

Proguardeum Optimum™ Solution is a proprietary formulation of optimized purified water and hypochlorous (HOCl) to form a “super-oxidized” water-based disinfectant solution. HOCl is a free neutral molecule within the chemical structure. The Optimum™ Solution poses no potential health effects; is non-hazardous and non-toxic, yet is 80 to 120 times more efficacious than bleach.



*Reduction of Viruses 99.99%*

*Reduction of Bacteria 99.999%*

*Reduction of Fungi 99.99%*

*Reduction of Spores 99.99%*



**100% NATURAL**  
ECO-FRIENDLY



**NON ALCOHOLIC**  
NON IRRITANT



**NON TOXIC**  
NO CHEMICALS



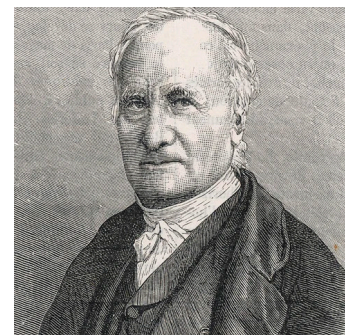
**NON CORROSIVE**  
NO SIDE EFFECTS

### How does Optimum™ Solution work?

The disinfectant solution is pH-neutral and effectively penetrates through the outer membrane of the bacterial DNA or the viral RNA, thus destroying its replication termed as the “cell lysis” process. The human body produces HOCl to reverse markers of epidermal aging, protect against environmental aggressors and cleanse the skin. When utilized as an application outside the human body, pH-neutral Optimum™ Solution works in the identical manner.

### What is its origin?

In 1834, French chemist Antoine Jérôme Balard discovered HOCl as the infection fighting compound found naturally in the white blood cells of the human body. Balard’s work would most notably used thereafter by armies in World War I and World War II for wound cleaning and to neutralize chemical burns. Today, it is most extensively used to treat antibiotic resistant wound infections, dentistry, ophthalmology, veterinary care and food processing.



### How does it kill microbial pathogens?

The Optimum™ Solution works to break down the cells that are creating the infection by destroying the cell membrane and its DNA, thus halting its replication through “cell lysis”.

### Are there any disadvantages?

Unlike many other sanitation chemicals, Optimum™ Solution does not have an ongoing antimicrobial effect. In other words, once it lands on a surface, it reacts with any germs or organic matter on surfaces to

deactivate the pathogen from replicating. This allows for an efficient sanitation process with no hazards to the environment as it is completely biodegradable.

### **How safe is the Optimum™ Solution?**

The Optimum™ Solution is made from all natural ingredients, designed to be non-toxic and non-hazardous, and non-allergenic. Unlike most chemical sanitizers, hypochlorous is non-irritant to eyes, skin, and the respiratory tract. Even if it were ingested by accident, it causes no harm.

### **Is the Optimum™ Solution safe enough for children and pets?**

Yes! Unlike the toxic threat posed by any other cleaner or disinfectant (often times loaded with carcinogens), you can feel completely safe to effectively use Optimum™ Solution around children and pets. It is also important to note that you can feel comfortable using Proguardeum™ products around food and food prep surfaces! Today, there are many over the counter pharmaceutical products with HOCL including eye rinse, oral rinse, facial and acne cleansers, wound care and nasal sprays.

*“Both the gel and the solution were extremely well tolerated. Additionally, based on the safety profile of HOCL, I have no problem recommending HOCL topical treatment to young children or women who are pregnant or trying to get pregnant. I can envision a time in the very near future when this will become a standard protocol in the treatment either alone or in combination with other treatments.”*

Mark Steven Nestor, M.D., Ph.D.

Director of the Center for Clinical and Cosmetic Research™ and the  
Center for Cosmetic Enhancement®, Aventura, Florida

### *Effects of a Low Concentration Hypochlorous for Nasal Irrigation Solution on Bacteria, Fungi, and Virus*

### **Is HOCL allowed by the USDA National Organic Program?**

On September 11, 2015 the National Organic Program (NOP) published a policy memorandum clarifying that electrolyzed water (hypochlorous) is allowed in organic production and handling. [Click here to see USDA Organic memorandum.](#)

### **What industries are using HOCL?**

HOCL is being used in restaurants, food & beverage processing, livestock, agriculture, hospitals, schools, cruise ships, water treatment, and pharmaceutical manufacturing.

### **Healthcare Environments | Schools | Cruise Ships | Applications**

Proguardeum Optimum™ Solution has many useful applications in many indoor environments. HOCL can be used in the kitchen as a no-rinse sanitizer for produce, meat, poultry, and seafood. HOCL can be used as a sanitizer on food contact surfaces and for general sanitation replacing quats and peroxide based chemicals for the cleaning of linens. It can be applied as dry misters to broadly disinfect rooms and large common areas. HOCL can be used to clean and disinfect for prevention and control of Norovirus and Hospital Acquired Infection outbreaks. HOCL can be used as hand sanitizers via dispensers throughout the ship. HOCL can replace chlorine for generating potable water and for pool treatment.

