

# VITAL-OXIDE<sup>®</sup>

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BROAD SPECTRUM DISINFECTANT CLEANER  
& MOLD CONTROL



**BROUGHT TO YOU BY VITAL TECHNOLOGIES**

LEADING THE WAY IN GREEN CLEANING

## What Makes **VITAL-OXIDE®** Different From Other Stabilized Chlorine Dioxide?

### THE VITAL FACTS

- **VITAL-OXIDE** is Shelf Stable & Ready To Use. No mixing required. Spray, wipe, or fog right from the bottle.
- **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” chlorine dioxide. This means that the **VITAL-OXIDE** total 2,000-ppm ClO<sub>2</sub> 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.
- **VITAL-OXIDE** includes components that dramatically decrease the size of it's particles to nano scale. This increases the ability of the active solution to spread on and to penetrate both hard and porous surfaces. This also makes it very effective against airborne pathogens by reducing droplet size from sprayers and foggers.



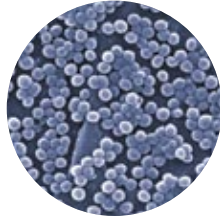
### Super Effective Green Cleaner & Odor Eliminator

- **VITAL-OXIDE** produces no harmful by-products for the environment. The smart ecological choice—contains no ozone harming VOC's and is 100% biodegradable.
- **VITAL-OXIDE** stands out among antimicrobial cleaners with a combination of extremely low toxicity and long-term effectiveness. USEPA Registered (82972-1) as a “Broad Spectrum Disinfectant-Cleaner” that is non-corrosive, non-irritating to skin, and requires no special handling instructions on its label.
- **VITAL-OXIDE** formula includes components that emulsify common oily, greasy substances, readily penetrating surfaces coated with oily materials.
- **VITAL-OXIDE** is effective even diluted from its “general purpose” strength. To enhance this capability, a sequestering agent in the formulation prevents the deactivation of the surface-active agents in the formula where “hard” water is used for dilution. As little as 2 ppm will prevent bio-slime formation in drip irrigation lines.
- **VITAL-OXIDE** is a highly effective odor remover that does not mask or cover up odors with a fragrance—it eliminates them on a molecular level.

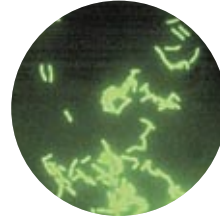
**Areas of use include:** Hospitals, Cruise Ships, Restaurants, Hotels, Schools & Day Care, HVAC Systems, Sports Equipment, Building Materials, Drip Irrigation Lines, Kennels, Auto Detail Shops and Households.



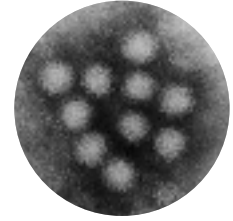
E Coli



MRSA



Legionella



Norovirus

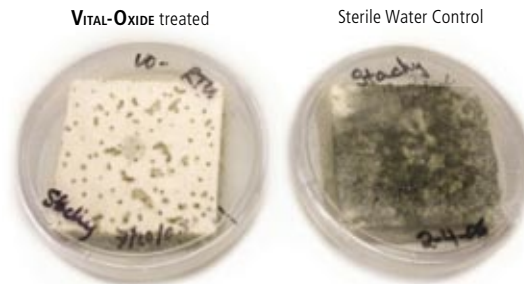
## Anti-Microbial Action

Proven effective against MRSA, Norovirus, *Legionella pneumophila*, and *E coli* in testing conducted by certified independent laboratories under GLP conditions submitted to the USEPA. **VITAL-OXIDE** is a broad-spectrum antimicrobial that performs against a wide variety of bacteria, yeasts, viruses, fungi, spores, molds, mildews and other microbes. It is very effective at low concentrations, over a wide pH range.

## PREVENTS MOLD & MILDEW ON HARD SURFACES & FABRIC

### Results of University of Tulsa Study: Effectiveness of VITAL-OXIDE for Controlling Fungal Contamination on Building Materials

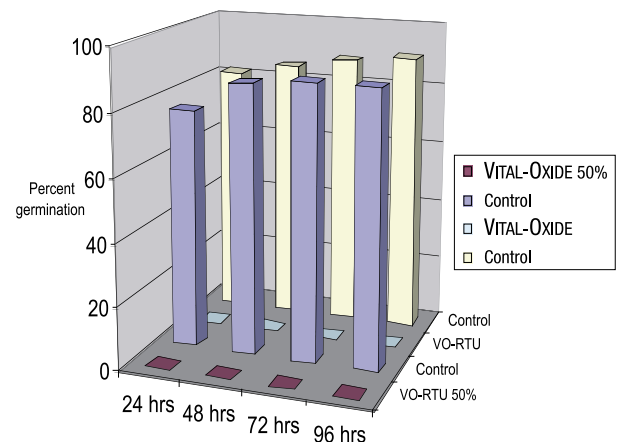
- **VITAL-OXIDE** inhibited spore germination of test fungi
- Pretreatment with **VITAL-OXIDE** inhibited the growth of fungi on sheetrock and ceiling tiles
- Spray applications of **VITAL-OXIDE** were effective in stopping fungal growth even in saturated conditions



