

# Chlorine Dioxide (ClO<sub>2</sub>) for Decon Use

## CHLORINE DIOXIDE (ClO<sub>2</sub>) GAS SACHET PRODUCES 1000 mg ClO<sub>2</sub> GAS IN 1 HOUR

### DIRECTIONS:

1. Remove Sachet From Outer Foil Wrap.
2. Pull Sachet Ends To Remove Spine Clip and Remove Poly Bag.
3. Shake Sachet Vigorously To Mix Two Powder Media Components
4. Liquid Component Will Discharge During Shaking.
5. Pool Media at One End of Sachet.
6. Place Sachet in Vessel.



### Recommended Use:

- 1 sachet / 1 liter liquid volume
- 1 sachet / 70 liter gas volume

### Caution:

Do not open. Do not eat. Inhaling fumes may cause respiratory irritation. In case of skin or eye contact, flush well with water; avoid ignition sources, heat and water.

### Hazard:

In air do not use in enclosed volumes less than 5 liters; gas may become unstable.

Product contains oxidizing substance requiring shipment as HAZMAT by USDOT.

Sodium Chlorite : Oxidizer 5.1, UN 1496, PG II  
CASS NO: 7785-19-2

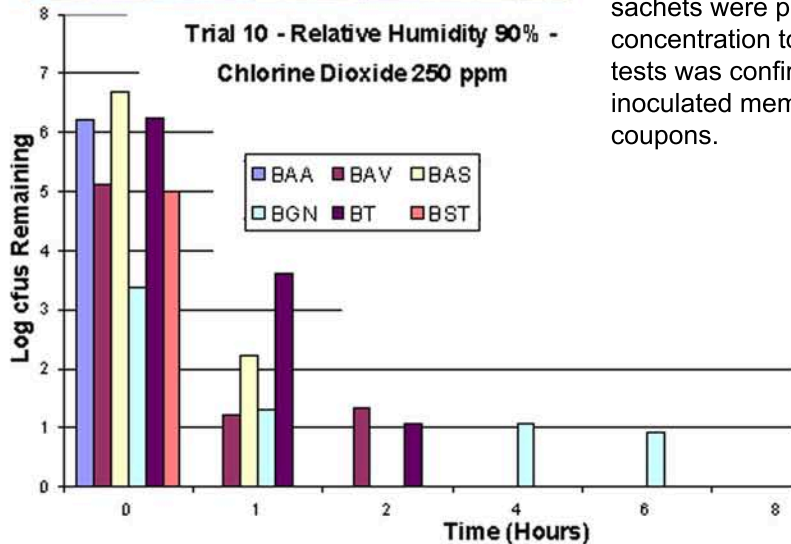


### The advantages of ClO<sub>2</sub> include:

- Well documented as a disinfectant for spores, vegetative bacteria and viruses.
- Rapid natural breakdown of ClO<sub>2</sub> eases its removal after application.
- Very soluble and stable in water.
- Effective on porous and non-porous surfaces.
- Can be commercially generated by several methods.
- Leaves no residue.
- Odor can be detected by humans at a concentration (0.1 ppm) equal to the PEL.
- Chlorine dioxide estimated to be 1000 fold more potent than ETO at similar temperature and RH conditions (Jeng and Woodworth, 1990)
- Inactivates Viruses
  - Coxsackie B3, Newcastle disease, poliovirus A, B, and C, Herpes Simplex
  - Dose of 0.08 mg/L ClO<sub>2</sub> = 0.15 mg/L O<sub>3</sub> and 0.25 mg/L Cl<sub>2</sub>
  - ClO<sub>2</sub> reacts with Proteins and Nucleotides
- ClO<sub>2</sub> is Sporicidal
  - More Effective than Cl<sub>2</sub> (Same OTA)
  - Sporicidal activity is concentration, time and RH dependent

ICA TriNova, LLC was contracted to develop a simple and portable chlorine dioxide delivery product for front line decontamination of equipment and clothing. In response to this request, ICA adapted it's Z-Series sachet powder technology to produce sufficient chlorine dioxide for the purpose. As part of the work ICA determined release amounts and time frames to make the technology efficacious for bacillus spores.

Sample sachets were tested in laboratory tests to show the conditions and constraints of chlorine dioxide killing on *B. globigii* spores. Efficacy testing was done on equipment and military clothing. The tests were run in approximately 500 liter rubberized duffle bags. A variety of gear, metal gunstocks, clothing, and radios, were placed in the duffle bags. Three Z-Series release sachets were placed into the duffle bags in order to raise the gas concentration to about 1000 ppm in one hour. Efficacy in the duffle tests was confirmed in three ways: 6 log spore strips, 6 and 7 log inoculated membranes, and 6 log inoculated cloth and metal coupons.



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