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HACCP AT IT'S BEST!

Chemical-free prevention of bacterial food poisoning

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What Does Sanitation Management Involve?

Employing electrolyzed water production equipment greatly changes daily sanitation management practices. Washing and disinfecting of cooking utensils and sterilization of foodstuffs are vastly simplified-almost like washing without soap.
Electrolyzed water is highly effective against microbes, the main cause of food poisoning, and acts to prevent both primary and secondary contamination.
Paired with an accurate grasp of the routes of contamination, use of electrolyzed water production systems offers an efficient means of providing effective sanitation management.

The critical point in ensuring the prevention of food poisoning is "interrupting the route of contamination between foods."

Primary Contamination

This comprises contamination of foods directly from the natural environment, such as locations where foods are produced.
This is broadly considered as contamination present at the time the food is received.

Secondary Contamination

This type of contamination arises indirectly from utensils and counters used in food processing, food handlers' hands and fingers, and other points of contact.

Shouldn't YOU be taking another look at your approach to sanitation management thus far?

"We do want to be stringent in following the "Sanitation Management Manual for Large-Scale Food Processing Facilities" guidelines,…

…but the work is so busy, and proper sanitation management takes a lot of effort…

Electrolyzed Water
Production System
ROX-10WB

Electrolyzed water actively prevents contamination.

Food Poisoning

Food is sterilized with acidic electrolyzed water (sanitizing water).

Prevention of Primary Contamination

Washing

Contaminants are washed away with alkaline electrolyzed water (cleaning water).

Disinfecting

Acidic electrolyzed water (sanitizing water) is effective against nearly all types of food poisoning.

Prevention of Secondary Contamination

Electrolyzed water changes sanitation management.

Increased Safety

Decreases residues while inhibiting retention of chlorine odors.

Improved Workflow

No diluting required. Facilitates smooth operations.

Greater Economy

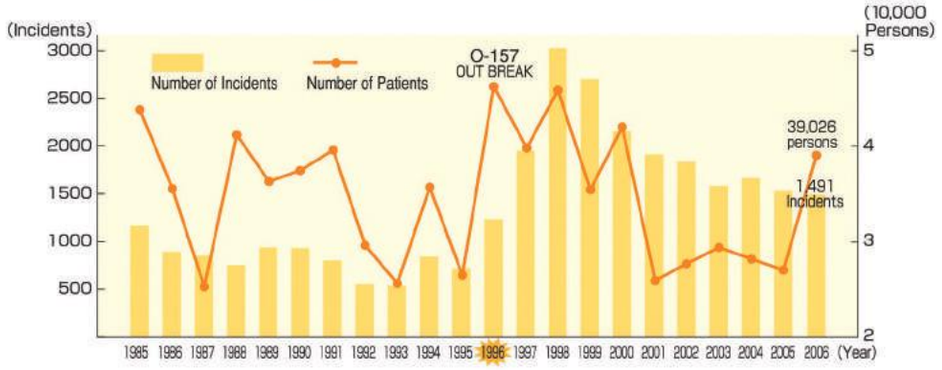
Only 0.02 Aed per liter. Enables large-scale use.

How is Food Poisoning Prevented?

[Bacterial Food Poisoning]

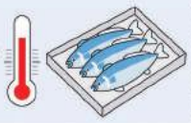
Despite the remarkable improvements in Japan's living environment each year, there has been no downturn in the incidence of food poisoning, which instead harms tens of thousands annually.

■Incidence of Food Poisoning by Year (Figures for incidence of food poisoning from Ministry of Health, Labour and Welfare)



How does bacteria food poisoning occur?

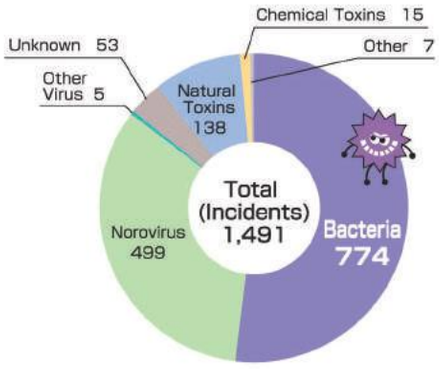
■In the course of major food processing operations

Critical Aspects	Processes in which bacterial ingress should be prevented	Processes in which bacterial proliferation should be prevented	Processes in which bacteria should be killed
Primary Contamination: Stocking and Inspection	Improper management of workers or inadequate inspections during stocking of foods 		
Primary Contamination: Preparation	Insufficient washing of ingredients in the processing stages 		
Secondary Contamination	"Cross-contamination" of meat, fish, and vegetables 		
Secondary Contamination: Storage		Excessively high temperatures during freezing and refrigeration 	
Secondary Contamination: Cooking			Inadequate heat used in cooking 
Secondary Contamination: Serving	Insufficient cleansing of hands and finger or presence of wounds 		Cutting boards, knives, and other implements in food processing not cleaned sufficiently 

What is Bacterial Food Poisoning?

