Product Information

Sanistar
SS-300

Estimated usage **3** tons/day

Sanistar
SS-1000

Estimated usage **3 - 12** tons/day

Sanistar
SS-2500

Estimated usage **10 - 30** tons/day

Specifications

Model	SS-300	SS-1000	SS-2500
Power source voltage(V)	Varies by country	Varies by country	Varies by country
Power consumption(W)	75W	150W	360W
Standard production capacity	300L/h	1,000L/h	2,500L/h
Chlorine source	Hydrochloric acid 3%	Hydrochloric acid 9%	Hydrochloric acid 9%
Standard source consumption	0.18kg/h	0.25kg/h	0.5kg/h
Dimensions(W×D×H)	210×256×345mm	420×303×538mm	560×400×825mm
Weight	11kg	32kg	70kg

The above specifications are subject to change without notice.

pH Test Strip

A simple test strip with two color bands for pH 3.5 - 6.8.

Chlorine Test Strips

The color of this pottassium iodide starch paper changes in the presence of residual chlorine.

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2016-4

SARAYA HACCP
Ensuring clean and safe food manufacturing

SANISTAR
Pure Sanitation from the Tap

Approved bactericide for food materials
Slightly acidic hypochlorous acid water

SARAYA

Disinfect safely with slightly acidic electrolyzed water

What are your countermeasures against microbial contamination, such as O-157 or norovirus? Are they perfect? The slightly acidic hypochlorous acid water generated by Sanistar is a crucially safe disinfectant. Being officially designated as a bactericide for food materials, Sanistar Water can be used for washing food materials, and does not pose risks to workers. Its bactericidal power is high against food poisoning microbes, and it is used as rinsing water after washing in a wide range of applications in various fields. Sanistar Water is high-security and produces the minimum amount of trihalomethan. It has no negative impact on workers engaged in disinfection, equipment, or the environment.

SS-300

SS-1000

SS-2500

Sanistar unit generates slightly acidic electrolyzed water

Three types of Sanistar units are available in our lineup, which offer different capacities to generate Sanistar Water. These units have a wide range of applications, from restaurants to food factories.

Three principles of food poisoning prevention

1 No adhesion

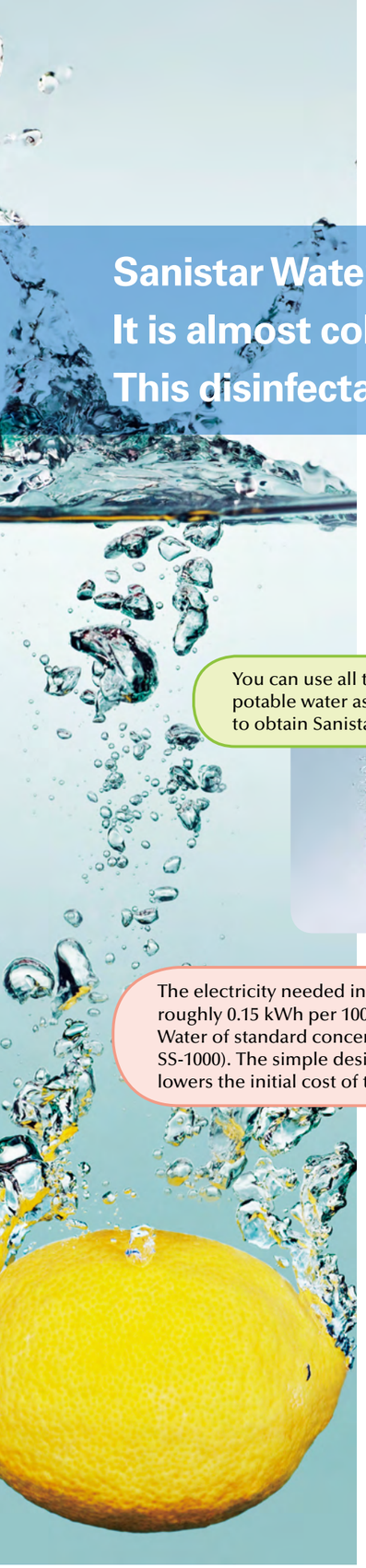
Bacteria may adhere to foods through your hands or utensils, and can proliferate to cause food poisoning.

2 No proliferation

Bacteria proliferate rapidly around room temperature (10 to 40°C); for instance, the doubling time of Vibrio parahaemolyticus is within 8 to 10 minutes.

