

OXINE® is a superior Sanitizer for many types of industries and applications, including biofilm removal from cooling towers, car wash recycling systems, and for other pathogen control programs.

# OXINE®

**BENEFITS**

Ideal for Application in Water Treatment and Water Storage Systems to control odor and slime forming microorganisms.

- Ultra high antimicrobial activity
- Low corrosion potential at recommended concentrations
- Does not chlorinate (no THM formation)
- Effective over a broad pH range (1-10)
- Uniquely effective against biofilm
- Resists neutralization due to organic load
- Very soluble in water
- Disinfectant (activated)
- Bacteriostat (unactivated)
- Excellent deodorant

**OVERVIEW**

Oxine® is a highly refined blend of oxychloro species containing purified sodium chlorite. When activated, chlorine dioxide is produced, greatly enhancing Oxine's antimicrobial potential. With several applications in the water treatment industry, Oxine® displays broad-spectrum antimicrobial capacity, proven effective against E. coli O157:H7, Salmonella, Aspergillus, Listeria, Staphylococcus and Pseudomonas, among others. This product is especially suited for the removal and subsequent control of biofilm. Oxine® has a myriad of EPA, FDA and USDA approvals, Kosher certification, and organic certification in Washington state.

**CONCENTRATE PROPERTIES**

|                         |  |
|-------------------------|--|
| Concentration           | . . . . . 2.00 - 2.10% available chlorine dioxide          |
| Appearance              | . . . . . Colorless liquid                                 |
| Odor                    | . . . . . Very faint chlorinous odor                       |
| pH                      | . . . . . Concentrate: of 8.2-8.5                          |
| Boiling point           | . . . . . 213°F (100.5°C)                                  |
| Melting point           | . . . . . N/A  |
| Freezing point          | . . . . . 28.9 °F (-1.72°C)                                |
| Vapor Pressure          | . . . . . 23.7 mm Hg (25°C)                                |
| Vapor Density           | . . . . . 0.02 kg/m3                                       |
| Specific Gravity        | . . . . . 1.03 g/ml (20°C)                                 |
| Volatiles (by volume)   | . . . . . 97% (Water)                                      |
| Solubility in water     | . . . . . Complete   |
| Evaporation rate        | . . . . . Comparable to water                              |
| Very low acute toxicity | . . . . . (EPA Cat. III)                                   |
| Stable Solution         | . . . . . non-flammable, non-explosive                     |
| NFPA Rating             | . . . . . Fire: 0, Health: 1, Reactivity: 1, Special: None |

See more information on reverse side. Sales sheet also available.

**Call: 210-930-4353 to order**





Fig 1: AANE Automated Activation unit

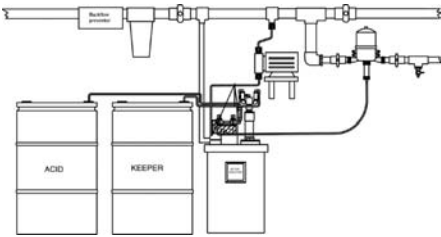


Fig 2. - Typical system setup

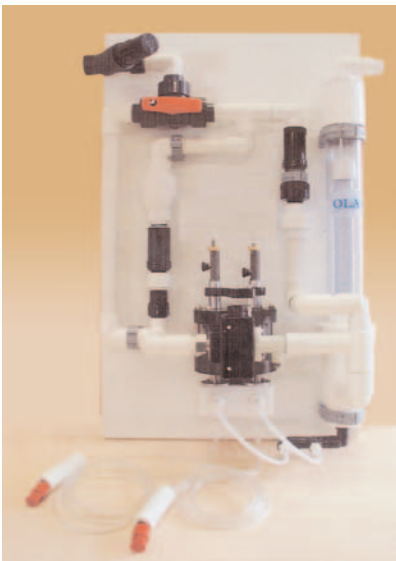


Fig 3- OLAS Online Activation unit



## APPLICATION IN WATER TREATMENT & STORAGE

- Control of odor and slime forming microorganisms in residential, commercial and industrial water treatment systems such as: sand, mixed media, zeolite, and carbon filters; softeners, demineralizers, iron filters, and removable media filters
- \* In distribution and recirculation plumbing and piping for process or potable water, to significantly remove odor and slime causing microorganisms
- To disinfect mobile or temporary water storage systems aboard aircraft, boats, ships, recreation vehicles, trailers, and off-shore oil rigs
- In fixed water storage systems for commercial and industrial buildings, homes and outbuildings
- in stored potable water, to control buildup of slime and odor causing bacteria
- In private and municipal well water, to improve taste and odors
- In enclosed and recirculating cooling water systems, for microbial control

