

# BioVex®

## Questions & Answers



### What is BioVex®?

BioVex® is a proprietary blend of oxychloro chemistry that can be activated to generate a highly efficient and effective, broad-spectrum, hospital-grade disinfectant that eliminates pathogens. It has EPA registration indicating utility on non-porous surfaces that commonly are the source of communicable infections.

### How does BioVex® work?

BioVex® works by attacking the surfaces of the microbes and breaking them down. This eliminates the ability of the microbe to spread. It works on contact and continues to work until dry.

### What does BioVex® kill?

BioVex® is a Bactericide, Virucide, Fungicide, and Tuberculocide. BioVex® is effective against biofilm and is proven against blood borne pathogens such as MRSA, VRE, HIV, and HEP-C. It also controls A virus, Salmonella, Listeria, E-Colli and Trichophyton among others.

### Can BioVex® be utilized on a variety of surfaces?

BioVex® can be safely used with great efficacy on Steel, laminate, ceramics, vinyl, plastic and other non-porous surfaces. Even non-porous surfaces that appear soft such as vinyl and plastic covered chairs and mattresses can be effectively treated without penetrating through the surface to the inner material.

### How frequently should I apply BioVex® to a surface?

For the greatest efficacy, BioVex® should be used as part of a daily routine on all common non-porous surfaces. It should also be used more frequently between every contact by an individual on target contact areas.

### Do I need to rinse or clean surfaces after spraying BioVex®?

No! BioVex® requires no finish rinse. Simply apply it and forget it. In fact, it continues its action until the treated surface area is dry. It leaves no active residue behind.

### What is the shelf life of the BioVex® concentrate solution prior to activation?

BioVex® has a shelf life of One Year from ship date. BioVex® should be stored in a cool, dark place. It is shipped in non-light transmitting bottles in boxes so light is no problem. While it does not require refrigeration or other special warehousing, it should not be stored in excessively hot environments.

### How do I activate and prepare BioVex® disinfectant?

BioVex® is provided in matched bottle to activator packaging. Everything is pre-measured and easy to use. Simply add the entire contents of the activator pack to the matched bottle of concentrate, shake for a few seconds, and then add the entire activated concentrate to the appropriate amount of tap water indicated on the package. The resulting application solution is then ready to use.

### Why is it necessary to activate BioVex® disinfectant?

The oxychloro chemistry has the best efficacy when activated with the supplied GRAS activator. Activation causes the formation of stabilized chlorine dioxide, an effective, broad-spectrum antimicrobial for non-porous surfaces. Since it is normal for there to be a trace odor of chlorine during activation, the product should be mixed in a room with adequate ventilation.

### How long can the activated application solution of BioVex® be used?

The application solution of BioVex® maintains its full efficacy for one week from the day it is mixed. New application solutions should therefore be made as needed, but no longer than weekly.

### Who is Bio-Cide International, Inc?

Bio-Cide International is the worldwide leader in stabilized chlorine dioxide chemistry. With more than 35 years of application experience providing microbial control solutions, Bio-Cide has pioneered the use of the technology for thousands of food, drinking water, human and animal health applications. Continuing in-house R&D, regulatory affairs and ISO certified management programs insure that clients receive state of the art professional services and assistance.

## Comparison of BioVex® with Other Conventional Sanitizing Agents

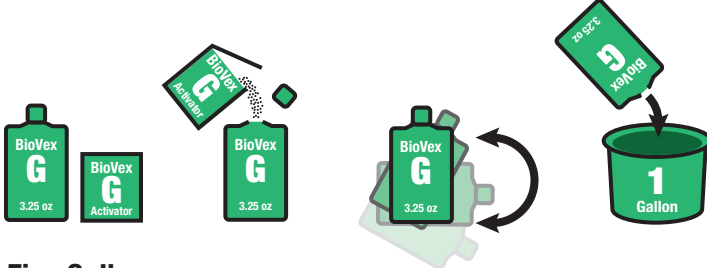
	BioVex®	Sodium and Calcium Hypochlorite	Glutaraldehyde	Iodopors	Quaternary Ammonium Compounds (409, Lysol, etc.)	Peracetic Acid
<b>Performance</b>	High	Moderate	Moderate to High	Moderate	Moderate to High	Moderate
<b>Contact Time</b>	Minutes	Minutes to Hours	30 Minutes to Several Hours	Minutes to Hours	Minutes to Hours	Minutes
<b>Concentration</b>	500 ppm	1,000 ppm to 1.0%	500 ppm to 1.0%	500 ppm to 1.0%	100 ppm to 1.0%	30-200 ppm
<b>pH</b>	Near Neutral	Alkaline	Neutral	Neutral to Acidic	Acidic to Neutral	Acidic
<b>Corrosiveness</b>	Negligible	Corrosive to Iron and Aluminum	Negligible	Corrosive to Iron and Stainless Steel	Corrosive to Iron, Copper, and Brass	Corrosive to Iron
<b>Toxicity</b>	Negligible	Harmful to Tissues	Can Cause Skin Irritation	Variable, Iodine is Extremely Toxic	Can Cause Skin Irritation	Skin and Mucous Membrane Irritation
<b>Biodegradability</b>	High	Moderate to Low	Moderate to High	Low	Low	High
<b>Cost</b>	Low to Moderate	Low	Moderate to High	Moderate to High	Moderate to High	High

