



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

September 13, 2017

Sherri Gray  
Authorized Representative of Sterling Bridge, LLC  
Environmental Consulting Inc.  
15616 Plain Dealing Place  
Manassas, VA 20112

Subject: Label and CSF Amendment – Addition of water soluble packaging and CSF  
Product Name: PureVista  
EPA Registration Number: 88228-2  
Application Date: May 12, 2017  
Decision Number: 529821

Dear Ms. Gray:

The amended label and CSF referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act, as amended, are acceptable. This approval does not affect any conditions that were previously imposed on this registration. You continue to be subject to existing conditions on your registration and any deadlines connected with them.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one copy of the final printed labeling before you release the product for shipment with the new labeling. In accordance with 40 CFR 152.130(c), you may distribute or sell this product under the previously approved labeling for 18 months from the date of this letter. After 18 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. "To distribute or sell" is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR 152.3.

Please note that the record for this product currently contains the following CSF(s):

- Basic CSF dated 4/25/2012
- Alternate CSF 1 dated 5/12/2017

Should you wish to add/retain a reference to the company's website on your label, then please be aware that the website becomes labeling under the Federal Insecticide Fungicide and Rodenticide Act and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) list examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance.

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Your release for shipment of the product constitutes acceptance of these conditions. If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6. If you have any questions, you may contact Donna Kamarei at (703)347-0443 or via email at [Kamarei.donna@epa.gov](mailto:Kamarei.donna@epa.gov).

Sincerely,

A handwritten signature in blue ink that reads "Wanda J. Fuller, for". The signature is written in a cursive style.

Demson Fuller, Product Manager 32  
Regulatory Management Branch II  
Antimicrobials Division (7510P)  
Office of Pesticide Programs

Enclosure

[Front panel]

# PureVista [ClO<sub>2</sub>Stix]

**Deodorizer                      Oxidizer**  
*(For Control of Odor-Causing Bacteria, Mold, and Mildew)*

**ACTIVE INGREDIENT:**

Sodium Chlorite.....28%

**OTHER INGREDIENTS:**.....72%

TOTAL.....100%

Available Chlorine: 22%

**KEEP OUT OF REACH OF CHILDREN  
DANGER**

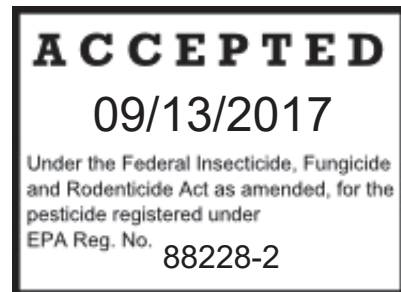
**POISON** 

<b>FIRST AID</b>	
If swallowed:	-Call a 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 a poison control center or doctor. -Do not give anything by mouth to an unconscious person.
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 inhaled:	-Move person to fresh air. -If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. -Call a poison control center or doctor for further treatment advice.
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.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For 24 hour emergency information on this product call NPIC at 1-800-858-7378. During other times call the poison control center at 1-800-222-1222.	
<b>NOTE TO PHYSICIAN:</b> Probable mucosal damage may contraindicate the use of gastric lavage.	

EPA Reg. No. 88228-2

EPA Est. No. 72852-IL-1

Sterling Bridge, LLC  
1241 N. Ellis  
Bensenville, IL 60106



## MASTER LABEL

Notes to Reviewer are Bracketed []  
Label Revised September 2017

Net Contents: (0.44 oz. (12.5g), 0.88 oz. (25 g), 1.76 oz. (50 g), 3.52 oz. (100 g), 7.04 oz. (200 g), 10.76 oz. (305 g), 1 lb. ([16 oz.][453g])

[Batch Code or Lot Number:]

Patents Pending

[Back or Side Panel(s)]

Restricted Use Pesticide: For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.

### PRECAUTIONARY STATEMENTS

#### HAZARDS TO HUMANS AND DOMESTIC ANIMALS

**Corrosive.** Causes irreversible eye damage and skin burns. Do not get in eyes, on skin, or on clothing. Fatal if swallowed, absorbed through the skin, or inhaled. Wear a NIOSH approved full-face acid gas respirator, long-sleeved shirt and long pants. Wear a digital chlorine dioxide detector. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

#### ENVIRONMENTAL HAZARDS

This product is potentially toxic to fish and aquatic organisms. All spills must be contained and immediately recovered or flushed with water into a chemical sewer or segregated holding tank or pond, which is provided for the specific purpose of neutralization. Chlorine dioxide solutions must NEVER be flushed to a sanitary sewer or other outlet, which connects to waterways or uncontrolled runoff streams. Contact local and federal authorities for applicable regulations. For guidance contact your State Water Board or Regional Office of the EPA.

#### PHYSICAL AND CHEMICAL HAZARDS

**Dry** sodium chlorite is a strong oxidizer. Mix only in water. Contamination may start a chemical reaction with generation of heat, liberation of hazardous gases (chlorine dioxide is a poisonous, explosive gas) and possible fire and explosion. Do not contaminate with garbage, dirt, organic material, pine oil, dirty rags, or any other foreign matter.

#### Personal Protective Equipment and Protocols

All persons purchasing and using PureVista chlorine dioxide products are required to be certified (Note: certification is not required for products used in autos, basements, boats, off road vehicles, offices, rooms, and RV's). The certification process requires all persons to be recertified every 15 months.

Personnel working with chlorine dioxide must always wear the proper protective equipment. It is recommended that employees be provided with, and required to use personal protective

## MASTER LABEL

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Label Revised September 2017

equipment and clothing necessary to prevent any possibility of skin or eye contact with chlorine dioxide. Remember the use of personal protective equipment is not a substitute for handling practices.

Avoid breathing vapors. After handling, always wash hands thoroughly with soap and water.

