

# The AeroClave Process™



Decontamination Technology





Our mission is to combat the spread of infectious diseases through a family of comprehensive, cost-effective, and environmentally safe solutions.



### Room Fogging: Effective Decontamination

AeroClave's room fogging technology creates a fine, atomized particle that reaches into nooks, crevices and corners that disinfecting sprays & wipes just can't reach. The dry mist permeates the entire area disinfecting surfaces while reaching under counters and furniture.

### AeroClave vs. Manual Cleaning

Studies show that manual cleaning may actually be spreading dangerous pathogens to previously non-contaminated surfaces. In addition, human error and ineffective techniques may significantly lessen the effectiveness of standard methods of disinfection.

Use of the AeroClave Process reduces the labor and skills required to perform an effective treatment. Automated room fogging is proven to be a most thorough and cost effective method for treating all the exposed surfaces within a room or vehicle. Consistent and reliable delivery of disinfectant to the high touch environmental surfaces assures sufficient contact time and reduces the risk of cross-contamination associated with a wipe or sponge.

### AeroClave Process Destroys Pathogens

Proven effective against MRSA, HIV-1, Hepatitis B, Hepatitis C, Ebola, MERS, CRE, E. coli, Norovirus, H1N1, Legionella pneumophila, Salmonella, Listeria, mold, mildew and more.

### AeroClave Partners with Vital Oxide

Vital Oxide is an EPA registered hospital disinfectant that is a broad-spectrum antimicrobial that performs against a wide variety of bacteria, yeasts, viruses, fungi, spores, molds, mildews, and other microbes. It is ready to fog right from the bottle. Vital Oxide includes components that dramatically decrease the size of its particles making it perfect for use in the AeroClave Process.

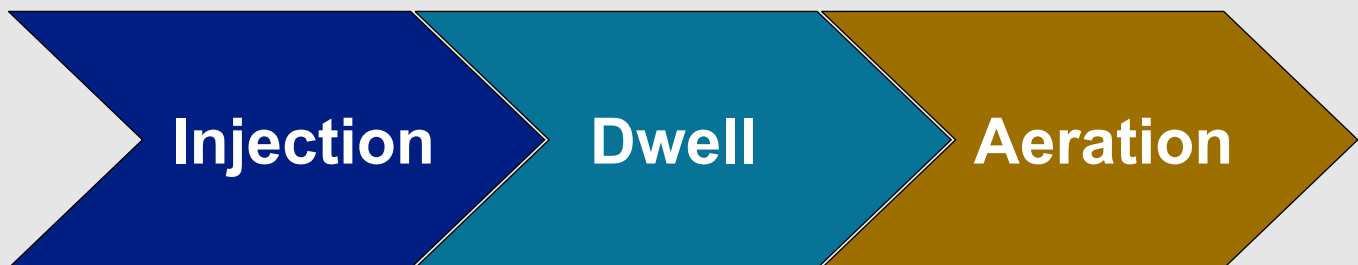
### Active Ingredient

The main ingredient in Vital Oxide is chlorine dioxide ( $\text{ClO}_2$ ).  $\text{ClO}_2$  has been recognized for its powerful disinfecting properties since the early 1900's. Although it has chlorine in its name, its chemistry is very different from the corrosive chemistry of chlorine bleach.

### Environmentally Friendly

The primary differences between chlorine and  $\text{ClO}_2$  are that  $\text{ClO}_2$  is less caustic, safer and gentler than bleach and many other antiseptics and antimicrobials, plus it remains effective under organic load. The chemical composition of Vital Oxide is such that it has a minimal impact on the environment and contains no ozone harming volatile compounds (VOC). Further, chlorine bleach produces harmful by-products to the environment including trihalomethanes (THM) and haloacetic acids (HAAS). Vital Oxide breaks down to a simple salt and produces no harmful by-products.

## Phases of the AeroClave Process



**Injection Phase:** In this phase, the decontamination solution is aerosolized and applied evenly to the treatment area. A typical injection phase will last anywhere from 5-30 minutes, depending on the size of the treatment area.

**Dwell Phase:** The treatment area is allowed to sit in a dwell period for a minimum of ten minutes. The dwell period gives the aerosolized solution an opportunity to evenly distribute throughout the treatment area, ensuring full coverage on all surfaces.

**Aeration Phase:** The aeration phase is when the solution is removed from the treatment area. This can be done in various ways: reenergizing the facility HVAC, providing external ventilation, promoting air circulation, etc. The solution will also naturally break down.