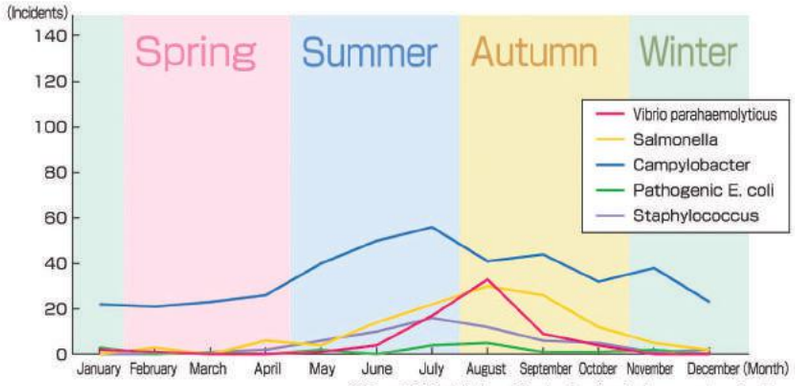
Approximately 50% of all cases of food poisoning is caused by bacteria.

■Occurrence of Food Poisoning by Etiologic (Disease-Causing) Agent ※



Bacteria, regardless of type, pose a danger throughout the year.

■Incidence of Food Poisoning by Month ※



※From 2006 statistics of food poisoning in Japan, categorized by pathogen and by month, produced by the Ministry of Health, Labour and Welfare (MHLW)

There are various types of bacteria that cause illness.

Major Bacteria

	Vibrio parahaemolyticus	Salmonella	Campylobacter	Pathogenic E. coli	Staphylococcus
Characteristics	Proliferates rapidly in seawater (Perishes in 8-10 minutes at 60℃)	Carried by flies and cockroaches (Perishes in 20 minutes at 60℃)	Present in livestock and pet intestines, proliferate in temperatures at and above 30℃ (Perishes in 20 minutes at 60℃)	Well water, practically all environments (Perishes in 30 minutes at 60℃)	Present in human nasal and throat passages and open wounds (Perishes in 10 minutes at 80℃)
Main Foods Contaminated	Seafood Compound foods	Eggs and processed foods containing eggs Compound foods Vegetables and processed foods containing vegetables	Meat and processed foods containing meat	Meat and processed foods containing meat Compound foods Vegetables and processed foods containing vegetables	Cereal grains and processed foods containing cereal grains

This is how to prevent bacterial food poisoning.

Maintaining these three basic food poisoning prevention principles is critical in preventing primary and secondary contamination.

Three Basic Food Poisoning Prevention Principles

Prevent Bacterial Ingress
Prevent contamination from humans, water, air, food, and utensils

Prevent Bacterial Proliferation
Control temperatures, times, humidity, and moisture levels.

Kill the Bacteria
Sterilize with heat, sanitize facilities and equipment, thoroughly clean and sterilize machinery

What Are the Effects of Electrolyzed Water?

Each of the two types of electrolyzed water generated by ROX Series units has different effects. Using the two types separately according to their respective qualities or in combination produces excellent results in improving efficiency in sterilizing food, washing and disinfecting cooking utensils, and other related tasks.

step 1
Alkaline electrolyzed water (cleaning water) washes away slime and grime that are difficult to remove by washing with water alone.

step 2
Acidic electrolyzed water (sanitizing water) washes away any remaining germs, leaving the surface clean.

Effective for Washing

Alkaline Electrolyzed Water (Cleaning Water)

Alkaline electrolyzed water (cleaning water) contains as an active ingredient a small amount of sodium hydroxide (NaOH) capable of dissolving proteins and emulsifying oil and fats. It is also useful for neutralization following disinfecting with acidic electrolyzed water (sanitizing water).

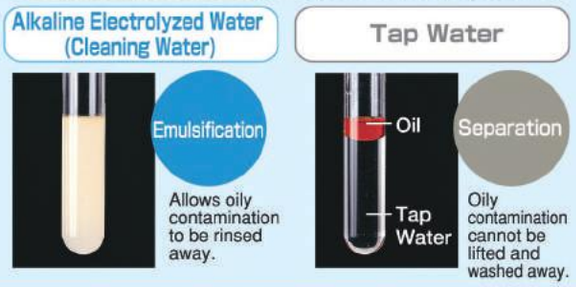
■Dissolves and emulsifies proteins, fats, and oils.

Alkaline electrolyzed water (cleaning water) dissolves and emulsifies proteins, fats and oils, and other organic matter difficult to remove with regular water and washes them away.

Comparison of Emulsification of Oil with Alkaline Electrolyzed Water (Cleaning Water) and Tap Water

1 ml of Chinese chili oil was mixed into 10 ml alkaline electrolyzed water (cleaning water) and 10 ml tap water. The oil in the tap water separates, while emulsification of the oil begins immediately in the alkaline electrolyzed water (cleaning water).

※The actual state of emulsification may differ than that depicted here.



Effective for Disinfecting Acidic Electrolyzed Water (Sanitizing Water)

The sodium hypochlorite (HClO) in acidic electrolyzed water (sanitizing water) sterilizes approximately 80 times faster than sodium※ hypochlorite solutions of the same concentration.

※ "Water Purification Technologies": Gihodo Shuppan, 1885

■Exhibits more powerful antimicrobial efficacy than sodium hypochlorite.