Where vapor concentration of chlorine dioxide exceeds or is likely to exceed 0.1 ppm, a NIOSH approved full-face acid gas respirator is acceptable. A NIOSH approved self-contained breathing apparatus, with full-face piece, is required for vapor concentration above 5 ppm and for leaks and/or emergencies. Follow any applicable respirator use standards and regulations.

### DIRECTIONS FOR USE

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

ClO<sub>2</sub> odor eliminator, eliminates odors caused by:

- Cigarettes
- Pets
- Food

Container is made with recyclable materials



In its gaseous state, PureVista may be used in controlling and inhibiting the growth of odor causing bacteria, mold, and mildew in unoccupied confined spaces when used as follows by trained professional personnel. All personnel purchasing or using PureVista must be certified, see the section discussing Personal Protective Equipment and Protocols. Visible signs must be placed at the opening or door of the treated area warning patrons not to enter during treatment. Applicators should remain on site to ensure that all treatment areas remain empty until treatment is completed. Vents and other openings must be sealed before treatment, and must be sealed in such a way that vapors from the use of this product are not allowed to escape to adjacent rooms or other confined spaces.

### Unoccupied Rooms Including but Not Limited to Commercial, Lodging and Non-Residential Spaces:

Prepare space/room: Open all cupboards, drawers, cabinets, closets and doors in the areas to be treated. Remove exposed foods. Close outside doors and windows. Shut off fans and air

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Label Revised September 2017

conditioners. Place lid on launcher: Place PureVista launcher lid on PureVista launcher, with “teeth” facing down. Add water to launcher: the amount of water will vary depending on which PureVista product is being used. See chart below for water fill instructions.

DO NOT OVERFILL

- PureVista 12.5                                      Fill water to the “25” tooth of the 25/50 launcher lid
- PureVista 25                                        Fill water to the “25” tooth of the 25/50 launcher lid
- PureVista 50                                        Fill water to the “50” tooth of the 25/50 launcher lid
- PureVista 100                                      Fill water to the “100” tooth of the 100/200 launcher lid
- PureVista 200                                      Fill water to the “200” tooth of the 100/200 launcher lid

Do not remove PureVista canister from vac pack wrapper until it is ready to be used. Remove plastic vacuum seal packaging and label from the PureVista canister: Pull on label tab to remove label from top of canister. Be sure that the label is removed from the PureVista canister, and place it into the PureVista launcher containing the correct amount of water. Place the launcher in the center of the room. Leave the room and close all doors, windows and vents. Room must remain unoccupied for 3 hours. After treatment, test room with electronic monitor for chlorine dioxide content. Chlorine dioxide levels must be no higher than 0.1 ppm before re-entry is permitted. Treatment dosages are as follows:

PureVista (ounce pouch)	Target PPM	Cubic Footage Treated
0.44 (12.5 g)	30	500
0.88 (25g)	30	1000
1.76 (50g)	30	2000
3.52 (100g)	30	4000
7.04 (200g)	30	8000

If necessary, multiple PureVista canisters can be used to treat desired space.

Unoccupied Automobiles: PureVista is effective when used in residential automobiles, commercial automobiles (cars, trucks, vans, trains, trailers, railroad cars, railroad tanks, shipping containers, and storage containers), commercial car wash operations, and rental automobile facilities engaged in detailing cars. Prepare interior of automobile: remove all items from automobile. Close windows. Place lid on launcher: Place PureVista 25/50 launcher lid on PureVista 25/50 launcher, with “teeth” facing down. Fill water to the “25” tooth of the 25/50 launcher lid. DO NOT OVERFILL.

Do not remove PureVista 25/50 canister from vac pack wrapper until it is ready to be used. Remove plastic vacuum seal packaging and label from the PureVista 25/50 canister. Pull on label tab to remove label from top of canister. Be sure that the label is removed from the PureVista 25/50 canister, and place it into the PureVista 25/50 launcher containing the correct amount of

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water. Place the launcher in the center of the automobile. Leave the automobile and close all doors and windows. Automobile must remain unoccupied for 3 hours. After treatment, test automobile with electronic monitor for chlorine dioxide content. Chlorine dioxide levels must be no higher than 0.1 ppm before re-entry is permitted. Only use on PureVista 25 canister per automobile. Do not use multiple canisters or canisters larger than 25 grams.

Unoccupied RVs/Boat Cabins/Aircrafts: PureVista is effective when used in unoccupied RVs, unoccupied boat cabins located in privately owned boat vessels, and unoccupied boat cabins located in commercial boat vessels including, but not limited, to cruise ships. Prepare space/room: Open all cupboards, drawers, cabinets, closets and doors in the areas to be treated. Remove exposed foods. Close outside doors, windows and vents. Shut off fans and air conditioners.

Place lid on launcher: Place PureVista lid on PureVista launcher, with “teeth” facing down. Add water to launcher: the amount of water will vary depending on which PureVista product is being used. See chart below for water fill instructions.

DO NOT OVERFILL

Pure Vista 12.5	Fill water to the “25” tooth of the 25/50 launcher lid
PureVista 25	Fill water to the “25” tooth of the 25/50 launcher lid
PureVista 50	Fill water to the “50” tooth of the 25/50 launcher lid
PureVista 100	Fill water to the “100” tooth of the 100/200 launcher lid
PureVista 200	Fill water to the “200” tooth of the 100/200 launcher lid

Do not remove PureVista canister from vac pack wrapper until it is ready to be used. Remove plastic vacuum seal packaging and label from the PureVista canister: Pull on label tab to remove label from top of canister. Be sure that the label is removed from the PureVista canister, and place it into the PureVista launcher containing the correct amount of water. Place the launcher in the center of the room. Leave the room and close all doors, windows and vents. Room must remain unoccupied for 3 hours. After treatment, test room with electronic monitor for chlorine dioxide content. Chlorine dioxide levels must be no higher than 0.1 ppm before re-entry is permitted. Treatment dosages are as follows:

PureVista (ounce pouch)	Target PPM	Cubic Footage Treated
0.44 (12.5 g)	30	500
0.88 (25g)	30	1000
1.76 (50g)	30	2000
3.52 (100g)	30	4000
7.04 (200g)	30	8000

If necessary, multiple PureVista canisters can be used to treat desired space.

