

Pure chlorine dioxide compared to other disinfectants.

	Efficacy	Microbial Range	Contact Time	Concentration	pH	Corrosion	Toxicity	Biodegradable	Other	Cost	Comments
Pure Chlorine Dioxide	High	Broad spectrum - effective against all bacteria, viruses and spore formers	Few seconds to minutes	0.1 ppm to 100 ppm	Neutral	Negligible at use concentration	Negligible at use concentration - prolonged exposure could cause slight skin or respiratory irritation	High - both for chemical and by-products	Drinking and wastewater disinfection, deodorization and chemical oxidation	Moderate	Does not form any chlorinated by-products (chloroform, chlorophenois, trichloromethane) or chlorates or chlorates
Sodium Hypochlorite (bleach)	Moderate	relatively ineffective against most viruses, molds, fungi and spore formers	Usually minutes to hours	1000 ppm to % range	Alkaline	Corrosive to iron and aluminum. Compounded with caustic may cause bluing on stainless steel	Alkaline compounded products highly corrosive to tissues. May produce chlorinated by-products	Moderate for bleach itself, low for the chlorinated by-products	Deodorizer and wastewater treatment. Restricted applications for drinking water.	Low	Shelf life and stability are poor. Strong odor and bleaching effects
Gluteraldehyde	Moderate to high	Sporicidal	Usually requires 30 minutes to several hours	500 ppm to % range	Neutral	Negligible	May cause severe skin irritation to sensitive individuals	Moderately high for use concentration	Surface sanitation and as cooling water products	Moderate to high	Odor problematic for some applications. Not well suited for food applications
Iodophors	Moderate	Relatively ineffective against many viruses, molds, fungi and spore formers	Usually minutes to hours	500 ppm to % range	Acidic to neutral depending on formulation	Acidic products in particular may be corrosive to iron and steel	Variable depending on concentration - iodine itself is extremely toxic	Relatively low for most products	Primarily applied as a surface sanitizer and teat dip formulation	Moderately high	Causes iodine staining - Milk and food contamination by residual iodine
Hydrogen Peroxide	Low	Unless used at high concentration relatively ineffective	Generally 15 minute to several hours	Usually % range	Neutral at use concentration	High on aluminum, iron and zinc	May be extremely irritating to skin and tissues at use concentration	High	Used as a chemical oxidant particularly for H ₂ S control and wastewater treatment	Relatively low - higher concentration requires expensive storage and handling	Stability difficult at higher concentration or if contaminated with metals
Dry Chlorine Compounds	Moderate	Relatively ineffective against certain molds and spore formers	30 minutes to several hours or more	Usually % range	Moderately to strong alkaline	Higher pH products corrosive to aluminum, iron and may cause bluing of some stainless steel	Many not fully assessed although most are known to be irritating at use concentration	Low to moderate particularly if chlorinated by products are produced	Use as emergency water sanitizers primarily in surface sanitation applications	Relatively low	High pH of some products may restrict sewer disposal unless pH is adjusted
Ozone	High	Broad spectrum effective against all types of micro-organisms	Seconds to minutes	0.1 - 10 ppm	Neutral	Marginally corrosive to iron and some grades of stainless steel at higher concentration	Likely to be negligible at higher concentration	High	Drinking and wastewater disinfection with some chemical oxidation applications	Very high in all forms	Powerful chemical oxidant and biocide but offers no residual protection
Phenol	High	Effective against most micro-organisms except certain spore formers	Minutes to an hour or more depending on target organisms	100 ppm to % range	Mildly acidic to neutral	Higher concentration more acidic and causes corrosion to iron and some grades of stainless steel	Extremely toxic, chronic exposure can cause kidney, liver and neurological damage	Relatively low	Limited to surface sanitizers and as ingredient in sanitizer lubricant formulations	Moderately high	Very hazardous and use is highly regulated
Quaternary Ammonium	Moderate to high depending on target organisms	Relatively ineffective against certain bacteria and spore formers	Minutes to several hours	100 ppm to % range	Acidic to neutral depending on formulation	Acidic products corrosive to iron, copper and brass	May cause severe skin irritation	Poor for most formulations	Primarily used in surface sanitation (non-food) also cooling tower treatment	Moderately high	High foaming and characteristic odor may cause problems in certain areas





Selectroicide®2L500 (EPA Reg. No 74986-4)
Selectroicide®1G, 5G, 12G & 12G MultiPack-15 (EPA Reg. No. 74986-5)

SELECTED EPA-REGISTERED CLAIMS/ORGANISMS (50 states and Puerto Rico)		
	ORGANISM(S)	Concentration/contact time (ppm/minutes)
Disinfectant	<i>Staphylococcus aureus</i> , <i>Salmonella enterica (choleraesuis)</i> , <i>Pseudomonas aeruginosa</i> , <i>Methicillin-Resistant Staphylococcus Aureus (MRSA)</i> , <i>Vancomycin-resistant Enterococcus faecalis (VRE)</i>	100/10 50/20
Disinfectant (Tuberculocide)	<i>Mycobacterium bovis</i>	100/10
Disinfectant (Fungicide)	<i>T-mentagrophytes (athlete's foot)</i>	100/10
Sanitizer (Food-Contact Surfaces)	<i>E. coli O157:H7</i> , <i>E. coli</i> , <i>Staphylococcus aureus</i> , <i>Multiple Drug-Resistant Salmonella Typhimurium (MDRS)</i>	5/1
Sanitizer (Non-Food-Contact Surfaces)	<i>Staphylococcus aureus</i> , <i>Klebsiella pneumoniae</i>	20/5
Virucide	<i>Coronavirus</i> , <i>HIV- 1</i> , <i>Hepatitis-A</i> , <i>Rotavirus</i> , <i>Feline calici</i> , <i>Poliovirus</i>	100/10
Fungicide	<i>Penicillium Digitatum</i> , <i>Botrytis Sp.</i> , <i>Fusarium solani</i>	5/60
Algicide	<i>Phormidium bohneri</i>	5/60
Wash for Raw Agricultural Commodities (RACs)	spoilage organisms (yeasts and molds)	5/1
Disinfectant	<i>Listeria monocytogenes</i>	100/10
Disinfectant (yeast)	<i>Candida albicans</i>	100/10 50/20
Sanitizer (Non-Food-Contact Surfaces)	<i>Listeria monocytogenes</i>	20/5
Virucide	<i>Influenza-A</i> , <i>Rhinovirus</i> , <i>Canine Parvo</i> , <i>Adenovirus</i> , <i>Herpes Simplex-2</i> , <i>Vaccinia</i> , <i>Norovirus</i>	100/10

CLAIMS IN ADVANCED RESEARCH AND INVESTIGATION (Expected submission date: CY 2014, Q1)		
Disinfectant	Several pathogens, especially <i>Campylobacter jejuni</i>	100/10
Sterilizer	<i>Bacillus subtilis</i> , <i>Clostridium sporogenes</i> 510(k) Foundation Testing (AOAC Sporocidal Test)	600/10

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