3 Disinfection

Remove bacteria completely. Sanistar enables effective implementation of this principle.



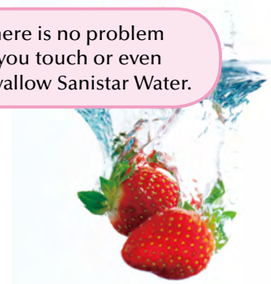
Sanistar Water is slightly acidic electrolyzed water. It is almost colorless, tasteless, and odorless. This disinfectant is close in character to tap water.

FEATURES

Sanistar Water is a bactericide for food materials designated by the Ministry of Health, Labour and Welfare in Japan. The application of Sanistar Water directly onto food materials is officially approved.

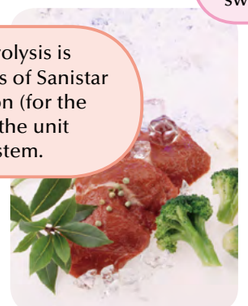
You can use all types of potable water as a source to obtain Sanistar Water.

There is no problem if you touch or even swallow Sanistar Water.

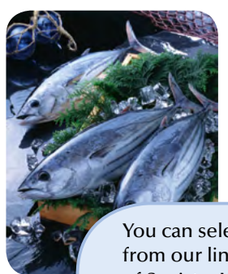


Let me protect your foods.

The electricity needed in electrolysis is roughly 0.15 kWh per 1000 liters of Sanistar Water of standard concentration (for the SS-1000). The simple design of the unit lowers the initial cost of the system.



Sanistar Water has a wide range of applications, including food factories, medical facilities, rest homes, restaurants, hotels, fishery, agriculture, etc.

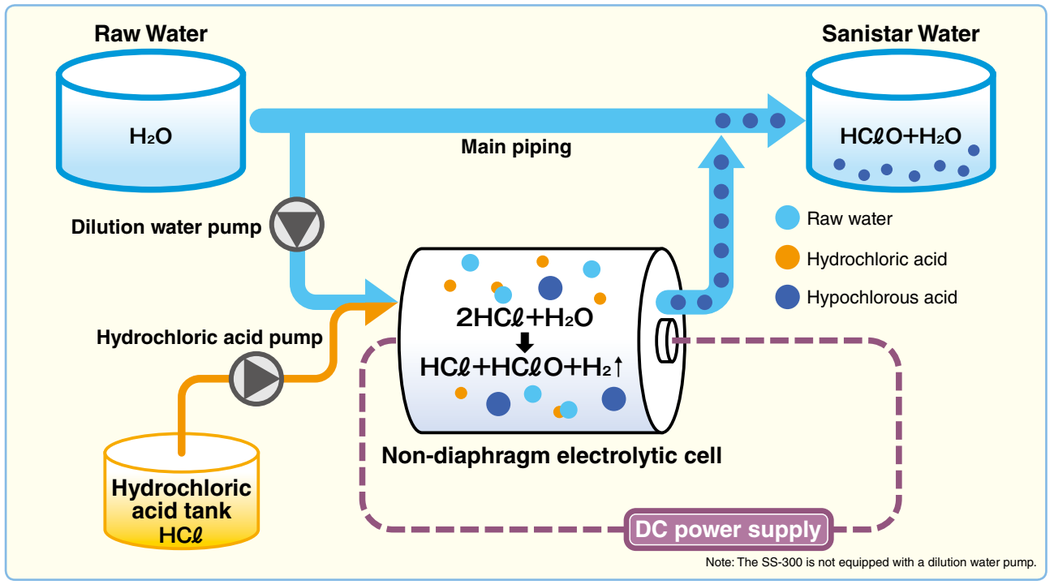


You can select the system which meets your demand from our lineup. The compact model generates 300 liters of Sanistar Water per hour. The models which generate 1,000 or 2,500 liters per hour are also available, satisfying the large demands of beverage and brewing industries.

What is Sanistar Water?

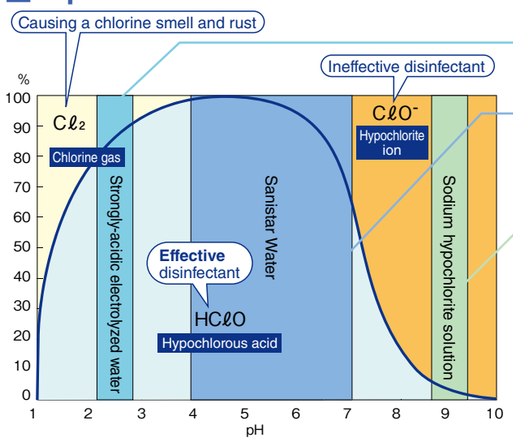
Hypochlorous acid water at pH 4.0 - 7.0 enables safe disinfection.