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Locker Rooms: Prepare space/room: Open all cupboard, drawers, cabinets, closets and doors in the areas to be treated. Remove exposed foods. Close outside doors and windows. Shut off fans and air conditioners.

Place lid on launcher: Place PureVista launcher lid on PureVista launcher, with “teeth” facing down.

Add water to launcher: the amount of water will vary depending on which PureVista product is being used. See chart below for water fill instructions.

DO NOT OVERFILL

PureVista 12.5	Fill water to the “25” tooth of the 25/50 launcher lid
PureVista 25	Fill water to the “25” tooth of the 25/50 launcher lid
PureVista 50	Fill water to the “50” tooth of the 25/50 launcher lid
PureVista 100	Fill water to the “100” tooth of the 100/200 launcher lid
PureVista 200	Fill water to the “200” tooth of the 100/200 launcher lid

Do not remove PureVista canister from vac pack wrapper until it is ready to be used. Remove plastic vacuum seal packaging and the label from the PureVista canister: Pull on label tab to remove label from top of canister. Be sure that the label is removed from the PureVista canister, and place it into the PureVista launcher containing the correct amount of water. Place the launcher in the center of the room. Leave the room and close all doors, windows and vents. Room must remain unoccupied for 3 hours. After treatment, test room with electronic monitor for chlorine dioxide content. Chlorine dioxide levels must be no higher than 0.1 ppm before re-entry is permitted. Treatment dosages are as follows:

PureVista (ounce pouch)	Target PPM	Cubic Footage Treated
0.44 (12.5 g)	30	500
0.88 (25g)	30	1000
1.76 (50g)	30	2000
3.52 (100g)	30	4000
7.04 (200g)	30	8000

If necessary, multiple PureVista canisters can be used to treat desired space.

Equipment Storage Cabinets or Areas for Athletic Equipment or Body Armour: Prepare space/room: Open all cupboards, drawers, cabinets, closets and doors in the areas to be treated. Remove exposed foods. Close outside doors and windows. Shut off fans and air conditioners.



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Place lid on launcher: Place PureVista launcher lid on PureVista launcher, with “teeth” facing down.

Add water to launcher: the amount of water will vary depending on which PureVista product is being used. See chart below for water fill instructions.

### DO NOT OVERFILL

PureVista 12.5	Fill water to the “25” tooth of the 25/50 launcher lid
PureVista 25	Fill water to the “25” tooth of the 25/50 launcher lid
PureVista 50	Fill water to the “50” tooth of the 25/50 launcher lid
PureVista 100	Fill water to the “100” tooth of the 100/200 launcher lid
PureVista 200	Fill water to the “200” tooth of the 100/200 launcher lid

Do not remove PureVista canister from vac pack wrapper until it is ready to be used. Remove plastic vacuum seal packaging and label from the PureVista canister: Pull on label tab to remove label from top of canister. Be sure that the label is removed from the PureVista canister, and place it into the PureVista launcher containing the correct amount of water. Place the launcher in the center of the room. Leave the room and close all doors, windows and vents. Room must remain unoccupied for 3 hours. After treatment, test room with electronic monitor for chlorine dioxide content. Chlorine dioxide levels must be no higher than 0.1 ppm before re-entry is permitted. Treatment dosages are as follows:

PureVista (ounce pouch)	Target PPM	Cubic Footage Treated
0.44 (12.5 g)	30	500
0.88 (25g)	30	1000
1.76 (50g)	30	2000
3.52 (100g)	30	4000
7.04 (200g)	30	8000

If necessary, multiple PureVista canisters can be used to treat desired space.

### Commercial Food Processing Plants and Storage Areas, Dairies, Bottling Plants, and Breweries:

For microbial control and growth of microorganisms (algae, bacteria, slime, and mollusks).

Prepare space/room: Open all cupboards, drawers, cabinets, closets and doors in the areas to be treated. Remove food products. Close outside doors and windows. Shut off fans and air conditioners.

Place lid on launcher: Place PureVista launcher lid on PureVista launcher, with “teeth” facing down.

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Add water to launcher: the amount of water will vary depending on which PureVista product is being used. See chart below for water fill instructions.

### DO NOT OVERFILL

PureVista 12.5	Fill water to the “25” tooth of the 25/50 launcher lid
PureVista 25	Fill water to the “25” tooth of the 25/50 launcher lid
PureVista 50	Fill water to the “50” tooth of the 25/50 launcher lid
PureVista 100	Fill water to the “100” tooth of the 100/200 launcher lid
PureVista 200	Fill water to the “200” tooth of the 100/200 launcher lid

Do not remove PureVista canister from vac pack wrapper until it is ready to be used. Remove plastic vacuum seal packaging and label from the PureVista canister: Pull on label tab to remove label from top of canister. Be sure that the label is removed from the PureVista canister, and place it into the PureVista launcher containing the correct amount of water. Place the launcher in the center of the room. Leave the room and close all doors, windows and vents. Room must remain unoccupied for 3 hours. After treatment, test room with electronic monitor for chlorine dioxide content. Chlorine dioxide levels must be no higher than 0.1 ppm before re-entry is permitted. Treatment dosages are as follows:

PureVista (ounce pouch)	Target PPM	Cubic Footage Treated
0.44 (12.5 g)	30	500
0.88 (25g)	30	1000
1.76 (50g)	30	2000
3.52 (100g)	30	4000
7.04 (200g)	30	8000

If necessary, multiple PureVista canisters can be used to treat desired space.

### Deactivation

Canister can be deactivated in water. To deactivate, place canister in two gallons of water for hour or use deactivation solution, following manufacturer’s instructions. Cover water with plastic wrap during this period of time. After deactivating please follow disposal directions.

