



PLANT AND CROP APPLICATIONS

HORTICULTURAL ALGAECIDE, AND SLIME REMOVER/INHIBITER

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

NOTE: Do not use at concentrations higher than those recommended for each application. When applied directly to plants, seeds, cuttings, or flowers as directed, GC 30 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 GC 30 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

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 1:5, 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 Gard'nClean Envelope of this size:	Activated in this many gallons or liters of water:	And apply using a device with an injection ratio of:
100 ppm	GC 30	30 gal	Undiluted
50 ppm	GC 30	6 gal	1:10
20 ppm	GC 30	15 gal	1:10
10 ppm	GC 30	30 gal	1:10
5 ppm	GC 30	60 gal ¹	1:10

3 ppm	GC 30	100 gal	1:10
0.8 ppm	GC 30	375 gal	1:10]
0.25 ppm	GC 30	60 gal ²	1:200

NOTE: Verify concentration using Gard'nClean Test Strips. For concentrations above 10 ppm, use Gard'nClean Wide Range test strips; for concentrations of 10 ppm or less, use Gard'nClean Low Range test strips.

1. Exceeds capacity of 55-gallon drum; activating the GC 30 in a 55-gallon drum and diluting with a 1:10 injection device will yield an application solution at a concentration of about 5.76 ppm— effective, but higher than necessary.
2. Exceeds capacity of 55-gallon drum; activating solution the GC 30 in a 55-gallon drum and diluting with a 1:200 injection device will yield an application solution at a concentration of about 0.27 ppm— effective, but higher than necessary.

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

1. Activate GC 30 according to "Directions for Use" on package label.
2. Prepare a 5 ppm solution of GC 30 OR prepare a 500 ppm solution of GC 30 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.

To control and suppress bacteria [(*Erwinia chrysanthemi*)], including algae (*Phormidium boneri*) and [(*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 GC 30 according to "Directions for Use" on the package label.
2. Prepare a 5 ppm solution of GC 30 OR prepare a 500 ppm solution of GC 30 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.

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

FOR CONTINUOUS TREATMENT TO SUPPRESS BACTERIA AND INHIBIT ALGAE, BIOSLIME, SLIME, AND BACTERIA AT A CONCENTRATION OF 3.0 PPM

1. Activate GC 30 according to "Directions for Use" on product label.

2. Using a dosing pump, add activated GC 30 to watering system until water reaches a concentration of 3.0 ppm (required concentration levels vary according to site-specific conditions—monitor the microbial content of the water and increase or decrease the addition rate of the activated solution as needed); [higher chlorine dioxide injection rates, such as 3.0ppm can ensure chlorine dioxide residual of up to 0.8 ppm is sufficient to provide adequate treatment]. Residual disinfectant and disinfection byproducts must be monitored as required by the National Primary Drinking Water Regulations (40 CFR Part 141) and state drinking water standards.
3. Dispose of package(s) and spent envelope(s) according to instructions on package label. Do not reuse.

NOTE: Use ultra-low-range Gard'nClean 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 3.0 ppm concentrations at emitter hoses, mist nozzles, and drip tubes.]

FOR CONTINUOUS TREATMENT TO SUPPRESS BACTERIA AND INHIBIT ALGAE, BIOSLIME, SLIME AND BACTERIA AT A CONCENTRATION OF 0.8 PPM

1. Activate GC 30 according to "Directions for Use" on product label.
2. Using a dosing pump, add activated GC 30 to watering system until water reaches a concentration of 0.8ppm (required concentration levels vary according to site-specific conditions—monitor the microbial content of the water and increase or decrease the addition rate of the activated solution as needed); residual disinfectant and disinfection byproducts must be monitored as required by the National Primary Drinking Water Regulations (40 CFR Part 141) and state drinking water standards.
3. Dispose of package(s) and spent envelope(s) according to instructions on package label. Do not reuse.

NOTE: Use ultra-low-range Gard'nClean 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 0.8 ppm concentrations at emitter hoses, mist nozzles, and drip tubes.