Sanistar Water production flow



Note: The SS-300 is not equipped with a dilution water pump.

Equilibrium chart on chlorine in water



Sanistar Water: available chlorine 10 - 30 ppm, pH 4.0 – 7.0

Below pH 4, the system tends to generate chlorine gas. This gas disperses into the air, causing an offensive chlorine odor and rust in the manufacturing area.

The chlorine gas is negligible if the hypochlorous acid solution is in the range from pH 4 – 7. The amount of hypochlorous acid, the source of its bactericidal power, is maximized. It enables safe and effective disinfection.

Roughly only 5% is hypochlorous acid. To heighten their bactericidal effects, the concentration should be as high as 200 ppm. Problems, including chlorine odors then arise.

The amount of hypochlorous acid determines the disinfection effect.

Countermeasures against microbial-contamination are needed everywhere.

Food factories

In brewing, beverage, fishery processing, and other food processing industries, Sanistar Water facilitates the disinfection of tanks, pipelines, filling machines, containers, walls, floors, etc. It also works on products such as fresh cut vegetables, prepared foods, and desserts.
Workers' hands are disinfected, as well. In addition to disinfection, Sanistar thus improves and maintains the cleanliness of your workplace and the quality of your food products.

■ Washing clean rooms

Sanistar Water is used in clean rooms, to obtain an even cleaner environment. With no chlorine odor, it is harmless to workers.

■ Washing floors

Mold often grows on floors and walls; however, with Sanistar Water, it is possible to reduce the bacterial density inside of production facilities. Cheesemaking factories are good examples. Since cheese manufacturers cannot wash their products directly, they thoroughly disinfect floors and walls to control microbes in their food production lines.

■ Sanistar Water outlet

In this manufacturing site, Sanistar Water is used just like tap water.

■ Disinfecting gauze

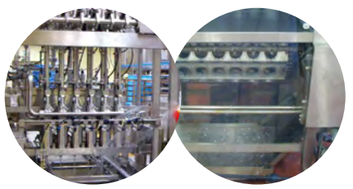
Here, Sanistar Water disinfects wipers and gauze. Workers use the disinfected gauze to wipe out cardboard boxes before opening. In principle, they wash wiping materials with abundant, overflowing water.

■ Washing belt conveyors

New milk bottles march on a belt conveyer in this dairy. The conveyor is washed with Sanistar Water.

■ Example of hand/finger washing equipment

Killing germs on hands and fingers is the first step of hygiene management. After removing grease with soap, hands are rinsed with Sanistar Water. Since it is almost completely harmless, there is no need to worry about skin damage.



■ Washing filling machines/retainers

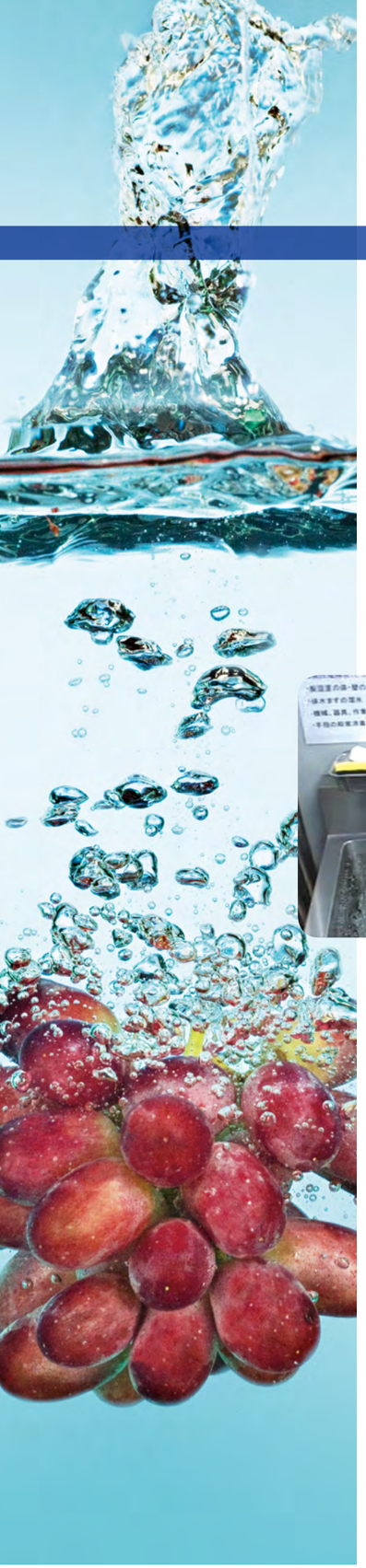
Belt conveyors and retainers often become contaminant sources. Workers spray Sanistar Water on these areas to prevent contamination. After installation of Sanistar, complaints related to microbes are decreased.