### **DIRECTIONS FOR CONTROLLING THE GROWTH OF ALGAE IN RECIRCULATING COOLING WATER TOWERS**

1. Clean badly fouled systems before starting treatment.
2. When algae are visible, add an initial dosage of 6 fluid ounces (170 g) of PureVista per 1,000 gals. of water in the system. Repeat if necessary until control is evident.

3. Where algae control is evident, use a subsequent dose of 3 fluid ounces (85 g) of PureVista solution per 1,000 gals. of water in the system twice per week or as needed to maintain control.
4. Add PureVista directly to the cooling tower drip pan (cold water basin) near the inlet to the recirculating pump.

**Directions for Use in the Chemical or Electrolytic Generation of Chlorine Dioxide as a Disinfectant, or for Microorganism or Mollusk Control, and as a Chemical Oxidant in Aquatic Systems**

**User is responsible for compliance with applicable Federal, state and local laws regarding proper use and disposal of the chlorine dioxide generated.**

**Feed requirements:** Feed rates of PureVista will depend on the severity of contamination and the degree of control desired. The exact dosage will depend on the size of the system and residual necessary for effective control. Depending on the generator type, PureVista may be diluted with water at the point of use to prepare a lower % active aqueous solution for use in chlorine dioxide generators.

Some examples of industrial applications of chlorine dioxide include:

- Potable water disinfection and removal of sulfide
- Control of bacterial slime and algae and mollusks in industrial recirculating and one-pass cooling systems
- Biocontrol in food processing flumes, water-using equipment, cooling water, and recycled waters.
- Disinfection of sewage and plant wastes.
- Destruction of phenolics, simple cyanides and sulfides by chemical oxidation.
- Bacterial slime control in white water paper mill systems.
- Bacterial control in oil well and petroleum systems.

**Method of feed:** Large amounts of chlorine dioxide ( $\text{ClO}_2$ ) can be generated by several common methods, including:

1. The chlorine method which utilizes a sodium chlorite solution and chlorine gas, or
2. The hypochlorite method which utilizes a sodium chlorite solution, a hypochlorite solution, and an acid, or
3. The Acid-chlorite method, which utilizes a sodium chlorite solution and an acid, or
4. The electrolytic method, which utilizes a sodium chlorite solution, with sodium chlorite added, as needed.

Your Sterling Bridge, LLC representative can guide you in the selection, installation and operation for feed systems.

**Potable Water Treatment**

The selected generator should be equipped with a sensor that detects the concentration of  $\text{ClO}_2$  that is produced. In addition, the generator should be periodically calibrated according to the manufacturer's instructions and/or by using standard chlorine dioxide, quantitated by iodometric

titration. Read the instructions on the chlorine dioxide generation system before using this product.

ClO<sub>2</sub> is used as both an oxidant and a disinfectant in drinking water treatment. For most municipal and public potable water systems, a chlorine dioxide residual concentration of 2 ppm is sufficient to provide adequate disinfection. Residual disinfectant byproducts must be monitored as required by the National Primary Drinking Water Regulations (40 CFR§ 141) and state drinking water standards.

### **Industrial Cooling Water Treatment**

For control of bacterial slime and algae in industrial recirculating and one-pass cooling systems, the required dosages will vary depending on the exact application and the degree of contamination present. The required ClO<sub>2</sub> residual concentrations range between 0.1 and 5.0 ppm. Chlorine dioxide may be applied either continuously or intermittently. The typical chlorine dioxide residual concentration range is 0.1 - 1.0 ppm for continuous doses, and 0.1 - 5.0 ppm for intermittent doses. The minimum acceptable residual concentration of ClO<sub>2</sub> is 0.1 ppm for a minimum one minute contact time.

### **Mollusk Control in Water Systems**

ClO<sub>2</sub> generated from sodium chlorite may be used for mollusk control in commercial and industrial recirculating and one-pass cooling water systems. The required dosages will vary with the system type, system conditions, the degree of water contamination present and the desired level of control. Depending on the extent of the infestation, sodium chlorite may be applied either continuously or intermittently through a chlorine dioxide generating system to achieve the necessary ClO<sub>2</sub> residual concentration.

Veliger Control: Maintain a continuous chlorine dioxide residual of 0.1 - 0.5 ppm.

Intermittent Dose: Apply ClO<sub>2</sub> to obtain a chlorine dioxide residual concentration of 0.2 - 25 ppm. Repeat as necessary to maintain control.

Continuous Dose: Maintain a ClO<sub>2</sub> residual concentration of up to 2 ppm.

### **Food Plant Process Water Treatment**

Chlorine dioxide generated from sodium chlorite is effective for use in controlling microbiological growth in flume water and other food processing water systems such as chill water systems, cheese brine and hydro coolers. The required dosages will vary with process conditions and the degree of contamination present. Depending on the requirements of the specific water system, ClO<sub>2</sub> should be applied continuously or intermittently to achieve a ClO<sub>2</sub> residual concentration between 0.25 and 5.0 ppm.

Water containing up to 3 ppm residual ClO<sub>2</sub> may be used to:

1. Provide microbial control in wash or process water for fruit and vegetable raw agricultural commodities.

2. Control spoilage and decay causing non-public health microorganisms present in the wash or process water for fruit and vegetable raw agricultural commodities.
3. Provide microbial control in poultry chiller water.

Water containing up to 3 ppm residual chlorine dioxide may be used for washing fruits and vegetables that are not raw agricultural commodities in accordance with 21CFR§173.300. Treatment of the fruits and vegetables with chlorine dioxide must be followed by a potable water rinse, or by blanching, cooking or canning.

ClO<sub>2</sub> gas may be used for fumigating fruits and vegetables that are not raw agricultural commodities in accordance with 21CFR§173.300. Treatment of the fruits and vegetables with ClO<sub>2</sub> in a closed chamber system must be followed by a potable water rinse, or by blanching, cooking or canning.