While the abundant hypochlorite in acidic electrolyzed water (sanitizing water) from ROX systems contains the same effective chlorine in chlorine ions (ClO-) of which sodium hypochlorite contains large numbers, there is a huge difference in antiseptic efficacy, with the hypochlorite in acidic electrolyzed water (sanitizing water) exhibiting much greater antimicrobial power.

※"Policies for Handling of Sodium Hypochlorite": Japan Water Works Association, 1981

■Low residues means greater assurance of safety.

Comparison of Residue for Acidic Electrolyzed Water (Sanitizing Water) and Sodium Hypochlorite

(Test performed by Hoshizaki)

Following sterilization of apple wedges (approximately 600g) with sodium hypochlorite (pH9.3, A.C.C. 200 mg/kg) and acidic electrolyzed water (sanitizing water) (pH2.6,A.C.C.30mg/kg), the apple pieces were washed for approximately 15 seconds in tap water,and the chlorine residue was checked using chlorine test paper (10-50 mg/kg).

Acidic Electrolyzed Water (Sanitizing water)

No discoloration

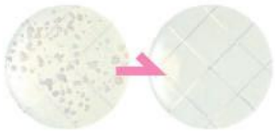
Sodium Hypochlorite

Color turns blue

■Shown to be powerful in preventing secondary contamination

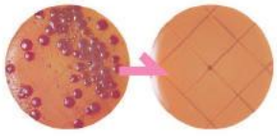
Results of testing by Hoshizaki using agar food stamps

General Bacteria



Before Processing　After Processing

Coliform Bacteria



Before Processing　After Processing

A cutting board surface was washed for approximately 30 seconds with ROX acidic electrolyzed water (sanitizing water). You can see the reduction in colonies of general bacteria and E. coli.

■Sterilization Efficacy Test

(Acidic Electrolyzed Water (Sanitizing Water) Sterilization Efficacy Test) [Shimane Industrial Experiment Station])

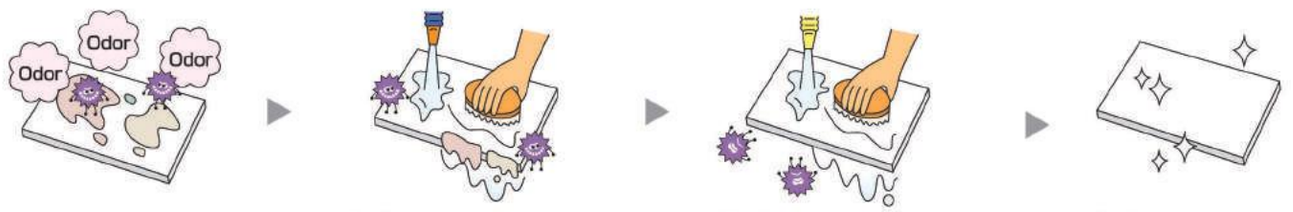
Type of Bacteria	Initial Bacterial Count (organisms/gram)	Processing Time			
		30 sec.	1 min.	2 min.	5 min.
Escherichia coli	7.1×10^6	<300	<300	<300	<300
Staphylococcus aureus	5.4×10^6	<300	<300	<300	<300
Salmonella enteritidis	3.3×10^6	<300	<300	<300	<300
Pseudomonas aeruginosa	7.0×10^6	<300	<300	<300	<300
Bacillus subtilis	5.3×10^6	<300	<300	<300	<300
Saccharomyces cerevisiae	7.3×10^5	<300	<300	<300	<300
Candida tropicalis	5.3×10^5	<300	<300	<300	<300
Penicillium islandicum	5.8×10^4	1.7×10^3	<300	<300	<300

※Values for live organisms in 1 ml.
※Using acidic electrolyzed water (sanitizing water) of pH2.7, ORP 1144 mV, ACC 20 mg/kg, at 26.5℃.
※The figure "<300" indicates that bacterial growth was not recognized in liquid diluted ten times.

Odor-Killing Power Alkaline (Cleaning Water) & Acidic (Sanitizing Water) Electrolyzed Water

Offensive odors are caused by bacterial proliferation and deterioration of proteins, fats and oils, and other substances. Washing with alkaline electrolyzed water (cleaning water) and then disinfecting with acidic electrolyzed water (sanitizing water) is thought to enable suppression of volatile odors by killing odor-causing germs and oxidizing odors' constituents.

■Attacking/Solving Odors at the Source



1 Contaminants and bacteria are the source of odors

2 Contamination washed off with **alkaline electrolyzed water (cleaning water)**

3 Disinfecting with **acidic electrolyzed water (sanitizing water)**

4 Odors eliminated

How do these systems differ from prev

Here is a comparison of the antiseptic efficacy of acidic electrolyzed water (sanitizing water) produced by ROX electrolyzed water production systems and sodium hypochlorite (diluted).