■ Washing chain conveyors

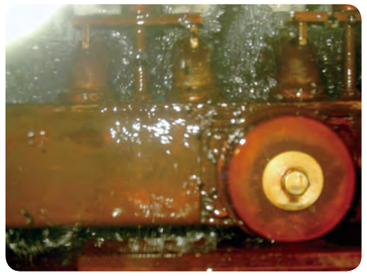
Sanistar Water is applied, because chain conveyors are also potential contaminant sources.

■ Washing manufacturing equipment

In this production line for boiled-noodles, Sanistar Water is sprayed to clean the equipment. Chains and other complex parts are difficult to wash by hand. To clean such parts, it is very effective to spray Sanistar Water while the machine is moving.



Food factories



■ Disinfecting milk bottles

Milk bottles are washed and finally rinsed with Sanistar Water.

■ Desserts factories

Since there are many outlets for Sanistar Water, all that is needed is to turn on a faucet. Sanistar Water can be used any place where moisture is allowed, and greatly advances the hygiene management of workplaces.

■ Cutting fresh vegetables

Previously, workers used sodium hypochlorite solution in this line for cut fresh vegetables. However, the fumes from the highly concentrated disinfectant were so offensive that the workers' eyes were irritated within minutes. Sanistar Water solved this problem, and the working environment was greatly improved.

■ Vegetable Slicer

During operation, Sanistar Water is injected into the device to reduce damage to the food product, and to prevent the proliferation of microbes during the cutting process.

■ Fishery Factories

In this octopus-processing factory, Sanistar Water is used instead of sodium hypochlorite solution.

Restaurants

Sanistar disinfects hands and fingers in the kitchens of restaurants and hotels. It is applied to fresh vegetables, fruits, meat, fish, utensils, dishes, and cooking table.

Medical facilities/care homes/ nursery schools

In medical/care facilities, Sanistar Water is utilized to wash hands and fingers, as well as equipment for food service. Since Sanistar Water does not develop resistant bacteria, it disinfects a wide range of materials, for instance, bathrooms (including bathtub, floors, and walls) and wheelchairs. Child care workers in nursery school wash their hands and play equipment with the disinfectant, to secure the environment for children.

Milking parlors/ poultry yards/ farms

For the effective production of high-quality milk, dairy farmers minimize the risk of microbial infection by washing their milking machines with Sanistar Water.

It is expected that Sanistar Water will reduce agrochemical use. Its bactericidal effects are potent enough to replace conventional agrochemicals, and reduce cost. Sanistar Water is a safe choice, since it remains only ordinary water after use.

Bactericidal effects on food poisoning bacteria and spores

Effect on food poisoning bacteria

As shown in this table, Sanistar Water has a bactericidal effect on a variety of microbes causing food poisoning. A treatment with Sanistar Water (available chlorine concentration of 10 ppm, pH 6.2) killed almost all microbes in just one minute. Hypochlorite ion OCl^- is also a common disinfectant. Researchers examined the relation between time and available chlorine concentration needed to kill 99% of typical E.Coli. The results showed that the bactericidal power of hypochlorous acid was about 150 times greater than that of hypochlorite ion. The level of influenza virus and FCV went down to the detection limit after a treatment with Sanistar Water (10 ppm, pH 6.2) in one minute. It has been proven that Sanistar Water is highly effective.