### **Wastewater Treatment**

ClO<sub>2</sub> is effective as both a disinfectant and an oxidant in wastewater treatment. The required dosages will vary with water conditions and the degree of contamination present. For most municipal and other wastewater systems, a chlorine dioxide residual concentration of up to 5 ppm is sufficient to provide adequate disinfection.

For sulfide odor control, between pH 5-9, a minimum of 5.2 ppm (wt) of ClO<sub>2</sub> should be applied to oxidize 1 ppm of sulfide (measured as sulfide ion). For phenol destruction, at pH less than 8, 1.5 ppm ClO<sub>2</sub> will oxidize 1 ppm phenol; at pH greater than 10, 3.3 ppm ClO<sub>2</sub> will oxidize 1 ppm phenol.

### **Bacterial Slime Control in Paper Mills**

ClO<sub>2</sub> generated from sodium chlorite is effective for use in controlling microbiological growth in white water paper mill systems. The required dosages will vary with the degree of microbiological and process contamination present. Depending on the specific requirements of the system, sodium chlorite should be applied continuously or intermittently through a chlorine dioxide generating system to achieve a chlorine dioxide residual concentration between 0.1 and 5.0 ppm. Intermittent treatments should be repeated as often as necessary to maintain control.

### **Directions for Use in Controlling Microbial Population in Poultry Processing Water**

ClO<sub>2</sub> generated from this product may be used as an antimicrobial agent in water used in poultry processing, provided that the residual concentration of chlorine dioxide does not exceed 3 ppm, as determined by an appropriate method in accordance with 21CFR§173.300.

For treatment of poultry chill water, apply this product as necessary through a ClO<sub>2</sub> generation system to maintain a residual concentration of up to 3 ppm.

### **Bacterial Control in Oil Wells and Petroleum Systems**

ClO<sub>2</sub> is effective in the remediation of bacterial and sulfide contamination commonly found in oilfield production, injection and disposal fluids. The required dosages will vary with process conditions. ClO<sub>2</sub> may be applied either continuously or intermittently to oil well production water as it is separated from the oil, and before it is re-injected into the well.

For continuous feeds, ClO<sub>2</sub> may be applied at dosages slightly higher than sulfide's oxidative demand as determined by a demand study. For intermittent treatment, chlorine dioxide should be applied at a shock dosage of 200-3000 ppm.

**FOR USE ONLY WITH PURELINE®TREATMENT SYSTEMS FOR GENERATING CHLORINE DIOXIDE GAS TO APPLY AS A FUMIGANT to inhibit odor causing bacteria and odor causing microorganisms, and TO CONTROL MOLD AND MILDEW ON HARD, NON-POROUS AND POROUS SURFACES IN/ON BUILDINGS AND THEIR CONTENTS**

### **PERSONAL PROTECTIVE EQUIPMENT (PPE)**

Handlers/applicators must wear:

- Long sleeve shirt and long pants
- Shoes plus socks
- Full face protective respirator using cartridges for chlorine dioxide gas, when concentrations are at or below 5.0 ppm. Use NIOSH/MSHA approval TC-13F-314 Low Pressure Self Contained SCBA Respirator for gas concentrations above 5.0 ppm.
- Waterproof gloves

### **OVERALL APPROACH TO FUMIGATION AND REMEDIATION**

The objective of ClO<sub>2</sub> fumigation is to effectively treat mold and mildew contamination, and odor causing bacteria and microorganisms present within buildings under operating conditions that protect site workers, the surrounding community and the environment.

Each fumigated building or subpart thereof is properly tented or sealed. During fumigation, operational parameters are monitored at an appropriate number of co-located ClO<sub>2</sub> gas sampling points. At the end of fumigation, the addition of ClO<sub>2</sub> gas is terminated and natural decay of the gas within the building begins. The building is aired out for the final stage. Building decay or ClO<sub>2</sub> removal continues until such time that ClO<sub>2</sub> concentration levels at all monitoring points have fallen below the Occupational Safety and Health Administration (OSHA) eight-hour time-weighted average (TWA) permissible exposure level (PEL) of 0.1 ppm, at which time the building is re-entered by fumigation personnel.

The user of this product shall develop a site-specific Safety Plan of Action (SPA) that follows these label instructions and takes into account site-specific information such as the size of the structure, its contents, condition, etc.

### **SPECIFIC USE INSTRUCTIONS**

#### **Site Preparation**

To the extent feasible, remove debris, non-reusable items and water-soaked materials. Eliminate any sources of water (e.g. roof leaks, damaged plumbing, etc.) that may contribute to further water damage and/or mold and/or bacteria growth. Open any enclosed spaces to allow maximum exposure to the ClO<sub>2</sub> gas during fumigation.

**Building Containment**

Tent the building undergoing fumigation completely with a material proven to be impervious to ClO<sub>2</sub> gas, or effectively seal the building through utilization of sealing materials such as tape, caulking, etc. in all external cracks, crevices, etc. through which ClO<sub>2</sub> might otherwise escape during fumigation.

**Negative Air Pressure**

Contain ClO<sub>2</sub> gas in the building through use of a negative air pressure system to maintain a slight negative pressure on the internal walls and ceiling of the building at all times.

Pause the fumigation process immediately should ClO<sub>2</sub> breakthrough be observed at any time outside the contained area until the cause of breakthrough is ascertained and corrective measures are implemented as necessary.

**Chlorine Dioxide Generation**

Generate ClO<sub>2</sub> in a ClO<sub>2</sub> generation system that produces ClO<sub>2</sub> gas through the use of an electrolytic generation system. The system reacts, PureVista Sodium Chlorite solution in electrolytic cells producing ClO<sub>2</sub>. Follow the label directions of that product. The ClO<sub>2</sub> gas generated will be pumped from the machine to the building.

**Chlorine Dioxide Removal**

At the conclusion of fumigation, allow residual ClO<sub>2</sub> gas remaining in the building to decay naturally, or if quicker removal of ClO<sub>2</sub> is desired, allow fresh air to enter building.