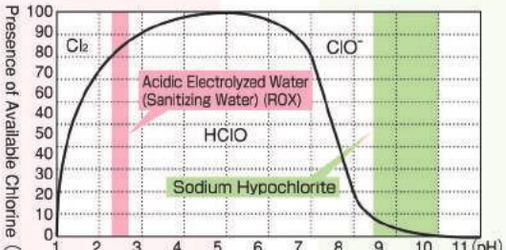
Acidic Electrolyzed Water (Sanitizing Water) VS **Sodium Hypochlorite (Diluted)**

Greater Efficacy — Despite acidic electrolyzed water (sanitizing water) having a lower concentration of chlorine than sodium hypochlorite (diluted), it exhibits equivalent sterilizing effectiveness.

●Main Active Ingredient
Sodium hypochlorite (HClO) molecules

Enables shorter treatment times, even at low concentrations

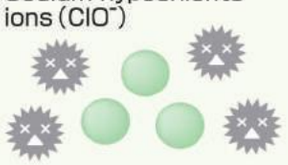
■Relative Effects of Chlorine in Water



Conditions Achieving Identical Effects

20-60 mg/kg	Concentration of Available Chlorine	100-200 mg/kg
10-60 sec.	Treatment Time (Standard)	5-10 min.

●Main Active Ingredient
Sodium hypochlorite ions (ClO^-)

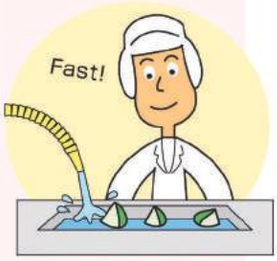


Shorter processing time required, even at high concentrations

Fast — Acidic electrolyzed water (sanitizing water) enables processing in less time

Treatment Time
Approx. **10~60** Seconds

Faster sterilization enables shorter processing times for more rapid operations



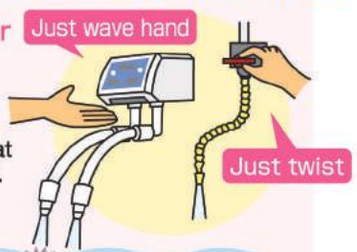
Treatment Time
Approx. **5~10** Minutes

Slow sterilization requires lengthy immersion times.

Simple — Acidic electrolyzed water (sanitizing water) requires no dilution-simply pour!

Electrolyzed water output simply by generator

Constantly produced at uniform concentration. No discrepancies in sterilization.



Requires extra work to dilute.

Discrepancies in sterilization occur easily. Achieving even sterilization effect is difficult.

evious Sterlization Methods?

Acidic Electrolyzed Water (Sanitizing Water) VS **Sodium Hypochlorite (Diluted)**

Safer — Acidic electrolyzed water (sanitizing water) leaves little residue, inhibiting lingering odors.

Residues are minimal, so practically no chlorine odors remain in foods. This enables sterilization while preserving delicious flavors.

Residues are easily retained, so chlorine odors easily remain in foods.

Safer — Acidic electrolyzed water (sanitizing water) inhibits generation of byproducts.

The low concentration of available chlorine inhibits generation of organic chlorine compounds and other byproducts.

The alkalinity of available chlorine in high concentrations promotes generation of organic chlorine compounds and other such by-products.

Acidic electrolyzed water (sanitizing water) offers both sterilizing power and ease of use.

Plus,ROX systems save money Low cost-just 0.02 Aed per liter.

The system utilizes only commercially available salt with tap water and electricity, with no need for any proprietary solutions or other special materials. This keeps running costs down, making these systems suitable for high-volume operations.

Tap Water + Salt + Electricity = 1L≒0.02 Aed

※Cost based on tap water rates of 366 yen/m3 (Tokyo waterworks rates), salt cost of 490 yen per 5 kg (Salt Industry Center of Japan), and electricity rates (100 V, single phase) of 24 yen/kWh and at 20℃ temperature and saline concentration of 0.1%

Food Hygiene Using Acidic Electrolyzed Water (Sanitizing Water)

Measures Against Primary Contamination

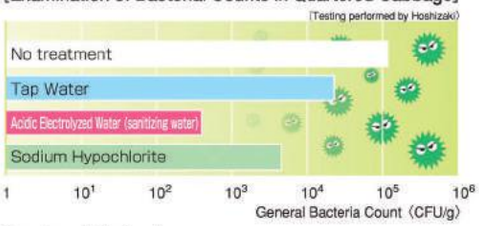
Sterilizing Vegetables

Raw vegetables used in salads, peeled fruit, and other raw food require special care as they are not cooked with any heat.
Always make sure these foods are thoroughly sterilized.

Cabbage

Wash in and between leaves with acidic electrolyzed water (sanitizing water).

[Examination of Bacterial Counts in Quartered Cabbage]



[Treatment Method]

Tap Water	5 min. immersion and agitation
Acidic Electrolyzed Water (Sanitizing Water)	1 min. immersion and agitation → 10 sec. rinse
Sodium Hypochlorite	5 min. immersion → 10 sec. rinse

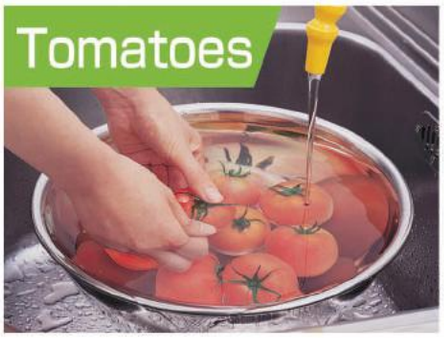
1 Remove outer leaves, cut into quarters, and remove the stem.