Microbe	Bacterial count before treatment (CFU/10 μL)	Bacterial count after treatment (CFU/10 μL)
E. coli	5.2×10^8	<1
Salmonella enterica	2.1×10^8	<1
Staphylococcus aureus	1.8×10^8	<1
Pseudomonas aeruginosa	3.7×10^8	<1
Vibrio parahaemolyticus	3.1×10^7	<1
Aspergillus niger	1.0×10^2	<1
Yeast	8.8×10^2	<1

Available chlorine concentration: 10 ppm
pH: 6.0
Treatment time: 1 minute
Treatment temperature: 20°C

Japan Food Research Laboratories
Issue;October 17.2002
Report No.102071681-001

Virus	Before treatment ($TCID_{50}$/mL)	After treatment ($TCID_{50}$/mL)
Influenza virus	1.4×10^6	<40
Feline calicivirus(FCV)	1.0×10^6	<40

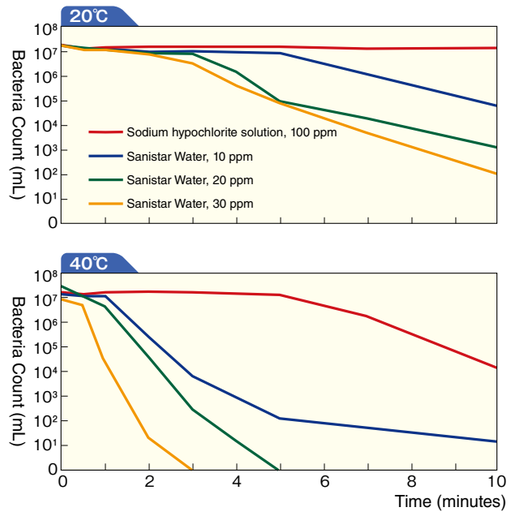
Available chlorine concentration: 10 ppm
pH: 6.0

Biocontrol Science Vol.34, No.1, 3-10, 2006

Evaluation of bactericidal activity against spores

Spores were transferred to an agar plate.
The bacteria were then cultured for one week at 35°C, then suspended in sterile saline, harvested with a centrifuge, and washed.
The culture was then stored for one week or longer at 4°C, and diluted to 10^8 CFU/mL with sterile saline. We confirmed that the bacteria count did not decrease after treatment in 80°C saline for 30 minutes.
We kept 36 mL of Sanistar Water (10/20/30 ppm, pH 6.0) and 4 mL of the suspension at the same temperature. After the suspension was added to Sanistar Water, the mixture was sampled over time. We plated the sampled portion on standard plate count agar, and cultivated it at 35°C for 48 hours, then counted the number of viable micro-organisms. The result shows that Sanistar Water is effective against spores. As the temperature is raised, its bactericidal activity is enhanced.

● **Survival chart of spores at different temperatures**



Sanistar Water is ACTIVE against flu virus

Comparison with Sodium hypochlorite solution and Strongly-acidic electrolyzed water

Stability of Sanistar Water and strongly-acidic electrolyzed water

● **Open vessel test**

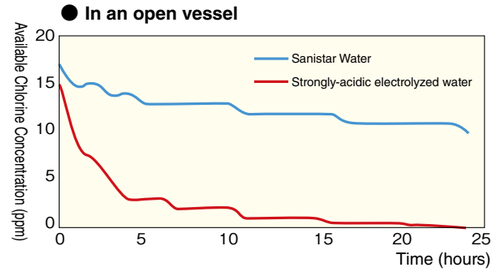
Four liters each of Sanistar Water (available chlorine concentration 17 ppm and pH 6.52) and strongly acidic electrolyzed water (available chlorine concentration 15 ppm and pH 2.33) were poured into open plastic containers and kept at room temperature (about 25°C). Available chlorine concentration was measured every hour.

● **Closed vessel test**

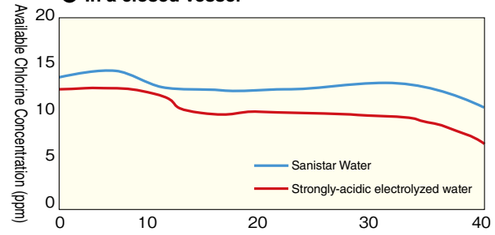
Sanistar Water (available chlorine concentration 14 ppm and pH 6.00) and strongly acidic electrolyzed water (available chlorine concentration 13 ppm and pH 3.95) were filled into separate brownish colored bottles (3 liter capacity). The openings of both bottles were covered with aluminum foil, closed firmly with screw lids and kept at room temperature (about 25°C). The available chlorine concentration was measured once daily by taking samples of the solutions from each bottle.