**Chemical Storage**

Store chemicals in drums, (5, 30 or 55 gal) depending on the size of the building being fumigated. Store all precursor and neutralization chemicals within secondary containment areas.

**Process Wastewater**

Store wastewater generated by the fumigation process temporarily in a dedicated on-site storage tank. Collect and analyze representative samples of the wastewater for purposes of waste profiling. If the wastewater is determined to be non-hazardous, dispose of into the sanitary sewer system if allowed by the local publicly owned treatment works. Otherwise, send off site to a permitted non-hazardous wastewater treatment facility.

**Ancillary Equipment**

Provide standby electrical generation power to provide power to critical fumigation systems should utility power to a fumigation site be interrupted at any time.

**Equipment Testing**

Test all key fumigation system components as they are installed to ensure that all subsystems will operate as designed.

Before commencing the fumigation, conduct a low-level “pulse” test in which all subsystems are simultaneously challenged as if it were the actual fumigation, with the exception that

significantly lower ClO<sub>2</sub> concentration levels are used (i.e., 200 to 500 ppm) than those used during the actual fumigation process and ClO<sub>2</sub> is introduced into the building for a much shorter duration (i.e., 15-30 minutes). Design and conduct the test such that all elements that support the fumigation are proven functional, operational and effective.

**Fumigation Operation Sequencing**

Perform fumigation activities in the following operational sequence to ensure safety and efficacy of the process.

Task Number	Task Description
1	Verify spill containment supplies are in place
2	Verify necessary chemical inventory is in place
3	Verify acceptable meteorological conditions exist
4	Conduct pre-fumigation safety meeting
5	Verify Emergency Response Team is in place
6	Verify Operations Team is in place
7	Confirm all personnel are out of building
8	Initial ClO <sub>2</sub> generation
9	Initiate ClO <sub>2</sub> concentration “ramp-up”
10	Initiate internal and external ClO <sub>2</sub> gas sampling
11	Achieve minimum desired ClO <sub>2</sub> concentration to start CT clock
12	Maintain ClO <sub>2</sub> concentration above target level
13	Terminate ClO <sub>2</sub> generation
14	Terminate gas sampling when ClO <sub>2</sub> <0.1 ppm
15	Conduct building inspection entry

**Temperature Monitoring**

Monitor temperature at an appropriate number of co-located building locations through use of HOBO® U12-011 TEMP/RH Data Loggers. The instrument has a measuring range of -4 to 158°F with an accuracy of ±0.63°F. Take measurement of 5-minute intervals during the conditioning, fumigation and aeration phases of the process. Obtain a local readout of temperature readings by connecting the data loggers to a PC via USB cable from the various monitoring locations. Log data in the monitor during fumigation and download for manipulation following fumigation.

**Chlorine Dioxide Monitoring**

Monitor ClO<sub>2</sub> concentration levels by means of a composite sample collection system constructed of ¼-in inside diameter high-density polyethylene (HDPE) tubing. HDPE tubing has been shown to be non-reactive with ClO<sub>2</sub>. Run the tubing from an appropriate number of co-located monitoring locations inside the building to a central sampling manifold located outside the building. Have knowledgeable air-sampling technicians collect samples and deliver them to an on-site gas laboratory for analysis.



**USE PRECAUTIONS**

Conduct fumigation operations in a manner that protects both workers and members of the general public from exposure to fumigation process chemicals through implementation of specifically designed safety measures.

**Worker Safety****Site-Specific Health and Safety Plan**

Develop a Site-Specific Health and Safety Plan (HASP) to establish safe working and operating conditions for both fumigation preparation activities and fumigation operations. Prepare the HASP in accordance with applicable OSHA guidelines and regulations.

**Health and Safety Training**

Establish minimum health and safety training requirements for all personnel involved in fumigation operations. Do not allow workers to participate in, or supervise field activities until they have been trained to a level required by their job function and responsibility. Cover appropriate elements during initial training including: (1) names of personnel and alternates responsible for site safety and health; (2) safety, health and other hazards present on site; (3) proper use, care and maintenance of PPE; (4) work practices by which the worker can minimize risks from hazards; (5) safe use of engineering controls and equipment on site; (6) medical surveillance requirements, including recognition of symptoms and signs which might indicate over exposure to hazards; and (7) contents of the site HASP.

In addition to initial training, provide Hazard Communication (HAZCOM) and Respiratory Protection training. In HAZCOM training, provide information on the possible types of biological or chemical agent contamination present within a facility, as well as the chemical substances stored and generated on-site, including physical properties, fire and explosion data, reactivity data, health hazard data, emergency and first aid procedures, spill and leak procedures, etc. In Respiratory Protection training, provide information about the proper selection, fitting, use, care and maintenance of respirators, with an emphasis on specific respirators worn if responding to an emergency involving either a chemical release or a fire. Provide basic First Aid and CPR training to all personnel who might be involved in a response to a medical emergency on-site.

Provide an orientation briefing to individuals who are on-site for short periods of time performing limited tasks as either visitors or contractors, including an overview of the site-specific HASP and a discussion of the facility layout. Also make these individuals aware of evacuation notification procedures and alert them to the pre-determined emergency response Rally Points or places of safe refuge where they should report in the event of an emergency.

**Post-Fumigation Building Re-Entry Requirements**

Establish a post-fumigation building re-entry requirements that prohibits workers from re-entering the building in OSHA Level D protective equipment until such time that it has been demonstrated that the concentration of ClO<sub>2</sub> at all monitoring points has fallen to a level below the applicable OSHA TWA PEL standard at 0.1 ppm.

## **Public Safety**

### **Site Emergency Planning**

Conduct meetings on-site periodically to discuss project roles and responsibilities, site communication procedures, hazardous materials storage issues and potential hazards. The goal of these meetings should be to gain consensus with regard to roles and responsibilities during potential emergency events.

### **Site Security**

Establish site security measures to prevent unauthorized entry to the site and secure the site perimeter during on-going fumigation preparation activities. Include site entry control procedures, personnel responsibilities, facility lighting requirements and emergency communication procedures.