2 Wash pieces submerged in **alkaline electrolyzed water (cleaning water)**.

3 Wash pieces submerged in **acidic electrolyzed water (sanitizing water)**.

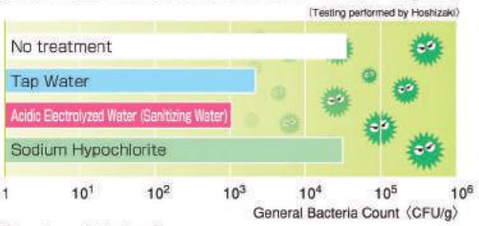
4 Cut with slicer or knife.

Tomatoes



Carefully clean the calyx, where many bacteria form.

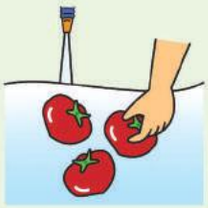
[Examination of Bacterial Counts in Tomato Calyces]



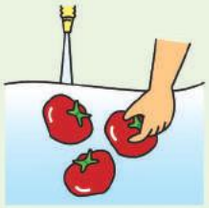
[Treatment Method]

Tap Water	10 sec. immersion and agitation + scrubbing
Acidic Electrolyzed Water (Sanitizing Water)	10 sec. immersion and agitation + scrubbing → 10 sec. rinse
Sodium Hypochlorite	5 min. immersion → 10 sec. rinse

1 Wash tomatoes submerged in **alkaline electrolyzed water (cleaning water)**.



2 Wash tomatoes submerged in **acidic electrolyzed water (sanitizing water)**.



Note Regarding Food Sterilization Examination

Based on the premise that sufficient application of heat with predetermined methods in food preparation inhibits incidents of food poisoning, tests were conducted concerning core temperatures of foods consumed or offered uncooked. Targeted solutions examined in the test are shown at the right.

Examined Solution	pH (℃)	Available Chlorine Concentration (mg/kg)
Tap Water	7.0~7.5 (10~12)	0.2~0.4
Acidic Electrolyzed Water (sanitizing water)	2.5~2.7 (10~12)	20~30
Sodium Hypochlorite Solution	9.5~10.2 (10~15)	190~210

Sterilization of Fish and Eggs

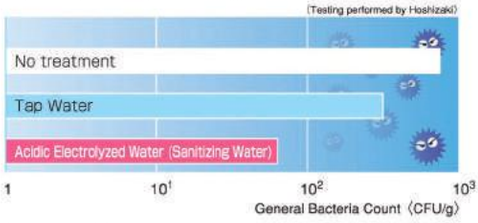
Washing procedures for fish and meat vary according to the state in which the foods are received. Therefore, comprehensive measures including thorough testing along heating, washing, and other methods of sterilization are required to prevent food poisoning.

Fish

Acidic electrolyzed water (sanitizing water) is effective in removing slimy matter from fish.

[Examination of Bacterial Counts in Outer Skin of Horse Mackerel]

(Testing performed by Hoshizaki)



[Treatment Method]

Tap Water	10 sec. immersion and agitation
Acidic Electrolyzed Water (Sanitizing Water)	10 sec. immersion and agitation → 10 sec. rinse

1 Remove slimy matter from outer surface with **acidic electrolyzed water (sanitizing water)**.

2 Remove the fish head and viscera. Rinse with tap water.

3 Wash fish submerged in **alkaline electrolyzed water (cleaning water)**.

4 Wash fish submerged in **acidic electrolyzed water (sanitizing water)**.

Effective in sterilizing outer surfaces of block-cut meats.

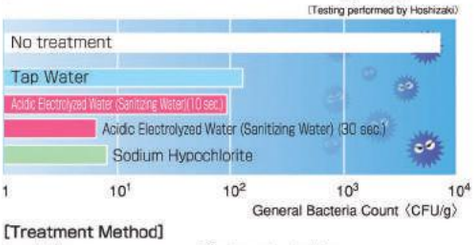
※ Although acidic electrolyzed water (sanitizing water) is effective in sterilizing the outer surfaces of vegetables, meat, fish, and other foods, it does not sterilize foods' interior portions.
※ Sterilization of block-cut meats, sliced meats, sliced fish, and other foods may result in discoloration of food surfaces or other problems with food quality.
※ Foods prepared with heating can be sterilized by heating at the appropriate temperature for the proper duration.
※ Following sterilization, dry off remaining moisture and place food in cold storage at the prescribed temperature.

Eggs

Occurrences of secondary contamination from eggshells is a distinct possibility. Be sure to stir eggs around within the acidic electrolyzed water (sanitizing water).