*Oxine has numerous other registered applications for the the HVAC, food, and beverage industries.*



## ACTIVATED CONCENTRATE PROPERTIES

Appearance .....Green-Yellow Liquid  
 Odor .....Chlorine-like (acred)  
 Oxichloro Species .....including ClO<sub>2</sub>



## ACTIVATION

Pro-Oxine activation may be accomplished in one of three (3) ways:

1. Manually: for mixing small batch applications without equipment.
2. Automatically, for mixing and storing continuous supply using the AANE (Automated Activation Non Electric) unit, shown in photo, fig 1, and with an auxiliary injection pump, as shown in drawing, (fig 2).
3. Automatically, for both mixing and injecting using the OLAS (On line Activation System) shown in photo, fig 3.

Fig 2 shows a typical AANE installation with 55 gal acid activator and product drums. The unit requires only a 1/2" water supply line with at least 25 PSI of water pressure to mix the correct ratio of acid to Oxine, dilute to stock solution concentration and serve as a reservoir for application to process waters. A simple dosing or water driven proportioning pump is then installed to transfer the activated Oxine solution to make up water lines or directly into process waters. Pumps used to dose concentrated activated product should be compatible with acid, and be chlorine resistant. The most serviceable pump materials are listed below:

**Pump Body:**  
 Stainless Steel, Polypropylene, ABS  
**Elastomers:**  
 Teflon, Afas, Kelrez, Chemrez, Durachlor, Viton, PVC (flexible tubing)  
**Wetted Parts:**  
 Teflon, PVDF, CPVC, PVC, Kynar

**TESTING:** Concentration of Oxine in process waters can be conveniently monitored using Oxine's Test Kit. This simple titration test is available through your Oxine distributor.

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## 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.

| TEST ORGANISM                      | CONTACT TIME | CONCENTRATION | RESULT          |
|------------------------------------|--------------|---------------|-----------------|
| Alicyclobacillus acidoterrestris   | 10 min       | 30 ppm        | 99.998% kill    |
| Aspergillus fumigatus spores       | 60 sec       | 100 ppm       | 99.9999% kill   |
| Bacillus cereus spores             | 5 min        | 200 ppm       | 99.999% kill    |
| Campylobacter jejuni               | 30 sec       | 30 ppm        | 99.9% kill      |
| Candida albicans                   | 60 sec       | 100 ppm       | 99.99999% kill  |
| Canine Parvovirus                  | 10 min       | 500 ppm       | 100% virucidal  |
| Cladosporium                       | 30 sec       | 500 ppm       | 99.999% kill    |
| Coxsackie Virus                    | 5 min        | 550 ppm       | 99.9% kill      |
| Erwinia carotovora carotovara      | 60 sec       | 50 ppm        | 99.999% kill    |
| Escherichia coli O157:H7           | 60 sec       | 3 ppm         | 99.999 % kill   |
| Herpes Simplex Virus Type 1        | 5 min        | 550 ppm       | 99.9% 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   |
| Mycobacterium bovis (tuberculosis) | 10 min       | 500 ppm       | 99.9999% kill   |
| Newcastle Disease virus            | 10 min       | 500 ppm       | 100% kill       |
| Pediococcus sp.                    | 60 sec       | 20 ppm        | 99.999% kill    |
| Polio Virus Type 2                 | 5 min        | 550 ppm       | 99.9% kill      |
| Proteus mirabilis                  | 60 sec       | 100 ppm       | 99.999999% kill |
| PRRS virus                         | 60 sec       | 312 ppm       | 100% virucidal  |
| Pseudomonas aeruginosa             | 60 sec       | 5 ppm         | 99.9999% kill   |
| Pseudorabies virus                 | 10 min       | 500 ppm       | 100% virucidal  |
| Rhino Virus                        | 5 min        | 550 ppm       | 99.9% kill      |
| Saccharomyces cerevisiae           | 60 sec       | 30 ppm        | 99.999% kill    |
| Salmonella choleraesuis            | 10 min       | 500 ppm       | 100% kill       |
| Salmonella typhimurium             | 60 sec       | 100 ppm       | 99.999% kill    |
| Stachybotrys chartarum             | 60 sec       | 100 ppm       | 99.997% 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   |
| Trichophyton mentagrophytes        | 5 min        | 500 ppm       | 100% kill       |