### **Specialized Training**

Provide specialized training to prepare site personnel to respond to a variety of potential emergency event scenarios that might occur during fumigation preparation activities or during the fumigation itself including a fire inside or outside the building, chemical spill and/or a release of a significant amount of the fumigant to the atmosphere during fumigation.

### **Emergency Response Supplies and PPE**

Stage appropriate spill response supplies suitable for cleanup of hazardous materials being stored on-site in close proximity to the stored materials. Also stage a variety of PPE, including Self-Contained Breathing Apparatus, at appropriate locations for use in an emergency response to a potential hazardous material release.

### **Site Communications**

Assign two-way radios to key personnel at the site. Two-way radios facilitate effective communication among all parties at the worksite and allow for careful monitoring of work tasks by individuals responsible for initiating and performing emergency response activities. Use separate channels for work being performed inside and outside the building so that individuals monitoring the work can effectively monitor tasks being performed in both locations simultaneously.

### **Surface and Ground Water Protection**

Protect surface and ground water supplies by containing any chemical release that might occur within a secondary containment area and respond with absorbents and neutralizing agents stored on-site. Place impervious spill mats in close proximity to storm drains in the vicinity of chemical storage areas where necessary. Deploy these mats immediately to cover drainage catch basins in the event of a chemical release from a primary storage vessel.

### **Site Evacuation Contingency Plan**

Develop specific procedures to respond to a potential emergency response scenarios that might occur during fumigation preparation operations or the fumigation itself. Identify a Site Safety and Health Officer (SSHO) who is responsible for determining when on-site personnel should

“Shelter-In-Place” or evacuate the site should an emergency evacuation of the site be contemplated.

### **Fire Response**

Place fire extinguishers throughout the site, both inside and outside the building, for use in fighting an incipient-stage fire. Also, activate existing operational building fire suppression systems in the event of a fire inside the building.

In the event that a fire is detected either inside or outside the building, implement a series of predetermined response measures including the following:

- The individual who identifies the fire immediately alerts their Supervisor, the SSHO and the Emergency Response Coordinator (ERC) for the site.
- If the individual who identified the existence of the fire can immediately extinguish it with a local fire extinguisher without endangering themselves or others, they extinguish the fire while the ERC is assembling the on-site Emergency Response Team (ERT).
- The on-site ERT dons proper PPE and initiates emergency response activities. The ERT is provided with PPE as warranted by the nature of the fire.
- Potentially affected electrical systems are deactivated as soon as possible, if appropriate, to prevent a spread of the fire.
- After donning appropriate PPE, the source and nature of the fire are investigated. If the fire is determined to be in its incipient stage, the ERT attempts to distinguish the fire. If a fire either inside or outside the building is determined to be beyond the incipient stage, the SSHO or ERC immediately requests the assistance of external emergency fire response authorities.
- The SSHO notifies all site workers to cease their activities, shutdown all process equipment and report to a designated location so that a “headcount” may be taken to account for all personnel.
- The SSHO determines if a site evacuation is necessary. If instructed to evacuate, personnel proceed to one of the designated Rally Points or to an off-site place of safe refuge.
- If the fire emergency also involves a release of hazardous materials, the release is addressed in accordance with the response measures outlined in the Plan.
- If necessary, based on the size and scope of the fire, the SSHO notifies appropriate external authorities and provides them with appropriate information about the fire.

**Chemical Spill Response**

Locate all storage vessels within secondary containment areas. Store incompatible materials within separate secondary containments. Place impervious spill mats near all storm water catch basins in the vicinity of chemical storage areas where necessary to prevent inadvertent discharge of chemicals through the storm drain sewer system in the event of a leak or other accidental release.

In the event that a hazardous material leak from a storage vessel or associated piping is detected, implement a series of predetermined response measures including the following:

- The individual who identified the release immediately alerts their Supervisor, the SSHO and the ERC for the site.
- The ERC assembles the on-site ERT, who don proper PPE and initial response activities. The ERT is provided with PPE as warranted by the nature of the hazardous material release.
- After donning appropriate PPE, the source and nature of the release are investigated and the release is stopped at its source (if safe to do so). Spill mats are placed over storm drain catch basins to prevent discharge of spilled material to the storm water drainage system and/or to ground water where necessary. Any sources of ignition present in the area are also eliminated.
- If any personnel have been affected by the release, they are evacuated from the area of impact as soon as possible and first aid administered as appropriate. If necessary, external medical emergency response authorities are summoned.
- Only members of the ERT involved in overseeing or performing emergency operations are allowed within the designated hazard area. If possible, the area is roped or otherwise blocked off. If a release cannot be immediately contained within a containment area, an isolation area is established around the spill, using sorbent and neutralizing materials.
- In the event a release breaches onsite secondary containment, the leading edge around the spill is contained with neutralizing agents and/or absorbents or other appropriate materials. Pumps may be employed to transfer spilled liquids to on-site waste tanks and for the removal of any liquid that may congregate at low points or depressions on surfaces.
- If the total amount of hazardous material released is less than the equivalent volume of 300 gallons, spill response materials and equipment located on-site are utilized to contain and collect the waste.
- Collected waste material is stored in secure storage containers for future disposal.
- If the amount of hazardous material released is greater than that which can be contained and collected for disposal by the on-site ERT, arrangements are made with an external

contractor to respond to the site with adequate supplies and equipment to perform necessary clean-up operations.

- The SSHO determines if a site evacuation is necessary. If instructed to evacuate, personnel proceed to one of the designated Rally Points or to an off-site place of safe refuge.
- The SSHO notifies external emergency response authorities if deemed necessary by the size and scope of the release. External emergency response authorities will take appropriate actions if required to safeguard the surrounding community.
- Following the initial spill response, provisions are made to conduct a full environmental assessment to delineate impacted areas. Hazardous materials generated from a release are disposed of off-site in accordance with applicable laws and regulations.