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

1. Activate GC 30 according to "Directions for Use" on package label.
2. Use power sprayer to wash all surfaces to remove loose filth. Scrub surfaces using a suitable soap or detergent to ensure that no filth remains on surfaces.

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 *GC 30* according to "Directions for Use" on package label.
6. Prepare a 100 ppm solution of activated *GC 30* OR prepare a 500 ppm solution of *GC 30* and use a 1 dilution device (one part 500 ppm solution to four parts water).
7. Fill tank completely. Run 100 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 ten (10) minutes.
8. Drain tanks and lines, flush with clean water, and resume normal operation.

FOR CONTINUOUS TREATMENT TO INHIBIT THE RE-ESTABLISHMENT OF SLIME, ALGAE, AND BACTERIA

5. Prepare a 0.25 ppm solution of activated *GC 30* OR prepare a 500 ppm solution of *GC 30* and use a 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 Gard'nClean 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 8.25 ppm concentrations at emitter hoses, mist nozzles, and drip tubes.

[FOR CONTINUOUS TREATMENT TO INHIBIT THE RE-ESTABLISHMENT OF SLIME, ALGAE, AND BACTERIA AT A CONCENTRATION OF 3.0 PPM]

1. [Activate *GC 30* according to "Directions for Use" on product label.
2. Using a dosing pump, add activated *GC 30* to water system until water reaches a concentration of 3.0 ppm (required concentration levels vary according to site-specific conditions—monitor the microbial content of the water and increase or decrease the addition rate of the activated solution as needed); [higher chlorine dioxide injection rates, such as 3.0 ppm can ensure chlorine dioxide residual of up to 0.8 ppm is sufficient to provide adequate disinfection]. Residual disinfectant and disinfection byproducts must be monitored as required by the National Primary Drinking Water Regulations (40 CFR Part 141) and state drinking water standards.
3. Dispose of package(s) and spent envelope(s) according to instructions on package label. Do not reuse.

NOTE: Use ultra-low-range Gard'nClean 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 3.0 ppm concentrations at emitter hoses, mist nozzles, and drip tubes.]

FOR CONTINUOUS TREATMENT TO INHIBIT THE RE-ESTABLISHMENT OF SLIME, ALGAE, AND BACTERIA AT A CONCENTRATION OF 0.8 PPM

1. [Activate *GC 30* according to "Directions for Use" on product label.
2. Using a dosing pump, add activated *GC 30* to water system water reaches a concentration of 0.8 ppm (required concentration levels vary according to site-specific conditions—monitor the microbial content of the water and increase or decrease the addition rate of the activated solution as needed); residual disinfectant and disinfection byproducts must be monitored as required by the National Primary Drinking Water Regulations (40 CFR Part 141) and state drinking water standards.
3. Dispose of package(s) and spent envelope(s) according to instructions on package label. Do not reuse.

NOTE: Use ultra-low-range Gard'nClean 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 0.8 ppm concentrations at emitter hoses, mist nozzles, and drip tubes.

As an algaecide and bactericide for treating, preventing, suppressing, and controlling horticultural diseases on hard, non-porous surfaces in commercial greenhouses, garden centers and nurseries:

1. Activate *GC 30* according to "Directions for Use" on package label.
2. 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.
3. Prepare solutions in indicated concentrations and ensure all surfaces are wetted and remain visibly wet for the times noted below.
4. Dispose of package and spent envelope according to instructions on package label.

AS AN INITIAL OR REMEDIAL TREATMENT TO KILL ALGAE AND BACTERIA ON HARD NON-POROUS SURFACES ON 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 *GC 30* OR prepare a 500 ppm solution of *GC 30* 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 MOSH/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 bacteria may require scrubbing to remove dead growth.

