Effectiveness, Safety, and Quality Test Data

Effectiveness

In vitro disinfection rate test
In vitro virus reduction rate test(COVID-19)
Disinfection of bacteria on inorganic substance (Disinfection rate test of bacteria on petri dish)
Disinfection rate test of bacteria on gloves
Disinfection of bacteria on cloth products (Disinfection test of bacteria on masks)
Disinfection rate test of indoor airborne bacteria
Reduction rate test of indoor airborne virus
Disinfection rate test of indoor dropping bacteria
Reduction rate test of indoor dropping virus
Disinfection rate test of indoor surface-adhering bacteria
Reduction rate test of indoor surface-adhering virus

Safety

In vitro skin irritation test
In vitro eye mucous membranes irritation test
In vitro airway epithelium irritation test
Rabbit 7-day accumulated skin irritation study
Rat 28-day repeated inhalation toxicity study

Quality

Storage stability
Stability in use – Effects of exposure (including ultraviolet region)
Stability in use – Effects of exposure (excluding ultraviolet region)
Stability in use – Effects of gap
Metal corrosion study
Analysis of component

Item name	CLFine™ Ionless™ Hypochlorous Acid Water
Volume	10Liters/bottle
Material	Japanese Pharmacopeia sodium chloride (NaCl), Purified water
Ingredients	Hypochlrous acid(HOCl) 0.0030% -0.0050% Water(H_2O) 99.98% or More
pH	5.0 ～6.5

Direction for use	Ready to use. Spray or pour onto surfaces thoroughly. Wipe with appropriate microfiber cloth or sponge. CLFine™ is deactivated when in contact with organic substances, so please clean the target area such as windows and walls before spraying. After spraying, there is no need to ventilate the treated area. This product is non-combustible, so there is no risk of fire hazard. Generate the aerosol in indoor spaces using our recommended ultrasonic humidifier (*).
Storage condition	Store in the original container in a cool, well ventilated, frost-free area out of direct sunlight between 1 to 25°C. Keep container tightly closed when not in use, as chlorine concentration deteriorates over time when in contact with air.
Shelf life	18 months after manufacturing date

(*)For details about the recommended spray conditions, usage environment, etc., please contact your local representative / distributor.

NIPRO

[Manufacturer]
NIPRO CORPORATION
3-9-3, Honjo-Nishi, Kita-ku,
Osaka 531-8510, JAPAN

[Manufacturing facility]
NIPRO PHARMA CORPORATION ISE PLANT
647-240, Ureshinotengeji-cho, Matsusaka-shi,
Mie, Japan

NIPRO

Pure, Safe, Effective

Reduction rate of airborne virus over 99%

JEM (Standards of the Japan Electrical Manufacturers' Association) 1467
Inhibit performance evaluation test toward airborne virus

＊Effectiveness varies depending on the situation in use.

CLFine™

Ionless™ Hypochlorous Acid Water

Unique manufacturing method: Three-chamber electrolyzed-water generator

Reduction of indoor airborne/surface-adhering bacteria and virus

A wide range of disinfection effects

Prevention towards indoor airborne/surface-adhering bacteria and virus

Effective chlorine concentration 40±10ppm **Less than NaCl 10mg/L** **pH 5.0～6.5**

What are your thoughts on indoor infection control?
Using the technology cultivated in the medical field for many years,
Nipro would like to propose Ionless™ Hypochlorous Acid Water* that disinfects and reduces indoor airborne bacteria and virus.

＊Ionless
Less than NaCl10mg/L and total amount of ions other than NaCl of 15 mg/L or less (Nipro standard)

Reduction and disinfection of indoor airborne bacteria/virus by aerosol mist of Ionless™ Hypochlorous Acid Water

Reduction and disinfection of surface-adhering bacteria/virus

For doorknobs, handrails, walls, windows, and other areas where the hand touches

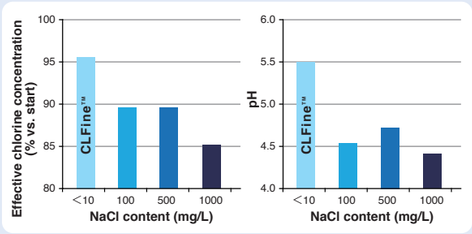
Pure Ionless™ Hypochlorous Acid Water

CLFine™ is made from Japanese Pharmacopoeia sodium chloride and purified water.
It is manufactured based on JIS B 8701 : 2017*using a dedicated device (three-chamber electrolyzed-water generator) that complies with hypochlorous acid water generators, which reduce ions such as NaCl, nitrate ions, and sulfate ions. Water quality also complies with the water quality standards stipulated in the JIS standard.