### **Building ClO<sub>2</sub> Leak Detection and Repair**

Perform ambient air monitoring during both the low-level “pulse” test and the actual fumigation to identify leaks of ClO<sub>2</sub> gas from the building so that appropriate action may be taken in the event a leak is detected. Whenever possible, repair building leaks immediately using appropriate patching materials.

Dispatch teams of trained employees to the immediate perimeters of the building, and to the rooftop where appropriate, as soon as ClO<sub>2</sub> liquid begins flowing from the generator to the emitters. Initially assign at least two teams to building monitoring duties. Each team should consist of at least two individuals, each having had sufficient previous experience with ClO<sub>2</sub> to readily identify its characteristic odor in air.

Equip each monitoring team with a calibrated Industrial Scientific Gas Monitor with a ClO<sub>2</sub> sensor capable of detecting ClO<sub>2</sub> gas and reporting TWA readings for purpose of comparison with OSHA’s eight-hour TWA PEL and the American Conference of Governmental Industrial Hygienists (ACGIH) recommended 15-minute TWA Short Term Exposure Limit (STEL) of 0.3 ppm and the OSHA PEL is 0.1 ppm. Because the human olfactory response to ClO<sub>2</sub> has been shown through experience to be far more sensitive than any commercially-available hand-held monitoring technology, the primary objective of using the monitor is not to identify the presence of ClO<sub>2</sub> emissions, but rather to make sure that team members are not being exposed to concentrations of the gas that are in excess of prescribed standards and recommended threshold levels while they are performing their ambient monitoring and repair assignments. In the event that ClO<sub>2</sub> readings above the 0.1 ppm eight-hour OSHA standard or the 0.3 ppm 15-minute ACGIH STEL are registered by a monitor during fumigation, the team identifying the reading should leave the area where the elevated reading was identified and don appropriate respiratory protection before continuing work in the area. A full-face negative pressure respirator with combination P-100 filter/acid gas cartridges should be used for ClO<sub>2</sub> concentrations above an applicable exposure standard but less than 5 ppm. A self-contained breathing apparatus and appropriate skin protection must be used in any atmosphere containing more than 5 ppm ClO<sub>2</sub>.

Identify potential sources of ClO<sub>2</sub> emissions from the top and sides of the building and immediately perform any repairs and/or modifications necessary to eliminate or reduce emissions to the greatest degree possible. Also, communicate monitoring findings to the Project Manager so that operational changes and/or shutdown of fumigation operations can be initiated immediately in the event that a leak cannot be effectively patched in a reasonable period of time. When a building leak cannot be quickly and effectively repaired, adjust operational parameters as necessary to mitigate the leak or terminate the fumigation process to eliminate exposure risk to the surrounding community.

### **Adjustment of Operational Parameters**

In the event a ClO<sub>2</sub> leak cannot be promptly repaired through use of available patching materials, adjust fumigation operating parameters, either temporarily or for the remaining duration of the fumigation, to prevent additional gas from escaping the building into the surrounding environment.

Increase the NAU fan speed upwards to increase the negative pressure level on the internal walls and ceiling of the building and/or decrease the target ClO<sub>2</sub> concentration level being applied to the building to lower the concentration of ClO<sub>2</sub> in air escaping through the leak.

### **Termination of Fumigation Process**

Should it be determined that a significant ClO<sub>2</sub> leak cannot be effectively repaired, nor can the magnitude of the leak be substantially mitigated through adjustment of operational parameters, terminate the fumigation process and take necessary measures to remove residual gas from the building.

### **Post Fumigation Repair and Cleaning**

Remove any remaining debris, non-reusable items and water soaked materials. Replace, repair or clean damaged areas of structure as needed. For additional information and guidance on mold remediation, see EPA's website at [www.epa.gov/mold](http://www.epa.gov/mold).

{optional text for labeled ClO<sub>2</sub>Stix}

[ClO<sub>2</sub>Stix are water-soluble sticks (305 g/each) that release chlorine dioxide when PureVista is activated with water down-hole in wells. See SDS for additional information.

Instructions: Leave in [vac pack][paper tube] until ready to use. Open package and flush entire stick down-hole.

Note: Keep out of reach of children. Always wear safety goggles and chemical resistant gloves when handling ClO<sub>2</sub>Stix. See carton label for instructions and additional precautionary statements. Store in a cool, dry place.]

Contents: 2 ClO<sub>2</sub>Stix]

**STORAGE AND DISPOSAL**

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

Pesticide Storage: Store this product in a cool, dry area from direct sunlight and heat to avoid deterioration. Do not contaminate with incompatible chemicals such as organic matter, oxidizers, reducing agents, chemicals, soaps, solvents, acids, paint products or combustible materials. Do not expose to moisture, which will result in a fire hazard. In case of spill, remove all sources of ignition. Wear proper PPE. Isolate the recovery container outside or in a well-ventilated area and hold for proper waste disposal. Do not return spill materials into the original container but place in a clean container and isolate outside or in well-ventilated areas. Flood any residual area with large quantities of water. Products or rinsates that cannot be used should be diluted with water before disposal in a sanitary sewer.

Pesticide Disposal: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to the label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the EPA Regional Office for guidance.

Container Handling: [For rigid non-refillable container less than or equal to 5 gallons]

Container Handling: Non-refillable rigid container. Do not re-use or refill this container. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling, or reconditioning if available, or puncture and dispose of in trash or in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay away of smoke.

Container Handling: [For rigid, non-refillable container greater than 5 gallons]

Container Handling: Non-refillable rigid container. Do not re-use or refill this container. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Then offer for recycling or reconditioning, or puncture and dispose of in trash or in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**WARRANTY**

**Sterling Bridge, LLC** warrants that this product complies with the specifications expressed on the label. To the extent consistent with applicable law, **Sterling Bridge, LLC** makes no other warranties, and disclaims all other warranties, express or implied, including but not limited to warranties of merchantability and fitness for the intended purpose.