss other winery specific application issues, contact Selective Micro Technologies' service personnel.
 2. This product does not produce Trichloroanisole (TCA) or precursor Trichlorophenol (TCP) by chemical reaction in red wine or in cooperage oak, and therefore does not contribute to the off odors associated with the former.

A. Disinfecting and sanitizing applications for winery equipment and environmental surfaces (including all non-porous materials and surfaces, such as transfer hoses and pipes, and other items listed above):

1. Activate *Selectrocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on package label.
2. **Disinfecting Applications.** For disinfecting applications, prepare a 100 ppm solution of activated *Selectrocide*® 5G [10G, 12G, 15G] directly in accordance with instructions above OR prepare a 500 ppm solution of *Selectrocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] and use a 1:5 dilution device (one part 500 ppm solution to 4 parts water).
- Sanitizing Applications on hard, food-contact surfaces.** For sanitizing applications on hard, food-contact surfaces, prepare a 5 ppm solution of activated *Selectrocide*® 5G [10G, 12G, 15G] directly in accordance with instructions above OR prepare a 500 ppm solution of *Selectrocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] and use a 1:100 dilution device (one part 500 ppm solution to 99 parts water).
- Sanitizing Applications on hard, non-food-contact surfaces.** For sanitizing applications on hard, non-food-contact surfaces, prepare a 20 ppm solution of activated *Selectrocide*® 5G [10G, 12G, 15G] directly in accordance with instructions above OR prepare a 500 ppm solution of *Selectrocide*® 5G [10G, 12G, 15G, 12G MultiPack-15] and use a 1:25 dilution device (one part 500 ppm solution to 24 parts water).
3. Apply to target surfaces with mop, sponge, circulate or spray until visibly wet for the following contact times:

— Disinfection (100 ppm)	10 minutes
— Sanitizing hard food-contact surfaces (5 ppm)	1 minute
— Sanitizing hard non-food contact surfaces (20 ppm)	5 minutes
4. Dispose of package and spent envelope according to instructions on package label.

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B. For sanitizing and cleaning tanks and associated connections, pipes, and hoses:

1. Activate *Selectroside*® SG [10G, 12G, 15G, 12G MultiPack-15] according to "Directions for Use" on product label.
2. Place the tank washer in the middle of the tank with the attached hose extending through the racking door. Cover door with plastic tarp.
3. Place all rubber gaskets inside the tank and leave bottom valve open to drain into tub.
- NOTE: Ensure man door on top of tank is closed and bolted.
4. Place 50 gallons of warm (not hotter than 160°F) water into the sump. To water, add:
 - For tanks not heavily soiled: Add one Scoop (about 2 pounds) of caustic (e.g., 270 Xtra)
 - For heavily soiled tanks: Add one scoop (about 2 pounds) of more aggressive caustic (e.g., 231 Xtra)
5. Turn on the pump and start the tank washer, running solution of caustic for about 20 minutes.
6. Check the inside surfaces of tank visually to ensure they are clean; if not, repeat steps 4-5.
7. Rinse the tank with cold water for 5 minutes.
8. Fill the tub with 50 gallons of warm (100°F or lower) water, and add one scoop (about 2 pounds) of citric acid to tub.
9. Add 2 liters of *Selectroside*® stock solution (500 ppm) to achieve a 5 ppm concentration in tank.
10. Start the pump and tank washer, and run citric solution for 20 minutes.
11. After 20 minutes, use Selective Micro® Chlorine Dioxide Test Strips to determine concentration of chlorine dioxide. Discard solution if strips indicated less than 5 ppm. (If strips register 5 ppm, then solution can be reused to sanitize another tank.)
12. Drain tank of citric solution, and rinse with cold water for 5 minutes.
13. Restore system to the operating mode.
12. Dispose of package and spent envelope according to instructions on package label.

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