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# Chlorine Dioxide for Agricultural Disinfection Instruction

## <Brief Introduction of Chlorine Dioxide Disinfectant>

Chlorine Dioxide has been recommended to the world as class AI disinfectant by WHO. It is a safe and high-efficiency disinfectant for greenhouse and cropland. It can be used in soil sterilization and soil PH adjusting, rapidly killing various pathogenic bacterium and various virus in soil. It can improve the utilization rate of fertilizer and degrade toxic matter at the same time. This product can be applied to greenhouse and cropland soil to effectively prevent plant disease like bacterial wilt and root rot and so on with no harm to the crop.

## <Soil Sterilization>

Soil disinfection should combine with closed greenhouse at high temperature during June to August.

### 1. Flood irrigation:

- Dosage: 5.7kg-7.5kg chlorine dioxide powder/1000m<sup>2</sup>, the amount of irrigation water for 1000m<sup>2</sup> is 30tons
  - Usage: Disinfection concentration is 15-20ppm
- (1) Add 5.7-7.5kg chlorine dioxide powder into 45.6kg to 60kg water, stir well and keep the solution stand for 10 to 15 minutes, we get 10000ppm mother liquid;
  - (2) Pour mother liquid evenly in irrigation water.

### 2. Pour to the land

- Dosage: 5.7kg-7.5kg chlorine dioxide powder/1000m<sup>2</sup>
  - Usage: Disinfection concentration is 150-200ppm
- (1) Add 5.7-7.5kg chlorine dioxide powder into 45.6kg to 60kg water, stir well and keep the solution stand for 10 to 15 minutes, we get 10000ppm mother liquid;
  - (2) Dilute the mother liquid to 150-200mg/L, and use the diluted solution to pour on the land evenly, let the solution infiltrates into the soil for 6-10cm.

### 3. Spraying by sprayer:

- Dosage: 5.7kg-7.5kg chlorine dioxide powder/1000m<sup>2</sup>
  - Usage: Disinfection concentration is 150-200ppm
- (1) Add 5.7-7.5kg chlorine dioxide powder into 45.6kg to 60kg water, stir well and keep the solution stand for 10 to 15 minutes, we get 10000ppm mother liquid;
  - (2) Put 0.225kg-0.3kg mother liquid into sprayer containing 15kg water, stir well and spray the solution directly to the surface of soil, and It's better to spray till the solution infiltrates into the soil for 6-10cm.

### 4. The Fumigation disinfection method is for greenhouse air disinfection and plant surface disinfection:

- Dosage: 0.5kg solution(the concentration is 3000mg/L-5000mg/L)/100m<sup>3</sup>
- Usage: Disinfection concentration is 3000-5000ppm

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- (1) Prepare 3000-5000ppm solution: take 500g/bag chlorine dioxide powder for example: add 500g powder to 8-15kg water, and we get 3000-5000mg/L solution.
  - (2) Put the solution container on high places and close the greenhouse

**Notices in fumigation:**

- The fumigation operation is better done during night
- You can use a fan at the mouth of the container to accelerate volatilization
- Put the solution container on high places, because chlorine dioxide gas is heavier than air.

**<Crop Disease Prevention>**

Mother Liquid Preparation: Add 500g powder/tablet to 50kg water (DO NOT ADD WATER TO POWDER/), stir for 5 to 10 minutes to completely dissolve. This solution is 800mg/L (800ppm). The mother liquid can be diluted and applied according to the following standards:

Disinfection Object	Concentration (mg/L)	Usage
Soaking of Seeds	50-100	Soak the seeds with diluted solution for 5 to 10 minutes. The actual application should be according to seeds' tolerance to ClO <sub>2</sub>
Spray the Crop	30-50	Spray the diluted solution directly to the crop foliage

**<Notes>**

1. This product is hygroscopic, it will deliquesce and lose efficacy when exposed to air. It should be finished at a time when package is open;
  2. Slowly add the powder/tablet to water (DO NOT ADD WATER INTO POWDER/TABLET);
  3. Do not store or transport the products when there are packaging damages; and do not store or transport the products together with acid content; avoid damp;
  4. Store the products in cool and dry places, seal and keep it away from sunlight;
  5. Place the products out the reach of children;
  6. Do not scatter the chlorine dioxide directly to soil, or it will reduce disinfection effect.
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