[Examination of Bacterial Counts in Chicken Eggs (Eggshells)]

(Testing performed by Hoshizaki)



[Treatment Method]

Tap Water	10 sec. immersion and agitation
Acidic Electrolyzed Water (Sanitizing Water)	10 sec./30 sec. immersion and agitation → 10 sec. rinse
Sodium Hypochlorite	5 min. immersion → 10 sec. rinse

1 Wash eggs submerged in **alkaline electrolyzed water (cleaning water)**.

2 Wash eggs submerged in **acidic electrolyzed water (sanitizing water)**.

3 To prevent proliferation of bacteria, remove moisture and store refrigerated.

Washing and disinfecting with Alkaline (cleaning water

Measures Against Secondary Contamination

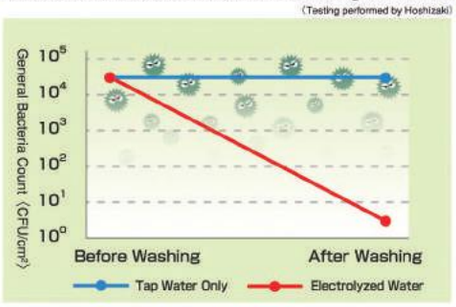
Washing and Sterilizing Utensils

Cooking utensils may become contaminated in preparation and cooking with bacteria from ingredients or food preparers, resulting in recontamination of the processed foods. Preventing such "secondary contamination" requires diligence in sterilization during these procedures.

Knives

Wash knives thoroughly, including the grips.

[Examination of Bacterial Counts from Processing with Knives]
(Testing performed by Hoshizaki)



1 Using a scrubber sponge, wash the knife, including the grip, with **alkaline electrolyzed water (cleaning water)**.

2 Wash with **acidic electrolyzed water (sanitizing water)**.

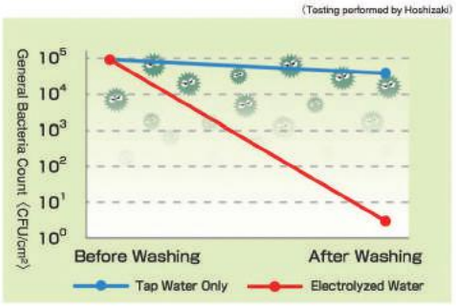
3 Wipe off moisture.

※Do not use this solution if bothered by rust on knives.

Cutting Boards

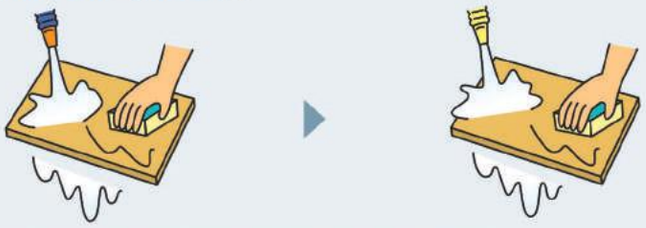
Be sure to wash in and around knife scores.

[Examination of Bacterial Counts from Use of Cutting Boards]
(Testing performed by Hoshizaki)



1 Use a scrubber, thoroughly wash in and around knife scores with **alkaline electrolyzed water (cleaning water)**.

2 Scrub with **acidic electrolyzed water (sanitizing water)**.



※If contamination is particularly heavy, prewash the cutting board thoroughly with detergent.

ter) and Acidic (sanitizing water) Electrolyzed Water

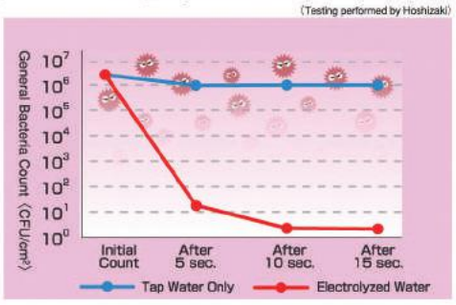
Washing and Sterilizing cloths

Kitchen cloths and other cloths used to wipe a wide variety of matter may harbor large numbers of bacteria. Sanitary practices should always be maintained with regular sterilization of cloths.

Kitchen Cloths

Kneading while washing is critical!

[Treatment of cloths] (Change in Bacterial Counts from Washing in Running Water)
(Testing performed by Hoshizaki)



1 Knead cloth under running **alkaline electrolyzed water (cleaning water).**

2 Firmly wring cloth.

3 Knead cloth under running **acidic electrolyzed water (sanitizing water).**

4 Firmly wring cloth.

5 Dry and store.

※Bleaching at regular intervals is recommended.

Washing and Sterilizing Floors and Drains

Floors are breeding grounds for bacteria flushed from processing or carried in from outside. Ensure proper sanitation management with sterilization at regular intervals.

Washing Floors

1 After sweeping up coarse debris, scrub the floor with a deck brush while pouring **alkaline electrolyzed water (cleaning water)** over the floor.

2 Wash floor with water containing a 1:1 mixture of **alkaline electrolyzed water (cleaning water)** and **acidic electrolyzed water (sanitizing water).**

※ Make sure machinery is covered while floors are being washed and take other steps to ensure the water does not come into contact with the machinery.

Sink Traps and Drains

Wash with running water containing a 1:1 mixture of **alkaline electrolyzed water (cleaning water)** and **acidic electrolyzed water (sanitizing water)**

※Plastic sink traps should be replaced.
※Rust may form on metal portions; rinse such areas with tap water for a period of time.