## How Do We Destroy Bacteria?

Bacteria are killed through the process of oxidation. The  $\text{ClO}_2$  aerosolized by the AeroClave Process steals electrons from the amino acid of the microbial cell. By stealing an electron from the amino acid,  $\text{ClO}_2$  chemically alters the amino acid preventing it from building protein. Without the protein, the cell wall crumbles and the unprotected organism inside dies. The bacterial cell is destroyed.



## How Do We Kill Viruses?

The process kills viruses by altering and preventing protein formation. This is done through a reaction to peptone, a water soluble substance that is formed from hydrolysis of proteins to amino acids. The virus effectively starves to death.

## Fast and Effective Way to Kill

Vital Oxide is stabilized to retain over 98% of its strength for over one year under normal storage conditions. At the same time the stabilization is controlled to allow a rapid equilibrium between the "stabilized" and "free"  $\text{ClO}_2$ . This means that the Vital Oxide total 2,000-ppm  $\text{ClO}_2$  is available almost instantly as needed to destroy harmful microbial substances, and whatever is not used will be available in reserve for long-term residual activity.

## Works Against Biofilm

$\text{ClO}_2$  is more effective than biocide chemicals such as ozone and chlorine. Both ozone and chlorine are consumed by other organic compounds whereas  $\text{ClO}_2$  is not. There are very few compounds that are reactive with  $\text{ClO}_2$  making this chemical compound much more selective. Other biocides may be able to kill off free-floating bacteria but they are unable to prevent the bacteria within the colony from mutating and building up resistance.  $\text{ClO}_2$  chemically alters the cell preventing it from community with other cells and mutating. This is why Vital Oxide works against biofilms more effectively than other biocides.

## Safe For Your Staff and Equipment

Vital Oxide is so mild that you can wash your hands in it. It is non-irritating to the skin, and non-corrosive to treated articles. Vital Oxide qualifies for a health and safety rating of 0 (HMIS=0) and an EPA toxicity rating of Category 4, meaning that exposure exhibits no oral or inhalation toxicities, and only a mild irritation when sprayed directly into the eyes. In fact, no special personal protective equipment is required during spraying or fogging except eye protection.

Vital Oxide	
HEALTH	0
FLAMMABILITY	0
PHYSICAL HAZARD	0
PERSONAL PROTECTION	0

# Vital Oxide Facts

EPA registered (EPA No.82972-1)

Hospital-grade disinfectant

Requires no special handling

Non-corrosive, safe for treated surfaces

Non-irritating to skin, no gloves or protective clothing required

Toxicity category: EPA Category 4

HMIS rating of 0

Leaves no offensive odor

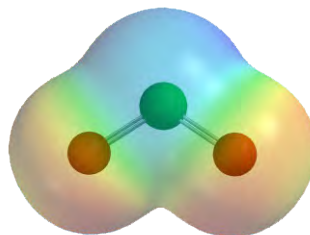
No harmful VOCs or bi-products

Breaks down to simple salt

NSF Rating: No Rinse Required

Ready-to-use, no mixing required

Shelf life up to 2 years



One chlorine atom and two oxygen atoms combine to create a molecular free radical - a magnetic like attraction that seeks out electron donors and selectively oxidizes bacteria and pathogens.



Visit our website to download more information on Vital Oxide

Testing	
Independent GLP Lab Testing Summary	<a href="http://www.aeroclave.com/vo/glp">www.aeroclave.com/vo/glp</a>
Surface Contamination of Outpatient Clinics Test	<a href="http://www.aeroclave.com/vo/clinic">www.aeroclave.com/vo/clinic</a>
Vital Oxide kills CRE (Carbapenem-Resistant Enterobacteriaceae)	<a href="http://www.aeroclave.com/vo/cre">www.aeroclave.com/vo/cre</a>
A Comparison of Environmental Disinfecting Techniques Effective Against Sporulating	<a href="http://www.aeroclave.com/vo/compare">www.aeroclave.com/vo/compare</a>
MSDS and Registrations	
EPA Label	<a href="http://www.aeroclave.com/vo/label">www.aeroclave.com/vo/label</a>
Material Safety Data Sheet	<a href="http://www.aeroclave.com/vo/msds">www.aeroclave.com/vo/msds</a>
EPA Registration for MRSA	<a href="http://www.aeroclave.com/vo/mrsa">www.aeroclave.com/vo/mrsa</a>
EPA Registration for Norovirus	<a href="http://www.aeroclave.com/vo/norovirus">www.aeroclave.com/vo/norovirus</a>

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