AS A WEEKLY PREVENTATIVE TREATMENT TO KILL, CONTROL AND SUPPRESS BACTERIA AND CONTROL AND SUPPRESS ALGAE ON HARD NON-POROUS

SURFACES ON 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 GC 30 in accordance with instructions above OR prepare a 500 ppm solution of GC 30 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).

As a dip to control and suppress bacteria [(*Erwinia chrysanthemi*)] on cuttings and cut flowers:

1. Activate GC 30 according to "Directions for Use" on package label.
2. Prepare a 5 ppm solution of activated GC 30 OR prepare a 500 ppm solution of GC 30 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.

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

1. Activate GC 30 according to "Directions for Use" on package label.
2. Prepare a 5 ppm solution of GC 30 in accordance with instructions above OR prepare a 500 ppm solution of GC 30 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 sucrose.
4. Refresh solution every 24 hours.
5. Dispose of package and spent envelope according to instructions on package label.

As a drench or spray to control and suppress bacteria, and algae in commercial mushroom growing operations (pre- and post-casing) (Not For Use In California):

PRE-CASING:

1. Activate GC 30 according to "Directions for Use" on the package label.
2. Prepare a 0.8 ppm solution of GC 30 OR prepare a 500 ppm solution of GC 30 and add 0.20 ounces per gallon.
3. Drench or spray mushroom beds until all mushrooms are visibly wet with solution. When applying these solutions using a sprayer, wear a NIOSH/MSHA-approved respirator appropriate for chlorine dioxide.

4. Begin casing mushroom beds.
5. Dispose of package(s) and spent envelope(s) according to instructions on package label.

POST-CASING:

1. Activate GC 30 according to "Directions for Use" on the package label.
2. Prepare a 0.8 ppm solution of GC 30 OR prepare a 500 ppm solution of GC 30 and add 0.2 ounces per gallon.
3. Drench or spray mushroom beds until all mushrooms are visibly wet with solution. When applying these solutions using a sprayer, wear a NIOSH/MSHA-approved respirator appropriate for chlorine dioxide.
4. Dispose of package(s) and spent envelope(s) according to instructions on package label.

Residual disinfectant and disinfection byproducts must be monitored as required by the National Primary Drinking Water Regulations (40 CFR Part 141) and state drinking water standards.

APPLICATION IN HYDROPONIC SETTINGS

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

NOTE: Do not use at concentrations higher than those recommended for each application

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

OPTIONAL DILUTION INSTRUCTIONS IN HYDROPONIC 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 hydroponic 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 HYDROPONIC SETTINGS

To achieve a final chlorine dioxide concentration of:	Use a single Selective Micro Envelope of this size:	Activated in this many gallons or liters of water:	And apply using a device with an injection ratio of:
100 ppm	GC 30	30 gal	Undiluted
50 ppm	GC 30	6 gal	1:10

20 ppm	GC 30	15 gal	1:10
10 ppm	GC 30	30 gal	1:10
5 ppm	GC 30	60 gal ¹	1:10
3 ppm	GC 30	100 gal	1:10
0.8 ppm	GC 30	375 gal	1:10
0.25 ppm	GC 30	60 gal ²	1:200

NOTE: Verify concentration using Gard'nClean Test Strips. For concentrations above 10 ppm, use Gard'nClean Wide Range test strips; for concentrations of 10 ppm or less, use Gard'nClean Low Range test strips.

1. Exceeds capacity of 55-gallon drum; activating the GC 30 in a 55-gallon drum and dilute in with a 10-injection device will yield an application solution at a concentration of about 5.76 ppm— effective, but higher than necessary.
2. Exceeds capacity of 55-gallon drum; activating the GC 30 in a 55-gallon drum and diluting with a 1:200 injection device will yield an application solution at a concentration of about 0.27 ppm—effective, but higher than necessary

To control and suppress bacteria [(*Erwinia chrysanthemi*)], including algae (*Phormidium boneri*); [(*Penicillium digitatum*, *Botrytis sp.*, *Fusarium solani*,] *Pythium aphanidermatum*, *Pythium irregulare*, *Fusarium oxysporumf. sp.* *Basilicum (Fob)*) on ornamentals, edibles in hydroponic gardens

(Not For Use In California):

1. Activate GC 30 according to "Directions for Use" on the package label.
2. Prepare a 10.0 ppm solution of GC 30 OR prepare a 500 ppm solution of activated GC 30 and use a 1:50 dilution device or add one part 500 ppm solution to 49 parts water.
3. Immerse or ornamentals, edibles. Ensure crops are visibly wet with solution for ten (10) minutes.
4. Dispose of package and spent envelope according to instructions on package label.