### **How is Optimum™ Solution made?**

The unique solution is made through a proprietary patented process. It is designed to optimized the water molecule properties through a patented process in concert with medical grade filtration media to remove all impurities from inorganic metals to trace pharmaceuticals where the optimized super-oxidized water is generated.

### **How stable is the Optimum™ Solution?**

The Proguardeum On-Demand System optimizes the process with medical grade filtration and utilizes a patented single cell technology to generate in the solution in the pH-neutral range of 6-7. When generating the disinfection solution through a single cell, no high pressures are used and no ions are forced across a membrane.

### **What is the shelf-life of the Optimum™ Solution?**

Given the purity of the disinfection solution, the shelf-life greater than 12 months if stored in a closed container protected from the oxygen in the air. Containers that block out UV light can assist in extending the shelf-life.

### **How effective is the Optimum™ Solution at eradicating bacteria?**

Study results indicated that HOCl is more effective than OCl<sup>-</sup> (aka. chlorine bleach) for inactivation of bacteria and viruses. These results have been confirmed by several researchers that concluded that HOCl is 70 to 80 times more effective than OCl<sup>-</sup> for inactivating bacteria (Culp/Wesner/Culp, 1986). Since 1986, there have been hundreds of publications confirming the superiority of HOCl over OCl<sup>-</sup>. HOCl may be more effective than OCl<sup>-</sup> for two reasons, this first is because it holds a neutral charge and therefore can easily penetrate the negatively charged cell walls of bacteria. The second reason is because HOCl has a much higher oxidation potential than OCl<sup>-</sup>.

### **How effective is it at eradicating viruses?**

The Optimum™ Solution has been independently validated to eradicate the SARs-COV-2 in a field study on May 9, 2020.

### **REFERENCE: Virucidal effect of electrolyzed water**

*Tamaki, S., Bui, V.N., Ngo, L.H. et al. Virucidal effect of electrolyzed water and neutral electrolyzed water on avian influenza viruses. Arch Virol* **159**, 405–412 (2014). <https://doi.org/10.1007/s00705-013-1840-2>

### **PRODUCT SAFETY REFERENCES**

Multiple studies have reported on the safety profile of pH neutral Hypochlorous. It is essentially tasteless & odourless and poses no risk of irritation or toxicity. The Regulatory Authorities have also classified Hypochlorous as safe for use by humans and animals.

Excerpt from CDC

The microbicidal activity of chlorine is attributed largely to undissociated hypochlorous (HOCl).

*The microbicidal activity of a new disinfectant, "super-oxidized water," has been examined. The concept of electrolyzing saline to create a disinfectant or antiseptics is appealing because the basic materials of saline and electricity are inexpensive and the end product (i.e., water) does not damage the environment. The main products of this water are hypochlorous (e.g., at a concentration of about 144 mg/L). As with any germicide, the antimicrobial activity of super-oxidized water is strongly affected by the concentration of the active ingredient (available free chlorine) 536. One manufacturer generates the disinfectant at the point of use by passing a saline solution over coated titanium electrodes at 9 amps. The product generated has a pH of 5.0-6.5 and an oxidation-reduction potential (redox) of >950 mV.*

### **FDA Reference**

In October 2002, the FDA cleared super-oxidized water as a high-level disinfectant (September 18, 2002).

*"Super-oxidized water" has been tested against bacteria, mycobacteria, viruses, fungi, and spores. Freshly generated super-oxidized water is rapidly effective (<2 minutes) in achieving a 5-log<sub>10</sub> reduction of pathogenic microorganisms (i.e., M. tuberculosis, M. chelonae, poliovirus, HIV, multi-drug-resistant S. aureus, E. coli, Candida albicans, Enterococcus faecalis, P. aeruginosa) in the absence of organic loading. However, the biocidal activity of this disinfectant decreased substantially in the presence of organic material (e.g., 5% horse serum) 537, 549, 550. No bacteria or viruses were detected on artificially contaminated endoscopes after a 5-minute exposure to super-oxidized water 551 and HBV-DNA was not detected from any endoscope experimentally contaminated with HBV-positive mixed sera after a disinfectant exposure time of 7 minutes.*

### **HOCL Approvals**

#### **EPA Title 40 - Protection of Environment**

CAS REG 7681-52-9 / Volume: 23

Date: 2005-07-01 / Original Date: 2005-07-01

Title: Section 180.940 - Tolerance exemptions for active and inert ingredients for use in antimicrobial formulations (Food-contact surface sanitizing solutions).

#### **EPA Substance Registry Services (SRS)**

#### **FDA Food Contact Notification 1811**

Hypochlorous Acid may be applied to food-contact surfaces in public eating places, dairy-processing equipment, and food-processing equipment and utensils. When ready for use, the end-use concentration of all hypochlorous acid chemicals in the solution is not to exceed 200 ppm determined as total available chlorine.

#### **USDA Accredited Certifying Agent**