Stainless Table top

1 Spray **alkaline electrolyzed water (cleaning water)** for stainless table top and wipe off with tablecloth for cleaning.

2 Spray **acidic electrolyzed water (sanitizing water).** and wipe off with tablecloth for sanitizing.

Compact unit requires little space for pipes, fits under sinks.

Electrolyzed Water Production System

Direct Output Type

ROX-20TB

Under-Counter Type

Daily Output Capacity

Alkaline Electrolyzed Water (Cleaning Water)	Approx. 2.2~4.3t
Acidic Electrolyzed Water (Sanitizing Water)	Approx. 2.2~4.3t

(Japanese model shown)

Sanitary touchless operation-emit water just by holding up your hand to the sensor.

The unit features a built-in contactless sensor. Just hold your hand up to the sensor; the sensor detects your hand and automatically emits electrolyzed water. The system is very sanitary, as it outputs water without hand contact.

Equipped with Easy-to-Use Flex Nozzles.

These units feature flexible pouring nozzles that can be bent to any desired angle. The nozzle also can be switched to emit water in a shower flow.

Emit Continuously or at Predetermined Times.

The system features two output modes, a normal mode that provides a continuous stream only when and in the amount needed, and one that allows users to set a timer and have the stream start and automatically shut off at preset times. This is a convenient feature for tasks such as filling sinks with electrolyzed water.

Indicator and Control Panels Are Easy to Read and Use.

Indicator Panel

(Japanese model shown)

Control Panel

Adjust Flow Rate Easily with a Single Switch.

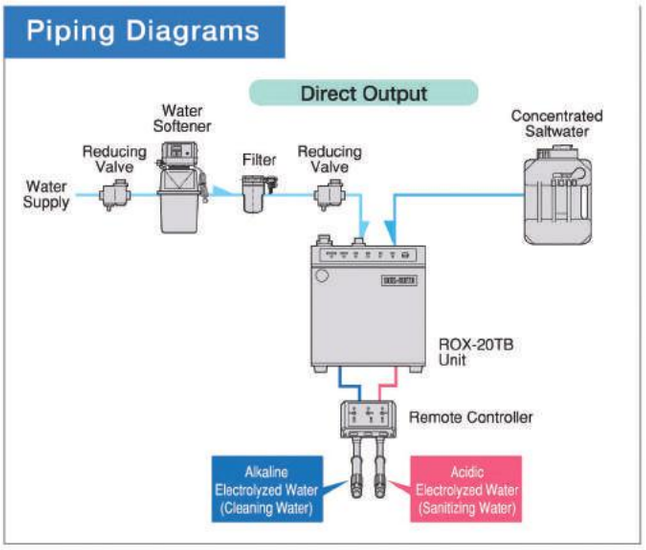
The flow rate can be adjusted just by pressing the control panel's flow adjustment switch. Select from "Low," "Standard," and "High" flow rates.

※Output capacity may not increase if supply water pressure is insufficient.

Alkaline Electrolyzed Water (Cleaning Water)	Acidic Electrolyzed Water (Sanitizing Water)
Approx. 3.0L/min	Approx. 3.0L/min