AS A DIP, SPRAY, OR DRENCH AT A CONCENTRATION OF 5.0 PPM

1. Activate GC 30 according to "Directions for Use" on the package label.
2. Prepare a 5 ppm solution of GC 30 OR prepare a 500 ppm solution of activated GC 30 and use a 1:100 dilution device or add one part 500 ppm solution to 99 parts water.
3. Immerse or ornamentals, edibles. Ensure crops are visibly wet with solution for ten (10) minutes.
4. Dispose of package(s) and spent envelope(s) according to instructions on package label.

[FOR CONTINUOUS TREATMENT TO SUPPRESS BACTERIA AND INHIBIT ALGAE, BIOSLIME, SLIME AND BACTERIA AT A CONCENTRATION OF 3.0 PPM]

1. [Activate *GC 30* according to "Directions for Use" on product label.
2. Using a dosing pump, add activated *GC 30* to watering system until water reaches a concentration of 3.0 ppm (required concentration levels vary according to site-specific conditions—monitor the microbial content of the water and increase or decrease the addition rate of the activated solution as needed); [higher chlorine dioxide injection rates, such as 3.0 ppm can ensure chlorine dioxide residual of up to 0.8 ppm is sufficient to provide adequate treatment]. Residual disinfectant and disinfection byproducts must be monitored as required by the National Primary Drinking Water Regulations (40 CFR Part 141) and state drinking water standards.
3. Dispose of package(s) and spent envelope(s) according to instructions on package label. Do not reuse.

NOTE: Use ultra-low-range Gard'nClean 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 3.0 ppm concentrations at emitter hoses, mist nozzles, and drip tubes.]

[FOR CONTINUOUS TREATMENT TO INHIBIT THE RE-ESTABLISHMENT OF SLIME, ALGAE, AND BACTERIA AT A CONCENTRATION OF 3.0 PPM]

1. Activate *GC 30* according to "Directions for Use" on product label.
2. Using a dosing pump, add activated *GC 30* to watering system until water reaches a concentration of 0.8 ppm (required concentration levels vary according to site-specific conditions—monitor the microbial content of the water and increase or decrease the addition rate of the activated solution as needed); residual disinfectant and disinfection byproducts must be monitored as required by the National Primary Drinking Water Regulations (40 CFR Part 141) and state drinking water standards
3. Dispose of package(s) and spent envelope(s) according to instructions on package label. Do not reuse.

NOTE: Use ultra-low-range Gard'nClean 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 0.8 ppm concentrations at emitter hoses, mist nozzles, and drip tubes.

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

1. Activate *GC 30* according to "Directions for Use" on package label.

2. Pre-clean all surfaces prior to application of deodorizing solution. Sweep and remove all plant debris. Use power sprayer to wash all surfaces to remove loose filth. Scrub surfaces using a suitable soap or detergent to ensure that no filth remains on surfaces.
 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)

1. Flush tank thoroughly with clean water. Activate *GC 30* according to "Directions for Use" on package label.
2. Prepare a 100 ppm solution of activated *GC 30* OR prepare a 500 ppm solution of activated *GC 30* and use a 1:5 dilution device (one part 500 ppm solution to four parts water).
3. 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 ten (10) minutes.
4. Drain tanks and lines, flush with clean water, and resume normal operation.