The available chlorine concentration in solutions in open containers after 24 hours fell to 58% of its original level in the Sanistar Water and to only 0.3% in the strongly acidic electrolyzed water. In closed containers, the available chlorine concentration after 40 days was 78% of its original in the Sanistar Water and 58% in the strongly acidic electrolyzed water. Therefore, superiority of the Sanistar Water was proven in both open/closed containers.

● **In an open vessel**



● **In a closed vessel**

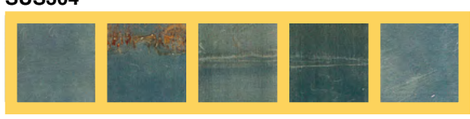


Friendly to anything

Corrosion caused by disinfectant

Samples of metal were half-immersed in 4 liters of solutions poured in plastic containers.
The upper halves of the samples were exposed to the air, while the lower halves were held in solution. Fresh solutions were provided 5 times during the 7-day period. Corrosion was similar for metal in Sanistar Water and the 100 ppm sodium hypochlorite solution. Strongly acidic electrolyzed water corroded brass, aluminum alloy, and SUS304; SUS316 and SUS316L showed some signs of rust. Sanistar Water has only a slight impact on metal equipment, which helps to decrease increases in maintenance and repair costs on your production line.

SUS304



Aluminum alloy

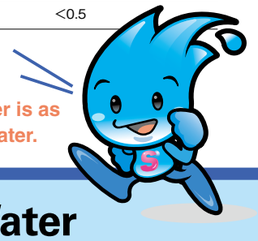
Metal corrosion

	SUS304	Aluminum alloy
Sanistar Water	No change	Small white rust stains
Strongly-acidic electrolyzed water	No change in solution; rusted brown in air.	Clear white rust on the surface in solution
Sodium hypochlorite solution	No change	Small white rust stains
Tap water	No change	No change

Residual chlorine after use

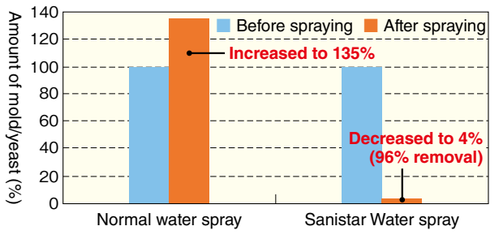
After rinsing food materials (lettuce, carrot, tuna, beef, and pasta) with Sanistar Water (available chlorine concentration 30 ppm, pH 6.2), residual chlorine was measured in accordance with the recommendations in the section on "hypochlorite acid" in Determination of Food Additives in Foods 2000, 2nd Ed., published by the Japan Food Hygiene Association. As shown in the chart, hypochlorous acid was not detected in any of these food materials.
It is well demonstrated that Sanistar Water is a safe and odorless disinfectant, which is directly applicable to food materials.

Food materials	Residual chlorine after treatment (mg/kg)
Lettuce	<0.5
Carrot	<0.5
Tuna	<0.5
Beef	<0.5
Pasta	<0.5



Effect of spraying Sanistar Water on mold and yeast

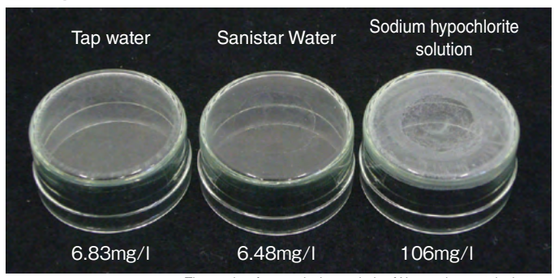
We evaluated the effect of sprayed Sanistar Water on airborne bacteria. The aim of this experiment was to develop a countermeasure against plant diseases in agricultural fields, such as greenhouse cultures. Sanistar Water removed 96% of the mold and yeast. In contrast, normal water spray increased the mold and yeast by 35%. Some molds are stimulated by the spread of spores by moisture, and this may have caused this increase. These results clarify the effect of Sanistar Water on mold and yeast.



Evaporation residue of Sanistar Water

Tap water, Sanistar Water, and sodium hypochlorite solution were dried in petri dishes, and their evaporation residues were examined. Sodium hypochlorite solution yielded the largest amount of white residue. After the measurements, we confirmed that sodium hypochlorite solution contains 15 times more sodium than tap water. In contrast, the amount in Sanistar Water was equivalent to that of tap water.

