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## Frequently Asked Questions for Produce Applications Selectrocide™12G and Selectrocide™A-15 Selective Micro Technologies

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Read product label and technical bulletin—this information is intended only to explain instructions in the label and technical bulletin and is not a substitute. It is a violation of federal law to use this product in a manner inconsistent with the labeling.

### *What is Selectrocide?*

- Selectrocide is a nearly-pure (greater than 99%) solution of chlorine dioxide in water. Selectrocide is produced by a patented micro-reactor sachet, which is designed to generate a specific amount of chlorine dioxide when water is added. Selective Micro® incorporates the micro-reactor into simple-to-use end products.

### *How do I use Selective Micro's products?*

- Introduce Selective Micro's chlorine dioxide solution into water to wash fruits and vegetables at the concentrations and for the contact times specified on the label and technical bulletin. The treatment of the fruits and vegetables should be followed by a potable water rinse or by blanching, cooking or canning.

Selective Micro's Selectrocide™ products come in the form of a packaged sachet. Simply open the package and add the sachet directly to the desired volume of water. After generation, dilute as required.

### *Are there other uses for the Selective Micro family of Selectrocide™ products?*

In addition to Selectrocide™ A-15 for application to fresh-cut fruits and vegetables, Selective Micro Technologies offers products for sanitizing and disinfecting hard, non-porous surfaces and for treating raw agricultural products in food processing facilities. These products, Selectrocide™ 12G for instance, bear EPA registration numbers. Activating/generating and diluting procedures follow the same protocols as those recommended for the A-15.

### *Why use Selective Micro's products over alternative treatments?*

The Selectrocide™ family of products offers a one-supplier solution to enhancing the quality and shelf life of produce.

Selectrocide™ A-15 offers huge advantages to fresh-cut producers:

- Reduces spoilage microbes on processed fruits and vegetables
- Enhances quality—taste, appearance, texture
- Extends shelf life of fresh-cut produce
- Superior efficacy at low concentrations
- Neutral pH
- Compatible with and non-corrosive to processing equipment at recommended use concentrations

Other products from the Selective Micro product line, the EPA-registered Selectrocide™ 12G for instance, are appropriate for general-purpose antimicrobial, disinfecting, and sanitizing applications on hard, non-porous surfaces throughout a fresh-cut processing facility. These would include cutting boards, knives, floors, walls, and drains, among other applications. The 12G is also registered to reduce spoilage microorganisms on raw agricultural commodities (RACs) in food processing facilities.

The products are an effective alternative to other antimicrobial and washing agents on the market today. Chlorine dioxide has a higher oxidation capacity than bleach, ozone, or peroxide. In other words, chlorine dioxide has more capacity to remove organic matter. In addition, because it is more selective to key organics, and less “aggressive” in oxidizing, at the recommended application concentrations, it is not corrosive to system components prone to oxidation.

### *Has chlorine dioxide been used before?*

- Chlorine dioxide has been recognized as an effective biocide for decades, and is used in a range of hygiene-related applications worldwide. Municipal water systems, for example, have used chlorine dioxide to treat drinking water for over 50 years.

### *Why couldn't I use chlorine dioxide before?*

- Prior to the introduction of Selectrocide in 1999, complicated, expensive mechanical generators or relatively impure “stabilized” solutions were the only ways to make chlorine dioxide. Shipping chlorine dioxide in non-frozen forms was and is prohibited. The expense of complex capital equipment, the corrosiveness of the lower-quality “stabilized” solutions, and the shipping taboos inhibited the development of many professional and consumer point-of-use applications. Now, using Selectrocide, nearly pure (99% +) chlorine dioxide can be generated at the point-of use—without capital-intensive equipment.

*I thought I used chlorine dioxide before, but it was “stabilized” chlorine dioxide, not “generated” chlorine dioxide. What is the difference?*

- The term “stabilized” chlorine dioxide is a misnomer. Products labeled as such are proprietary formulations incorporating sodium chlorite and “activators” that are acids. Conversion rates for chlorine dioxide run from 1 to 10%, and are typically proportional to the amount and strength of the acid added to the sodium chlorite solution. For instance, adding citric acid would make the solution more acidic than adding lactic acid. These solutions are commonly referred to as “acidified-sodium chlorite” solutions. This name is more accurate and appropriate, because chlorine dioxide only accounts for a small portion of the solution. Acidified-sodium chlorite solutions do not separate out reaction byproducts, so the majority of constituents in the solution are contaminants, not chlorine dioxide. For instance, a typical “stabilized”-chlorine dioxide solution contains 3.2 ppm chlorine dioxide, 3 ppm chlorate, and 134 ppm chlorite, at pH 3.04.
- Generated-chlorine dioxide solutions go through two steps - the generation of the chlorine dioxide and its separation from the reaction byproducts. As of now, this type of chlorine dioxide solution can only be made using mechanical generators—or Selective Micro Technologies’ proprietary micro-reactor, found in all Selective Micro products. Chlorine dioxide solutions made these ways are exceedingly pure and conversion rates are easily above 80%. A 500 ppm generated-chlorine dioxide solution may contain only 0.60 ppm chlorite and 0.20 ppm chlorate (the detection limits for these two ions), at neutral pH.

*What is the shelf life of Selectocide?*

- In the unopened package, Selective Micro’ products have a shelf life of two years. Once the product is activated, use Selective Micro’s solution within 15 days. Store activated solution according to instructions on label (cool place, out of direct sunlight, apart from food).

*Will Selective Micro damage my equipment?*

- Compatibility testing at 5 ppm and 100 ppm has demonstrated that Selective Micro’s products in general, and Selectocide™ A-15 for fresh-cut applications in particular, are compatible with most metals and plastics and should not damage operative equipment reservoirs or water lines. At typical use concentrations, Selective Micro does not have detrimental effects on most materials, excluding some elastomers. Compatibility of specific materials should be tested prior to extended contact. More information regarding compatibility can be found at [www.selectivemicro.com](http://www.selectivemicro.com).

*Is there a test for concentration and rinse-out of Selective Micro’s chlorine dioxide?*

- Chlorine dioxide is easily detectable. For quick on-site verification, Selective Micro offers test strips that quickly and accurately detect concentration and the rinse-out threshold.

*Are Selective Micro's products toxic?*

Selective Micro Technologies has arranged for independent toxicity testing of the aqueous solution of chlorine dioxide its micro-reactors produce. Some of these tests and their results include:

- Dermal Sensitivity: Protocol No. P328 EPA (FIFRA) and FDA. The activated solution is not considered to be a contact sensitizer at 700 ppm.
- Acute Oral Toxicity: Protocol No. P320 EPA (FIFRA) and FDA. The single dose acute oral LD<sub>50</sub> of the activated solution is greater than 5,000 mg/kg of bodyweight in male and female rats. The product is considered Category IV, the least toxic of the four categories.
- Acute Inhalation Toxicity: Protocol No. P330 EPA (FIFRA). The LC<sub>50</sub> of the activated solution is greater than 2.07 mg/L in male and female rats.

Product Safety Laboratories, Dayton, New Jersey performed these tests. More information can be found at [www.selectivemicro.com](http://www.selectivemicro.com).

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