[FOR CONTINUOUS TREATMENT TO INHIBIT THE RE-ESTABLISHMENT OF SLIME, ALGAE, AND BACTERIA AT A CONCENTRATION OF 3.0 PPM]

1. [Activate *GC 30* according to "Directions for Use" on product label.
2. Using a dosing pump, add activated *GC 30* to water system until water reaches a concentration of 3.0 ppm (required concentration levels vary according to site-specific conditions—monitor the microbial content of the water and increase or decrease the addition rate of the activated solution as needed); higher chlorine dioxide injection rates, such as 3.0 ppm can ensure chlorine dioxide residual of up to 0.8 ppm is sufficient to provide adequate treatment. Residual disinfectant and disinfection byproducts must be monitored as required by the National Primary Drinking Water Regulations (40 CFR Part 141) and state drinking water standards.
3. Dispose of package(s) and spent envelope(s) according to instructions on package label. Do not reuse.

NOTE: Use ultra-low-range Gard'nClean 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 3.0 ppm concentrations at emitter hoses, mist nozzles, and drip tubes.]

FOR CONTINUOUS TREATMENT TO INHIBIT THE RE-ESTABLISHMENT OF SLIME, ALGAE, AND BACTERIA AT A CONCENTRATION OF 0.8 PPM

1. Activate *GC 30* according to "Directions for Use" on product label.
2. Using a dosing pump, add activated *GC 30* to watering system until water reaches a concentration of 0.8 ppm (required concentration levels vary according to site-specific conditions—monitor the microbial content of the water and increase or decrease the addition rate of the activated solution as needed); residual disinfectant and disinfection byproducts must be monitored as required by the National Primary Drinking Water Regulations (40 CFR Part 141) and state drinking water standards.
3. Dispose of package(s) and spent envelope(s) according to instructions on package label. Do not reuse.

NOTE: Use ultra-low-range Gard'nClean 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 8.8 ppm concentrations at emitter hoses, mist nozzles, and drip tubes.

To maintain freshness and extend shelf-life for cut ornamentals, edibles*, and crops* (*Not For Use In California):

1. Activate *GC 30* according to "Directions for Use" on package label.
2. Prepare a 5 ppm solution of *GC 30* in accordance with instructions above OR prepare a 500 ppm solution of *GC 30* and use a 1:100 dilution device (one part 500 ppm solution to 99 parts water).
3. Unbundle the crops to preclude bunching and submerge crops in the 5 ppm solution or place the crops 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 *GC 30* 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 *GC 30* OR prepare a 500 ppm solution of *GC 30* 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 Gard'nClean 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.

PLANT AND CROP APPLICATIONS TO CONTROL SPOILAGE MICROBES IN AGRICULTURAL WATER

[FOR CONTINUOUS TREATMENT TO INHIBIT THE RE-ESTABLISHMENT OF SLIME, ALGAE, AND BACTERIA AT A CONCENTRATION OF 3.0 PPM]

1. [Activate *GC 30* according to "Directions for Use" on product label.
2. Using a dosing pump, add activated *GC 30* to watering system until water reaches a concentration of 3.0 ppm (required concentration levels vary according to site-specific conditions—monitor the microbial content of the water and increase or decrease the addition rate of the activated solution as needed); [higher chlorine dioxide injection rates, such as 3.0 ppm can ensure chlorine dioxide residual of up to 0.8 ppm is sufficient to provide adequate treatment]. Residual disinfectant and disinfection byproducts must be monitored as required by the National Primary Drinking Water Regulations (40 CFR Part 141) and state drinking water standards.
3. Dispose of package(s) and spent envelope(s) according to instructions on package label. Do not reuse.

NOTE: Use ultra-low-range Gard'nClean 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 3.0 ppm concentrations at emitter hoses, mist nozzles, drip tubes, and other point-of-application.]