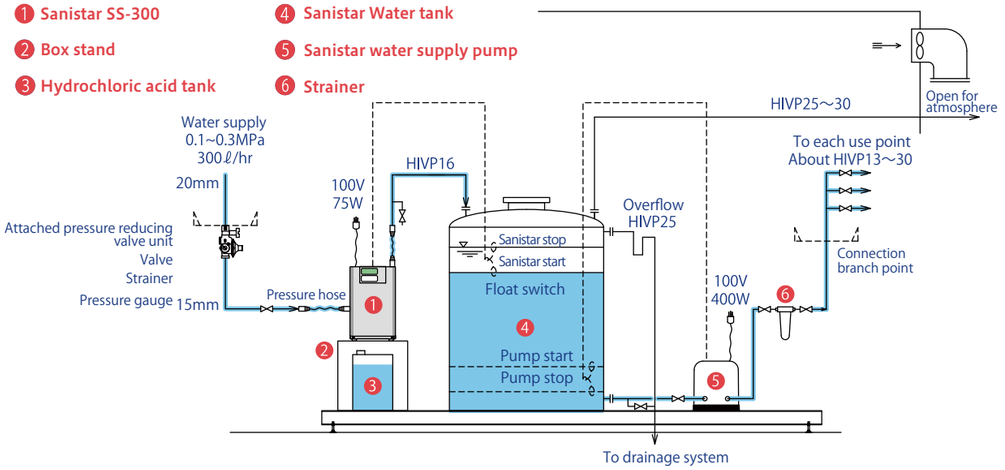
■ **Evaporation residue**



The results of a quantitative analysis of Na are shown at the bottom.

System flow example SS-300

1. Sanistar SS-300
2. Box stand
3. Hydrochloric acid tank
4. Sanistar Water tank
5. Sanistar water supply pump
6. Strainer

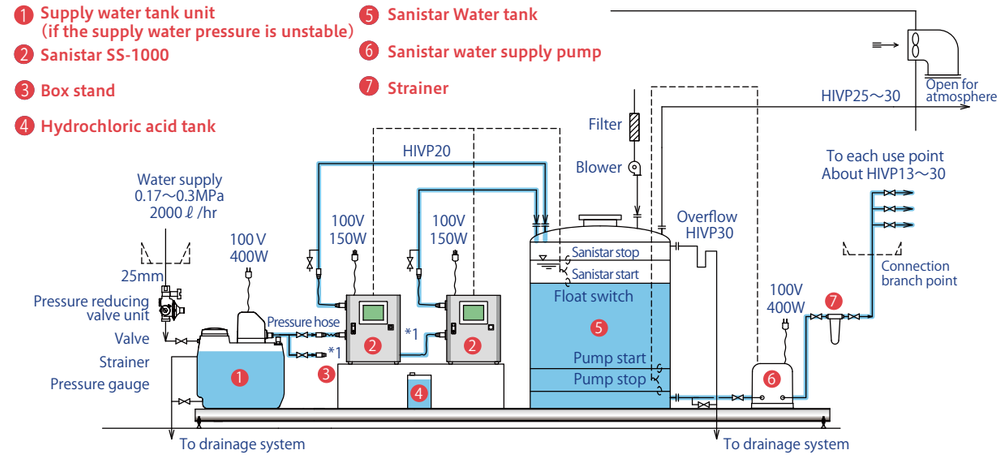


Notes on construction

- For indoor use only.
- Temperature requirement: 3 ~ 40℃
- Humidity requirement: Less than 85% (no condensation)
- Supply water pressure: 0.1 ~ 0.3MPa
- Keep Sanistar Water outlet open and do not stop the water flow.
- Use HIVP for Sanistar Water piping.
- Use fluoro rubber or fluoro resin for gaskets.
- Install Sanistar Water tank in a place with drainage.
- Well ventilate the room in which installed Sanistar.
- Sanistar has an alarm contact (dry normal open contact).

System flow example SS-1000

1. Supply water tank unit (if the supply water pressure is unstable)
2. Sanistar SS-1000
3. Box stand
4. Hydrochloric acid tank
5. Sanistar Water tank
6. Sanistar water supply pump
7. Strainer



Notes on construction

- For indoor use only.
- Temperature requirement: 3 ~ 40℃
- Humidity requirement: Less than 85% (no condensation)
- Check entrance and carry-in route in advance.
- Supply water pressure: 0.17 ~ 0.3MPa
- Keep Sanistar Water outlet open and do not install a valve.
- Do not install Sanistar Water outlet piping higher than 3,000mm from the floor.
- Use HIVP for Sanistar Water piping.
- Use fluoro rubber or fluoro resin for gaskets.
- Install Sanistar Water tank in a place with drainage.
- Well ventilate the room in which installed Sanistar.