Pretreatment of ceiling tiles with **VITAL-OXIDE** inhibited growth of *Stachybotrys* 7 months following treatment.

| Fungi                         | Mean colony diameter (cm) of fungi after 30 days incubation on sheetrock saturated with <b>VITAL-OXIDE</b> "Ready To Use" (RTU) or sterile water Control |          |         |
|-------------------------------|--|----------|---------|
|                               | Control  | VO - RTU | 50% RTU |
| <i>Alternaria alternata</i>   | >6.0   | 0        | 0       |
| <i>Aspergillus fumigatus</i>  | >6.0   | 0        | 0       |
| <i>Aspergillus versicolor</i> | 3.6  | 0        | 0       |
| <i>Chaetomium globosum</i>    | >6.0   | 0        | 0       |
| <i>Penicillium sp.</i>        | >6.0   | 0        | 0       |
| <i>Stachybotrys chartarum</i> | >6.0   | 0        | 0       |

### VITAL-OXIDE Treated Sheetrock Exhibits No Fungal Growth Even in Saturated Conditions



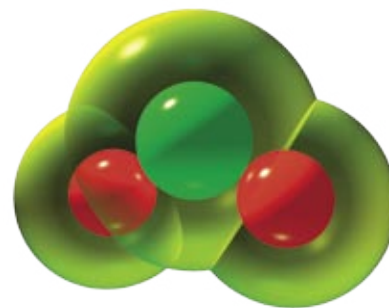
Percent Germination of *Stachybotrys* Spores

# VITAL-OXIDE® USES THE POWER OF OXYGEN

KILLS HARMFUL BACTERIA & VIRUSES & REMOVES MOLD & MILDEW

## THE TECHNOLOGY

The chlorine dioxide molecule has one chlorine atom and two oxygen atoms. This combination creates a molecular free radical—a magnetic like attraction that seeks out electron donors and selectively oxidizes harmful bacteria and mold.



## THE ENVIRONMENTALLY SOUND ALTERNATIVE TO CHLORINE BLEACH

Although chlorine dioxide (ClO<sub>2</sub>) has chlorine in its name, its chemistry is radically different from that of chlorine itself. Technically speaking both chlorine and ClO<sub>2</sub> are oxidizing agents. Yet these fundamentally different chemistries react in distinct ways with organic compounds resulting in very different by-products.

### STABILIZED ClO<sub>2</sub>

VS

### CHLORINE BLEACH

- ClO<sub>2</sub> is not a metabolic toxin and will not aid in developing antibiotic resistance in bacteria.
- ClO<sub>2</sub> and its primary by-product chlorite, break down to sodium chloride (simple salt).
- ClO<sub>2</sub> works through Highly Selective Oxidation, reacting with vital amino acids in the cell to eliminate bacteria, viruses and denature proteins, while being relatively un-reactive to other organic material—thus reducing the level of ClO<sub>2</sub> required to do the job.

- Chlorine produces harmful by-products (THM) trihalomethanes and (HAAS) haloacetic acids which are linked to cancer.
- Chlorine is highly corrosive to tissues and treated articles.
- Chlorine has a poor shelf life & stability.
- Chlorine has strong unpleasant odor.
- Chlorine's large molecule can't penetrate porous surfaces thus making it ineffective against mold mycelia (roots).

## THE HISTORY

ClO<sub>2</sub> has been recognized for its powerful disinfecting properties since the early 1900's. It is used by municipalities to purify drinking water. Environmentalists now recommend its use in eco-friendly paper production. Produced on site, these treatments require sophisticated chemical generation equipment and limit practical use to only large scale industrial operations.

In an effort to commercialize ClO<sub>2</sub> for the general public several companies have developed methods to produce "stabilized ClO<sub>2</sub>". These products usually require a two-step process mixing an acid "activator" into a chlorite solution to produce ClO<sub>2</sub>. Yet, even though products claim to have even the same amount of this key ingredient it certainly can not be assumed that they will perform in an equal manner. The results are solutions of varying strength—and safety—with a shelf life of a few days to just a few hours.

## THE BREAK THROUGH

**VITAL-OXIDE** is a super effective, ecologically sound cleaner & odor eliminator, with proven broad-spectrum anti-microbial action. (USEPA registered #82972-1) Shelf stable & Ready To Use—no mixing required, just spray, wipe, or fog right from the bottle. Non-irritating to the skin, and not corrosive to treated articles.

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