FOR CONTINUOUS TREATMENT TO INHIBIT THE RE-ESTABLISHMENT OF SLIME, ALGAE, AND BACTERIA AT A CONCENTRATION OF 0.8 PPM

1. Activate *GC 30* according to "Directions for Use" on product label.
2. Using a dosing pump, add activated *GC 30* to watering system until water reaches a concentration of 0.8 ppm (required concentration levels vary according to site-specific conditions—monitor the microbial content of the water and increase or decrease the addition rate of the activated solution as needed): residual disinfectant and disinfection byproducts must be monitored as required by the National Primary Drinking Water Regulations (40 CFR Part 141) and state drinking water standards.
3. Dispose of package(s) and spent envelope(s) according to instructions on package label. Do not reuse.

NOTE: Use ultra-low-range Gard'nClean 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 0.8 ppm concentrations at emitter hoses, mist nozzles, drip tubes, and other point-of-application devices.

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

This product will inhibit spoilage 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. Gard'nClean 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 Gard'nClean 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 a treatment before returning the system to normal operation. See GC's "Sanitization 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 GC 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.

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 GC-series product line. For example, with a 1,000-gallon system capacity, two GC 30's would fill the system at 5 ppm — and leave an additional 270 gallons at 5 ppm in reserve.

VOLUME OF 5 PPM SOLUTION USING SINGLE GC-SERIES PRODUCT

GC-Series Product	Volume of Water Specified To Generate 500 ppm Stock Solution	Volume of 5 ppm Solution Created Using a Single Envelope	
		Liters	Gallons ¹
GC 30	24	2,400	635

¹Rounded to nearest 5 gallons

Note: Verify concentration using Gard'nClean Test Strips. For concentrations above 10 ppm, use Gard'nClean Wide Range Test strips; for concentrations of 10 ppm or less, use Gard'nClean Low Range Test Strips.

3. Activate GC 30 according to "Directions for Use" on package label.

4. Prepare a 5 ppm solution of activated *GC 30* OR prepare a 500 ppm solution with *GC 30* and use a 1:100 dilution device (one part 500 ppm solution to 99 parts water) to achieve target concentration of 5 ppm.
5. Verify concentration of process solution using Gard'nClean 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).
6. Cover or enclose containers holding solution and operate normally.
7. 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.
8. At desired intervals, drain system, clean as necessary, and refill with freshly activated solution.
9. 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 "Sanitization and General Cleaning Applications for Potable water Systems")

PLANT AND CROP APPLICATION OF FLUME WATERS FOR CONTROL OF SLIME

This product can be used to treat slime [and other bio slimes] in flume waters.

1. Activate *GC 30* according to "Directions for Use" on package label.
2. Add activated *GC 30* to flume via a dosing pump at a concentration of 50 ppm (50 mg/liter) and let stand overnight or circulate for 10-15 hours.
3. To prevent slime growth after initial treatment, add *GC 30* using a dosing pump to the water at a dose of 5.0 ppm (5.0 mg/liter) chlorine dioxide. Minimum contact time for control of listed pathogenic organisms is 5 minutes.
4. Drain and rinse flume with clean, potable water before putting system back into use.
5. Dispose of package(s) and spent envelope(s) according to instructions on package label. Do not reuse.

FOR USE IN POTATO STORAGE FACILITIES AS AN ATMOSPHERIC ClO_2 TREATMENT FOR POTATOES (NOT FOR USE IN CALIFORNIA)

This product releases chlorine dioxide gas (ClO_2) to inhibit or remove odors caused by spoilage growths such as late blight, brown rot, and others on potatoes during their storage and shipment.

Directions for Setup

Treatment **MUST** take place in a suitable space. Two such treatment sites are storage rooms and shipping containers. Personnel **MUST** vacate the treatment space during the atmospheric chlorine

dioxide treatment process until chlorine dioxide levels are at or below the OSHA 0.1 ppm TWA level. For the treatment of large areas/surface areas, the generation of additional Gard'nClean GC 30 may be required.

Directions for Activation:

For potato and general atmospheric chlorine dioxide treatment, place a single GC 30 sachet in one gallon of water. For each application, do not generate more than two sachets AND two gallons of water in a single activation vessel; one GC 30 sachet should be used per one gallon of water.