Improve Work Efficiency with Foam Cleaning

Foam Cleaning
Clean Foam

Hygienic Rinse Water
Sanistar Water

■ Cost Reduction and Efficiency Improvement

Advantage of the Foam Cleaning System

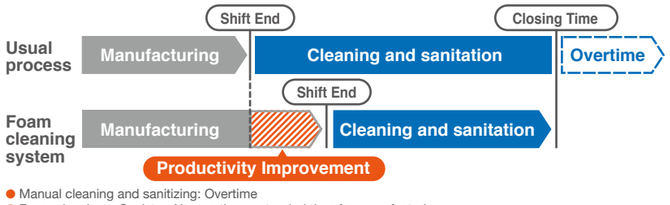
Foam cleaning eliminates the disadvantages of manual cleaning, increasing productivity.

Factors preventing standardization of cleaning methods

- Manual cleaning methods differ from person to person.
- Cleaning results will vary when complicated or large number of objects are cleaned at once.
- It is difficult to tell where chemical has been applied or already cleaned.

A foam cleaning system solves these problems.

Significant reduction in cleaning time and cost



- Manual cleaning and sanitizing: Overtime
- Foam cleaning + Sanistar: No overtime, extended time for manufacturing

Foam cleaning can improve productivity.

■ Foam Cleaning Product Line

SCX-24

Type	Compressor filled *1
Chemical dispensing	1L/m *2
Rinse function	None
Spray distance	Close to long range
Spray width	Broad
Foam fineness	Very Fine

*1 Compressor is not included.
*2 Calculated at 30x dilution. Dispensing varies by chemical.

CF-5000

Type	Manual or compressor filled *1
Chemical dispensing	250mL/m *2
Rinse function	None
Spray distance	Close range
Spray width	Middle
Foam fineness	Fine

*1 Compressor is not included.
*2 Calculated at 30x dilution. Dispensing varies by chemical.

Food Safety Compatible Cost Savings

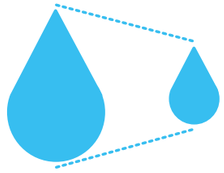
While the daily cost is never much, how often do we think about the long term costs?
Sanistar makes securing food safety while reducing costs possible.

1. Cost of Chemicals

365 days
$723.65 ▸ $149.17

↓ 79%

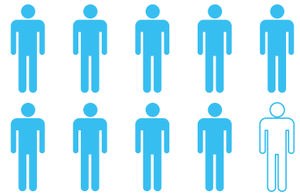
2. Water Cost



365 days
$73.00 ▸ $31.74

↓ 56%

3. Labor Cost



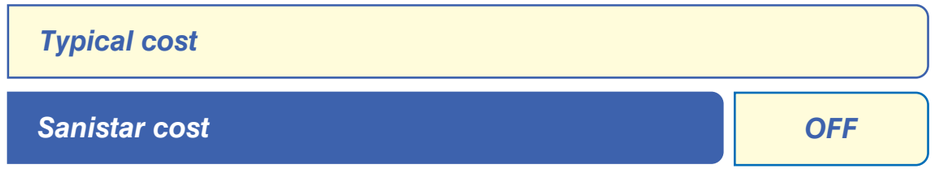
365 days
$2224.91 ▸ $1980.52

↓ 11%

Cost calculation method *Research by SARAYA

We compared the typical costs from cleaning and sanitizing to the same process with the Sanistar.
The average cost of chemicals, electricity, water and labor in Japan was used as a basis for this calculation.

■ Total Cost Comparison for Cleaning Work



$3021.57 ▸ $2161.43

↓ total 28%

Cost calculation method *Research by SARAYA

The approximate number of times typical cooking utensils are cleaned in a day was estimated and cleaned (Cutting board: 15, Knife: 10, Bowl: 10, Tray: 10, Tongs: 10, Hotel pan: 3). “Elapsed time”, “Use of chemicals”, “Water usage”, “Electricity usage” were measured and the annual value for each cost is calculated.