

What is Electrolyzed Water?

Electrolyzed water is generated using water, salt and electricity. The process is called electrolysis and involves applying a direct electric current (DC) across a pair of electrodes immersed in a solution of ions to drive an otherwise non-spontaneous chemical reaction. The key process is the removal or addition of electrons and therefore a change in the oxidation-reduction potential of the solution.

Offshore's electrolysis systems are capable of generating neutral-to-acidic electrolyzed water (anolyte) for cleaning & sanitation and for water disinfection. The anolyte is composed primarily of the free chlorine molecule hypochlorous acid (HOCl), a powerful oxidant.



EFFECTIVE



Electrolytically generated hypochlorous acid kills bacteria, bacterial spores, viruses, and fungi 100x more effectively than chlorine bleach.

EFFICIENT



Hypochlorous acid is generated on-site at preset concentrations using Offshore's systems. No storing or mixing toxic chemicals.

NATURAL



Electrolytically generated hypochlorous acid is a safe, non-toxic, eco-friendly, no-rinse solution produced with just water, table salt, and electricity..

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Industries

We use Electrolyzed Water for sanitation in many industries.

Medical Facilities & Hospitals

EW can be used to sanitize all contact surfaces in the hospitals & medical offices including patient rooms, hospital beds, chairs, medical equipment and instruments, nursing stations, surgery rooms, floors, and bathrooms.

Schools & Daycare Centers

Eco-friendly sanitizer that is 100% safe and non-toxic. It can be used to replace all the chemicals for cleaning and sanitation. Many shared contact surfaces can be contaminated with bacteria and viruses spread by skin flora and respiratory droplets. Common bacteria that contaminate contact surfaces include bacteria such as staphylococcus and streptococcus and viruses such as Adenovirus, Influenza, and Norovirus.

Banks & Municipal Offices

Public offices and highly trafficked spaces with many touchpoints. Using a completely natural solution ensures the public is kept safe from chemicals or allergens or any individual sensitivities. Sanitizing surfaces such as desk tops, service windows, courtrooms & restrooms.

Restaurants, Bars & Nightclubs

Environment for bacteria and viruses to spread. Sugary drinks are often spilled creating ideal environments for microbial organisms to grow. Bars and tables are being frequently shared by patrons spreading bacteria and viruses by skin contact and respiratory droplets. Odor can develop left unharmed by insufficient sanitation.

Gyms

EW ideal antimicrobial for gyms because it is safe, all-natural, and effective. EOW does not cause skin or respiratory irritation and satisfies the demand for implementing safer and more natural alternatives to toxic chemicals. Sanitize all contact surfaces in the gym including equipment, seats and benches, weights, mats, medicine balls, floors, and bathrooms.

General Offices & Store Fronts

Any spaces where public or individuals spend time leave areas susceptible to contagions. Surfaces such as desks, counters, cashier or kitchens can be sanitized. Using a product that is safe for everyone prevents reactions to harsh chemicals without sacrificing cleanliness.

EW can replace chemicals such as chlorine bleach and quaternary ammoniums. Not only is electrolyzed sanitation water safe and all-natural, but it is more effective than the chemicals currently being used.

- Antimicrobial Effectiveness
- 100 times more biocidal than chlorine bleach
- Effective against G+ and G- bacteria
- Effective against Clostridium difficile spores
- Effective against VRE, MRSA, and MRSE
- Effective against Mycobacterium tuberculosis
- Effective against HIV, HBV, HCV, and CMV
- No high temperatures are necessary
- Most effective between 50-86 °F (10-30 °C)
- Does not cause irritation, safe on eyes and skin

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About Hypochlorous Acid - HOCl

What is HOCl?

Quick Facts

- HOCl is the scientific formula for hypochlorous acid, a weak acid similar to that of a mild citrus juice.
- HOCl is made naturally by white blood cells in all mammals for healing and protection.
- HOCl is a powerful oxidant that is effective against invading bacteria, fungi, and viruses.
- Generating HOCl by running electricity through a solution of saltwater was discovered in 1970s.
- HOCl is now used in healthcare, food safety, water treatment, and general sanitation.

How is HOCl made?