＊JIS
the Japanse Industrial Standards

Stability **Storage Condition: 40°C - 1 month**

Standard : Effective chlorine concentration 40±10ppm (30ppm=65% vs. start)
pH 5.0~6.5
Chloric acid content less than 0.6ppm (Tap water quality standards in Japan)



Safe Realization of aerosol mist of Ionless™ Hypochlorous Acid Water based on safety tests

CLFine™ is adjusted to an effective chlorine concentration of 40±10 ppm and can be used without dilution. Also, the pH is adjusted to be slightly acidic, and the influence of metal corrosion and the effects of aerosol mist of Ionless™ Hypochlorous Acid Water on the living body were also confirmed.
Regarding the spatial effective chlorine concentration, we propose it according to the customer's environment, referring to the standard of chlorine control concentration (0.5 ppm) of the Industrial Safety and Health Act in Japan.

Corrosion Study

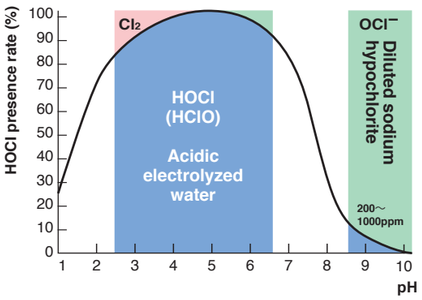
Test material	Hypochlorous water		Tap water
	Space chlorine concentration 0.02ppm	Space chlorine concentration 0.5ppm	
SUS304	Appearance change: None	Appearance change: None	Appearance change: Slight
iron	Appearance change: Yes	Appearance change: Yes	Appearance change: Significant
electronic substrate component	Appearance change: None	Appearance change: None	Appearance change: Slight

Study Facility : JFE Techno-Research Corporation
Test Method : Accelerated test by diverting JIS C 60068-2-52

Effective

Effectiveness of reduction and disinfection of bacteria/virus by hypochlorous acid water

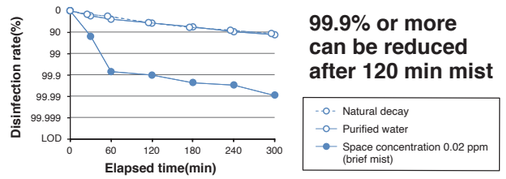
Acidic electrolyzed water(hypochlorous acid water) has a higher ratio of hypochlorous acid water(HOCl), which is a bactericidal factor than sodium hypochlorite, so it shows high activity at low concentrations. CLFine™ is an Ionless™ Hypochlorous Acid Water with high hypochlorous acid(HOCl) presence rate adjusted to pH 5.0 to 6.5.



Reference: "Norovirus prevention and Electrolyzed Water" Functional Water Doundation 2008

Disinfection of indoor airborne bacteria

Airborne bacteria(Staphylococcus aureus)
Number of disseminated bacteria: 100,000 or less

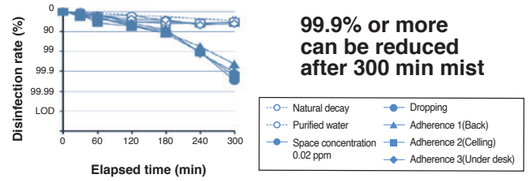


99.9% or more can be reduced after 120 min mist

Study Facility: Kitasato Research Center for Environmental Science
Study method: After evenly spreading Staphylococcus aureus in a test space of 9.72m², the decrease in the number of bacteria when misting CLFine™ was evaluated

Disinfection of indoor surface-adhering bacteria

Surface-adhering bacteria(Staphylococcus aureus)
Number of disseminated bacteria: 10,0000 or less



99.9% or more can be reduced after 300 min mist

Study Facility: Kitasato Research Center for Environmental Science
Study method: Petri dishes seeded with Staphylococcus aureus was installed in a test space of about 9.72m², and the decrease in the number of bacteria when misting CLFine™ was evaluated.

In vitro disinfection rate test

HOCl concentration which demonstrated bacterial inactivation effects of 3 log or more
(= inactivation rate: 99.9% or more)

Bacteria species	Duration of action			
	20s	1min	5min	30min
Staphylococcus aureus	≧ 3ppm	≧ 3ppm	≧ 3ppm	≧ 3ppm

Study Facility: VibioSphen (France)
Study method: Evaluated the decrease in the number of viruses when virus suspensions and various concentrations of CLFine™ are mixed for a certain period of time

In vitro Virus reduction rate test

HOCl concentration which demonstrated bacterial inactivation effects of 3 log or more
(= inactivation rate: 99.9% or more)

Bacteria species	Duration of action			
	20s	1min	5min	30min
SARS-CoV-2 (novel coronavirus)	≧0.3ppm	≧0.3ppm	≧0.3ppm	≧0.3ppm
Influenza virus type A/H1N1	≧1ppm	≧0.3ppm	≧0.3ppm	≧0.3ppm

Study Facility: VibioSphen (France)
Study method:Evaluated the decrease in the number of viruses when virus suspensions and various concentrations of CLFine™ are mixed for a certain period of time