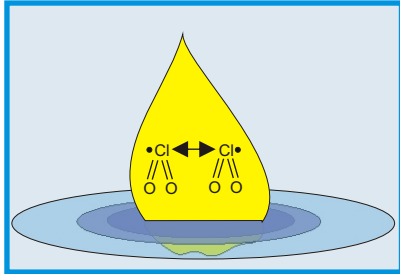


Chlorine Dioxide

Superior Water Disinfectant



- Yellow-orange gas, highly soluble in water
- Sensitive to light, thus produced mainly on-site in generators
- More than 95% produced in the world used as bleaching agent for wood pulp
- Very strong oxidant and disinfectant

- Introduced as a drinking water disinfectant on a large scale in 1956 (Brussels, Belgium)
- Superior to chlorine when operating above pH 7
- Unlike chlorine, does not react with organic substances and ammonia, thus does not produce THMs
- Less corrosive than chlorine
- Superior than chlorine for control of Legionella in hot water tanks
- More effective than chlorine in most circumstances against viruses and bacteria
- Unlike chlorine very effective in destruction of protozoans, including cysts of Giardia and oocysts of Cryptosporidium
- Used in many industrial water treatment applications as biocide in cooling towers, process water and food processing



Components for Generators
 ClO_2 produced out of solutions
 20 l of hydrochloric acid (9%) &
 20 l of sodium chlorite (7.5%)
 Produce 1,050 g of chlorine dioxide

PowerOxide™
Components for Manual Mix
 ClO_2 produced out of dry ingredients
 Chemical yield >90%

PowerOxide™ User Manual

- Read the Material Safety Data Sheet before use.
- Fill tank with 100 L clean water. Water must not be colder than 10°C
- Add Component A (500 g) to tank. Mix until dissolved.
- Add Component B (1105 g) to tank. Stir several times.
- Close tank. Take precaution to minimize gas release and ensure adequate ventilation is present.
- Wait for three (3) hours to ensure completion of reaction.
- Stir solution once with lid closed. Prevent release of ClO_2 gas



Drinking Water Safety

Chlorine vs. Chlorine Dioxide - A Comparison

	Chlorine	Chlorine Dioxide
Disinfection Power bacteria virus protozoa	Yes Low Low	Yes Yes Yes
Required Concentration	Not less than 0.5 mg/L	0.2 mg/L
Typical Total Concentration	2 or more mg/L	0.5 mg/L
Persistence of Disinfectant	Low, rapid decomposition in the distribution system	Very high, decomposition through hydrolysis 10 million times slower than chlorine
Water Taste	“Chlorine taste”	No taste at disinfectant concentrations. Most frequent comment: water tastes “fresh”.
Water Smell	“Chlorine smell”	No smell at disinfectant concentrations
Disinfection Byproducts THM TAA Chlorite/Chlorate	Can be very high, frequently exceeding legal limits Can be very high, often exceeds legal limits Depends on the quality of commercial hypochlorite solution, can exceed legal limits	Negligible Negligible This is the only byproduct generated in appreciable concentration. Cannot exceed legal limits because it can never be higher than the chlorine dioxide input concentration.
Operational Safety	Low: 1. Greatly varying composition of commercial hypochlorite solution 2. Feed pumps require frequent adjustments because of changing composition of the feed	High: 1. Strict quality control of the disinfection chemicals guarantees consistent disinfectant concentration 2. Automated equipment maintains a constant disinfectant level

Do you require additional information? Can we give a presentation to YOUR council about our Disinfection Technology? Are you interested in an evaluation of the feasibility to use chlorine dioxide in YOUR community?

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