### BioVex® Mixing Instructions

(please read and follow all package directions)

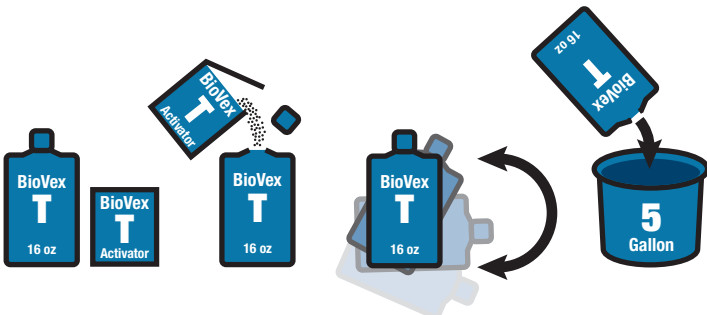
#### One Gallon

Add one (1) packet of activator (Green “G”) to one (1) 3.25 oz. package of BioVex® liquid concentrate chemistry. Replace cap securely. Shake vigorously and invert bottle multiple times. Add to one (1) gallon container and fill with water. The product is now ready to use.



#### Five Gallons

Add one (1) packet of activator (Blue “T”) to one (1) 16 oz. package of BioVex® liquid concentrate chemistry. Replace cap securely. Shake vigorously and invert bottle multiple times. Add to one (5) gallon container and fill with water. The product is now ready to use.



Bio-Cide International, Inc. the worldwide leader in Chlorine Dioxide technology.



INTERNATIONAL, INC.

Exceptional Chemistry • Extraordinary People  
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Bio-Cide International is ISO 9001:2000 certified





## Summary of Antimicrobial Efficacy

The following results were obtained using Oxine® - a proprietary formula of Bio-Cide International, Inc. These results should not be extrapolated for other chlorine dioxide based products that may take much higher concentrations to achieve similar biocidal activities.

### Bacteria

Effective March 2007

TEST ORGANISM	CONTACT TIME	CONCENTRATION	RESULT
Alicyclobacillus acidoterrestris	10 min	30 ppm	99.998% kill
Bacillus cereus spores	5 min	200 ppm	99.999% kill
Campylobacter jejuni	30 sec	30 ppm	99.9% kill
Erwinia carotovora	60 sec	50 ppm	99.999% kill
Escherichia coli O157:H7	60 sec	3 ppm	99.999 % kill
Lactobacillus sp.	60 sec	20 ppm	99.999% kill
Legionella pneumophila	60 sec	25 ppm	99.999% kill
Listeria monocytogenes	60 sec	25 ppm	99.9999% kill
Methicillin Resistant Staphylococcus aureus (MRSA)	10 min	500 ppm	100% kill
Mycobacterium bovis (tuberculosis)	10 min	500 ppm	99.9999% kill
Pediococcus sp.	60 sec	20 ppm	99.999% kill
Proteus mirabilis	60 sec	100 ppm	99.999999% kill
Pseudomonas aeruginosa	60 sec	5 ppm	99.9999% kill
Salmonella typhimurium	60 sec	100 ppm	99.999% kill
Staphylococcus aureus	60 sec	30 ppm	99.999% kill
Streptococcus faecalis	60 sec	100 ppm	99.99999% kill
Streptococcus faecium	60 sec	100 ppm	99.9999% kill
Vancomycin Resistant Enterococcus faecalis (VRE)	10 min	500 ppm	100% kill

### Fungi

TEST ORGANISM	CONTACT TIME	CONCENTRATION	RESULT
Aspergillus fumigatus spores	60 sec	100 ppm	99.9999% kill
Aspergillus niger	60 sec	100 ppm	99.9999% kill
Candida albicans	60 sec	100 ppm	99.99999% kill
Cladosporium	30 sec	500 ppm	99.999% kill
Mucor sp	30 sec	500 ppm	99.999% kill
Penicillium	60 sec	100 ppm	99.999% kill
Penicillium roquefortii	60 sec	500 ppm	100% kill
Saccharomyces cerevisiae	60 sec	30 ppm	99.999% kill
Stachybotrys chartarum	60 sec	100 ppm	99.997% Kill
Trichophyton mentagrophytes	5 min	500 ppm	100% kill

### Viruses

TEST ORGANISM	CONTACT TIME	CONCENTRATION	RESULT
African Swine Fever Virus	5 min	500 ppm	100% virucidal
Avian Influenza A virus	10 min	500 ppm	100% virucidal
Canine Parvovirus	10 min	500 ppm	100% virucidal
Coxsackie Virus	5 min	550 ppm	99.9% kill
Foot & Mouth Disease Virus	5 min	500 ppm	100% virucidal
Hepatitis C	10 min	500 ppm	100% virucidal
Herpes Simplex Virus Type 1	5 min	550 ppm	99.9% kill
Newcastle Disease virus	10 min	500 ppm	100% kill
HIV Virus Type 1 (HIV 1)	10 min	500 ppm	100% virucidal
Polio Virus Type 2	5 min	550 ppm	99.9% kill
PRRS virus	60 sec	312 ppm	100% virucidal
Pseudorabies virus	10 min	500 ppm	100% virucidal
Rhino Virus	5 min	550 ppm	99.9% kill
Swine Vesicular Disease Virus	5 min	500 ppm	100% virucidal