History of Electrolysis

- Michael Faraday founded the laws of electrolysis and it became commercially available in the 1870s.
- Generating HOCl from the electro-chemical activation (ECA) of salt water was developed in the 1970s.
- Early ECA technology used membranes to force saltwater into two solutions of HOCl and NaOH.
- In the 1980s, single stream systems were developed that produced one solution of HOCl without byproduct.
- In recent, single stream systems have been innovated to last longer and generate more stable solutions.

Research Publications

Over 30 years of Research on Hypochlorous Acid

Research by Microbial Pathogen

- Listeria - Over 70 Research Publications
- E. coli O157:H7 - Over 60 Research Publications
- Salmonella - Over 50 Research Publications
- Staphylococcus - Over 30 Research Publications

Research by Industry

- Produce - Over 120 Research Publications
- Poultry - Over 30 Research Publications
- Seafood - Over 30 Research Publications
- Medical - Over 20 Research Publications

Why is HOCl more efficient at killing pathogens?

Hypochlorous Acid (HOCl) vs. Sodium Hypochlorite (Chlorine Bleach)

Hypochlorite ion carries a negative electrical charge, while hypochlorous acid carries no electrical charge. The hypochlorous acid moves quickly, able to oxidize the bacteria in a matter of seconds, while the hypochlorite ion might take up to a half hour to do the same. Germ surfaces carry a negative electrical charge which results in a repulsion of the negatively charged hypochlorite ion to the area of the germ surfaces, making hypochlorite ion less effective at killing germs. The ratio of the two compounds is determined by the relative acidity (pH) of the water. Water treatment specialists can adjust the pH level to make hypochlorous acid more dominate, as it is more efficient at killing bacteria. The hypochlorous acid's lack of electrical charge allows it to more efficiently penetrate the protective barriers surrounding germs.

Home use of HOCl

Home Electrolysis Systems

There are several home electrolysis systems that have been developed that can generate stable hypochlorous acid using table salt and water. Distilled vinegar is sometimes added to lower the pH allowing for a solution of free chlorine more dominated by the hypochlorous acid molecule. When choosing a home system, an important factor to consider is the quality of the electrolysis cell. Higher quality systems may cost more but will last much longer due to the durability of the alloys in the metals used to make the cells.

What are the benefits?

Hypochlorous acid, unlike chlorine bleach, is 100% safe and non-irritant. If it gets on your skin or in your eyes, it will not burn. Even if it were accidentally ingested, it is completely harmless. Yet, it is 70-80 times more efficient at killing microbial pathogens than chlorine bleach.

Where can it be used?

In the home, hypochlorous acid is useful anywhere you need a sanitizer but don't feel comfortable using a toxic chemical. A perfect example is in the kitchen. Instead of rinsing leafy greens with water, use hypochlorous acid. Or for personal items such as toothbrushes or razors, hypochlorous acid is safe. Want to sanitize laundry without damaging or discoloring clothing, hypochlorous acid is the answer.

Commercial use of HOCl

Membrane Cell Electrolysis

The technology behind generating hypochlorous acid has evolved tremendously over the past 20 years. The market used to be dominated by membrane cell electrolysis that used high pressures to force saltwater into two separate streams, an acidic stream and an alkaline stream. The acidic stream would contain hypochlorous acid (HOCl), the anolyte or oxidizing agent, and the alkaline stream would contain sodium hydroxide (NaOH), the catholyte or reducing agent. The benefit of these systems were that two useful solutions were generated, a sanitizer and a degreaser. The downside of these systems were that they were expensive, required high maintenance, and would generate unstable solutions that lost their oxidation-reduction potential (ORP) within a short period of time.

Single Cell Electrolysis

With the development of single cell electrolysis, many of these obstacles were overcome. Single cell electrolysis does not use high pressures across a membrane therefore little to no maintenance is required. And because single cell electrolysis does not force the saltwater into two streams of opposite oxidation-reduction potential and opposite pH, a more stable solution is generated, a solution that is not seeking to regain an equilibrium. Single cell systems generate only one solution, an anolyte in the pH range of 5 to 7. This pH range is optimal for hypochlorous acid in regards to stability and effectiveness as a sanitizer.

