

# Technical Communication

## Anthium™ Dioxide – Disinfection FAQ

**Prepared by:** P.Garrison, C.Windom, and S.Glynn

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**Objective:** Provide guidance for the application of Anthium™ Dioxide for disinfection.

**Background:** Anthium™ Dioxide is a broad-spectrum EPA registered biocide. Always follow the approved EPA label instructions.

**Safety:** An SDS has been provided for Anthium™ Dioxide. When preparing solutions or applying use solutions containing chlorine dioxide, ClO<sub>2</sub>, use PPE Level C which includes a toxic gas respirator rated for Acid Gases for atmospheres under 5 ppm, v ClO<sub>2</sub>. More information can be found at <https://chemm.nlm.gov/ppe.htm>

### Frequently Asked Questions:

**1. Can a customer break down the bulk package of Anthium™ Dioxide for resale?**

No, they cannot repackage Anthium™ Dioxide to a smaller package unless they are:

- An EPA registered pesticide manufacturing site, and
- In an agreement with International Dioxide for repackaging

Typically, we do not allow repackaging of this type. We have at times with a contract in place allowed a customer to private label as an EPA sub-registered product. But, if the package is not simply just relabeled, they must be an EPA registered site to break it to a smaller package. In contrast, if the customer is not reselling the product but breaking it to a smaller package for application from a service container, then they must only apply a simple label identifying the product, emergency number, and carry the SDS in the truck.

**2. Can the customer save prepared use solution and move it from one job to the next? How long can they store it?**

The use solution maximum concentration is 800 ppm ClO<sub>2</sub>. The product application guidance is to make up the solution volume necessary at each job site and dispose of remaining use solution. Some EPA label application instructions require the use of freshly prepared solutions and prohibit reuse of prepared solutions. See the specific language of the approved application instructions on the EPA label. However, if use of freshly prepared solution is not required by label instructions, to transport use solution from one job site to another the remaining solution should be placed in a smaller container that is liquid full or with minimal headspace and placed in a cool temperature-controlled environment.

ClO<sub>2</sub> will leave solution and accumulate in the available headspace with agitation during transport. Transporting use solution could lower the concentration of the solution below the effective concentration required for disinfection. We do not recommend storing use solution.



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### 3. Does the solution pose a hazard to plants?

The impact to vegetation will depend on how much is washed off following application and how frequently the solution is applied. The use solution is a disinfecting solution. Depending on how the solution is made the pH may be low and it may cause browning of the foliage if left to dry. We recommend rinsing foliage following 15-minute contact time to minimize risk of browning. There may be some phytotoxicity from salts in the use solution with large quantities and frequent application.

### 4. Can I use this on soft surfaces such as fabrics? Will the cleaning solution bleach carpet?

Anthium™ Dioxide disinfecting solution is not labeled for use on soft or porous surfaces. Concentrated Anthium™ Dioxide solution will bleach fabric. Dilute and activated solutions may cause fading of fabrics depending on the acid used to make the solution, amount, concentration of solutions, repeat contact, and type of dyes and/or pigments in the fabric.

### 5. Can I generate the disinfecting solution at my base and carry it to a work site?

We recommend generating the use solution at the job site. However, if you are the Applicator, you can generate the use solution in a service container and carry it to the job site. ClO<sub>2</sub> will leave solution with agitation during transport. It is important to minimize headspace in the service container and keep the container sealed and in a cool environment.

### 6. How do I dispose of unused cleaning solution?

Follow label instructions for disposal of pesticide and containers. Refer to regulations for local municipality. It is best to prepare an appropriate amount of use solution and use the solution prepared. Depending on local regulation, disinfection of toilet facilities and drains followed by water rinse is appropriate.

### 7. What is shelf life of base solution?

Anthium™ Dioxide has a 15-month shelf life.

### 8. Can I dilute with more water?

No. You must follow exactly the label instruction for the specific application. It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

### 9. Can you send the product in smaller packaging?

We do not currently offer smaller packaging.

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**10. Can I break the product into smaller containers for application?**

If you are an Applicator with a simple label, SDS, and an emergency number, you can activate any quantity required utilizing the formulation 1 part Anthium™ Dioxide, 5 part 10% acid activator, wait 15 minutes, dilute with 56 parts water.

**11. Can I use product in a restaurant?**

There are use instructions on the label for food-contact surface sanitization and for uses in food-handling establishments. Instructions vary by specific application within this category. Refer to the label instructions. (In general, prepare the solution per instruction, preclean, spray use solution, maintain wet surface 15 minutes, and wipe down with damp cloth.) Control access during application so as not to expose customers or employees. Wear proper PPE for the application.

**12. What is the EPA number for Anthium™ Dioxide?**

9150-2

**13. What is the pH of the use solution? Does it vary by choice of acid?**

Per Use Directions (1 part AD to 5 parts 10% acid, 15 minutes, dilute with 56 parts water)		
Acid	pH Final	ClO <sub>2</sub>
Citric	2.6	119
Phosphoric	2.06	314
Sulfuric	1.62	579
Hydrochloric	1.6	784

**14. What is the ClO<sub>2</sub> concentration after 15 minutes upon dilution with different acids? Do you have data waiting longer than 15 minutes before dilution?**

We currently do not have data beyond 15 minutes activation.

**15. Can you summarize activation instructions?**

- 1 Add Part Anthium™ Dioxide
- 5 Add Parts 10% Acid
- Wait 15 Minutes
- 56 Add Parts Water
- 62 Parts Total by Volume

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### 16. Can I use more concentrated acid solutions to make up the activator?

The EPA approved instructions require use of 10% by weight acid to achieve the proper use solution concentrations. Use of more concentrated acids will result in differences in final concentrations. However, you can procure more concentrated acids and dilute them to the proper 10% concentration prior to making the use solution.

### 17. How do I prepare 10% Citric Acid from powder?

Several resources are available for instructions on preparing citric acid solutions from powder. RPC provides a dilution table for their citric acid material: <https://www.rpc-rabrenco.com/assets/documents/Dilution.pdf>

(5 gal. of 10% citric acid solution requires 1975 g of Citric Acid and 4.7 gal of water)

### 18. Any other preparation or use guidance?

Prepare the use solution in a well-ventilated area with proper PPE as described above for handling acids, oxidizers, and acid gasses. As 56 parts of water is added some ClO<sub>2</sub> gas will be displaced out of the preparation container. When transferring use solutions to a use container some ClO<sub>2</sub> will be displaced out of the use container. Transfer and use the solution in a well-ventilated area. Acid gas respirators are only appropriate for atmospheres under 5 ppm<sub>v</sub> ClO<sub>2</sub>. Do not allow any spills or drips of Anthium™ Dioxide solution to dry. Do not use flammable towels or absorbents to soak up spills. Contain and recover spilled material and wash residues with water to prevent drying. Refer to SDS and PUSH documentation as well as other safety literature provided during our First Order Procedure execution.

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