FOR TREATMENT OF POTATOES IN AN AREA WITH A STATIC VESSEL OF ACTIVATED GC-30

Directions for Application:

1. For best results, wash potatoes thoroughly before use, removing any visible traces of dirt or mold.
2. Activate GC 30 according to directions above.
3. Prepare a GC solution according to the directions in the table below based upon volume of area treated.

The amount of GC required for a given stock of potatoes can be calculated as follows:

Volume of potato storage	Gallons of concentrate solution required
0-3,000 ft. ³	2
3,001 – 6,000 ft. ³	3
6,001 – 12,000 ft. ³	4
12,001 – 24,000 ft. ³	5
24,001 – 36,000 ft. ³	6

4. Immediately place the vessel(s) in the storage area, preferably on top of the potatoes to be treated. If there is one vessel treating the storage area, place it as close to the potatoes as possible. If preparing multiple vessels to treat the storage area, place them at equidistant points around the area.
 5. Allow gas to freely migrate across the potatoes' surface. Personnel MUST vacate the treatment space during the treatment process using atmospheric chlorine dioxide treatment process until chlorine dioxide levels are at or below the OSHA 0.1 ppm TWA level OR wear a NIOSH/MSHA-approved respirator appropriate for chlorine dioxide. In-air chlorine dioxide levels can be measured with a Model C16 PortaSens II chlorine dioxide gas leak detector or an equivalent measuring instrument.
 6. When chlorine dioxide levels are at or below the OSHA 0.1 ppm TWA level OR after 6 hours, remove the vessel(s) containing generated solution from area and dispose of solution according to instructions on package label or in accordance with federal, state, and local law. Rinse vessel thoroughly using potable water.
 7. Dispose of package(s) and spent envelope(s) according to instructions on package label.
-

FOR TREATMENT OF POTATOES IN AN AREA WITH A GARD'NCLEAN AUTOMATED DISPERSION UNIT

For use only by professional personnel or trained personnel or persons hired and trained under contract to Gard'nClean.

Directions for Application:

1. For best results, wash potatoes thoroughly before use, removing any visible traces of dirt or mold.
2. Activate GC 30 according to directions above AND directly inside Gard'nClean Automated Dispersion Unit.
3. Place the Gard'nClean Automated Dispersion Unit in the storage area. Unit should be as close to potatoes to be treated as possible. Prepare a GC solution according to the directions in the table below. Add to or dilute the concentration of the GC solution until the required concentration is achieved in the Gard'nClean Automated Dispersion Unit's solution tank. For each application, one GC 30 sachet should be used per one gallon of water.

The amount of GC required for a given stock of potatoes can be calculated as follows:

Volume of potato storage	Gallons of concentrate solution required
0-3,000 ft. ³	1
3,001-6,000 ft. ³	2
6,001-12,000 ft. ³	3
12,001-24,000 ft. ³	4
24,001-36,000 ft. ³	5

4. Fit top on the Gard'nClean Automated Dispersion Unit and power on the unit.
5. Allow gas to freely migrate across the potatoes' surface. Personnel MUST vacate the treatment space during the atmospheric chlorine dioxide process until chlorine dioxide levels are at or below the OSHA 0.1 ppm TWA level OR wear a NIOSH/MSHA-approved respirator appropriate for chlorine dioxide. In-air chlorine dioxide levels can be measured with a Model C16 PortaSens II chlorine dioxide gas leak detector or an equivalent measuring instrument.
6. When chlorine dioxide levels are at or below the OSHA 0.1 ppm TWA level OR after 6 hours; turn off the Gard'nClean Automated Dispersion Unit. Remove unit from area and dispose of solution according to instructions on package label or in accordance with federal, state, and local law.
7. Rinse Gard'nClean Automated Dispersion Unit solution tank thoroughly using potable water.
8. Dispose of package(s) and spent envelope(s) according to instructions on package label.