Sample Installation

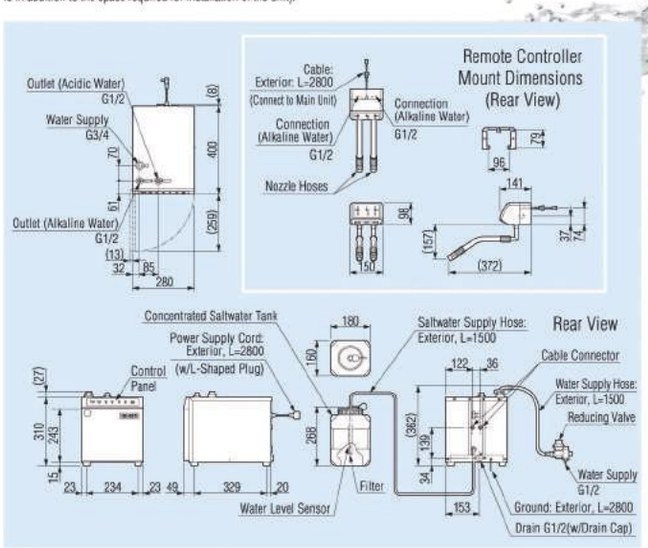
Piping Diagrams



ROX-20TB

Power Supply		Single-phase 100 V, 50/60 Hz, 0.99 kVA (9.89 A)
Power Consumption		170/170 W
Standard Performance	Electrolyzed Water Output	Acidic electrolyzed water (sanitizing water), alkaline electrolyzed water (cleaning water): approx. 2.0 L/min
	Available Chlorine Concentration	Acidic electrolyzed water (sanitizing water): 20–60 mg/kg
	Electrolyzed Water pH	Acidic electrolyzed water (sanitizing water): approx. 2.7 or under; alkaline electrolyzed water (cleaning water): approx. 11.3 or above (with Toyoake City water)
Reference Performance	Electrolyzed Water Output	Acidic electrolyzed water (sanitizing water), alkaline electrolyzed water (cleaning water): approx. 1.5-3.0 L/min (however, minimum supply water pressure of 0.15 MPa required for generation at 2.0-3.0 L/min)
	Available Chlorine Concentration	At production rate of approx. 3 L/min: ACC for acidic electrolyzed water (sanitizing water): 10 mg/kg or above
	Electrolyzed Water pH	Acidic electrolyzed water (sanitizing water): approx. 2.9-3.3; alkaline electrolyzed water (cleaning water): approx. 10.5-11.0 or above (Note) May vary according to quality of water source and water temperature.
Exterior Dimensions		W: 280 mm x D: 400 mm x H: 310 mm
Connections		Supply: G3/4 (reducing valve G1/2); outlet G1/2; drain G1/2
Weight		Approx. 22 kg (28 kg packaged)
Water Supply		Must conform to waterworks standards, with water softener and filter required
Usage Temperature Range		Ambient temperature range: 5-35°C; water temperature: 5-30°C; relative humidity: 85% max. (condensation not permissible)
Installation Siting		Must meet interior specifications, with ventilation required
Allowable Voltage Range		±10% of rated voltage
Salt		Table salt (sodium chloride) from Salt Industry Center of Japan (min.purity 99%)
Accessories		Concentrated saltwater tank (5 L), caps (2), connector hose set, nozzle hoses (2), output hose, hose clamp, pH tester (TB, AZY), chlorine tester, beaker, gasket, reducing valve (0.15MPa) operation instruction sheet, remote controller, braided hose, bracket/remote, union/elbow, rubber syringe, shower nozzle, straight nozzle, O-ring, elbow fitting

<Important Notes>
1. Grounding is mandatory. 2. Environment must be free of dust, with good ventilation. 3. Piping outside equipment must be insulated; condensation is not permissible. 4. Pipe resistance in piping outside equipment must be uniform. 5. Rated values indicated are measured values based on technical standards for electric devices, with 30°C ambient temperature, water temperature of 25°C, water supplied by Toyoake City. 6. Notes regarding installation requirements:Ensure system is used properly in accordance with conditions regarding placement, water supply and drainage, power supply, and other stipulations in the operation manual and installation manual. As actual space for installation may differ slightly, allow approximately 10 mm additional space in dimensions (space for ventilation and piping is in addition to the space required for installation of the unit).



"I believe that MGK ROX Water is the future of chemical free cleaning and sanitizing for the 21th century."

Ian Hopper, Immediate past President FCSI, Worldwide

Compact unit can be mounted on walls above sinks and in other tight spaces

Electrolyzed Water Production System

Direct Output Type

ROX-10WB

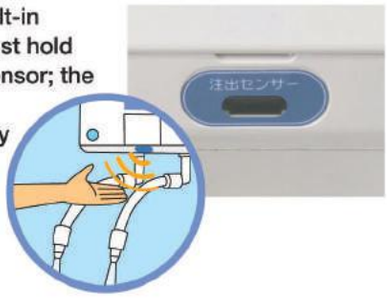
Wall-Mounted Type

Daily Output Capacity

Alkaline Electrolyzed Water (Cleaning Water)	Approx. 1.5~2.1t
Acidic Electrolyzed Water (Sanitizing Water)	Approx. 1.5~2.1t

Sanitary touchless operation - emit water just by holding up your hand to the sensor.

The unit features a built-in contactless sensor. Just hold your hand up to the sensor; the sensor detects your hand and automatically emits electrolyzed water. The system is very sanitary, as it outputs water without hand contact.



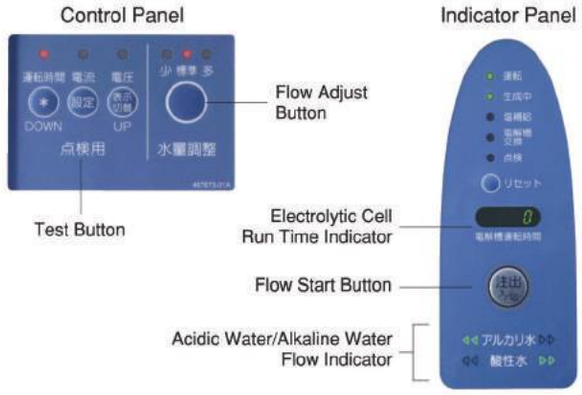
Equipped with Easy-to-Use Flex Nozzles.

These units feature flexible pouring nozzles that can be bent to any desired angle. The nozzle also can be switched to emit water in a shower flow.

Emit Continuously or at Predetermined Times.

The system features two output modes, a normal mode that provides a continuous stream only when and in the amount needed, and one that allows users to set a timer and have the stream start and automatically shut off at preset times. This is a convenient feature for tasks such as filling sinks with electrolyzed water.

Indicator and Control Panels Are Easy to Read and Use.



Adjust Flow Rate Easily with a Single Button.

The flow rate can be adjusted just by pressing the control panel's flow adjustment switch. Select from "Low," "Standard," and "High" flow rates.

※Output capacity may not increase if supply water pressure is insufficient.

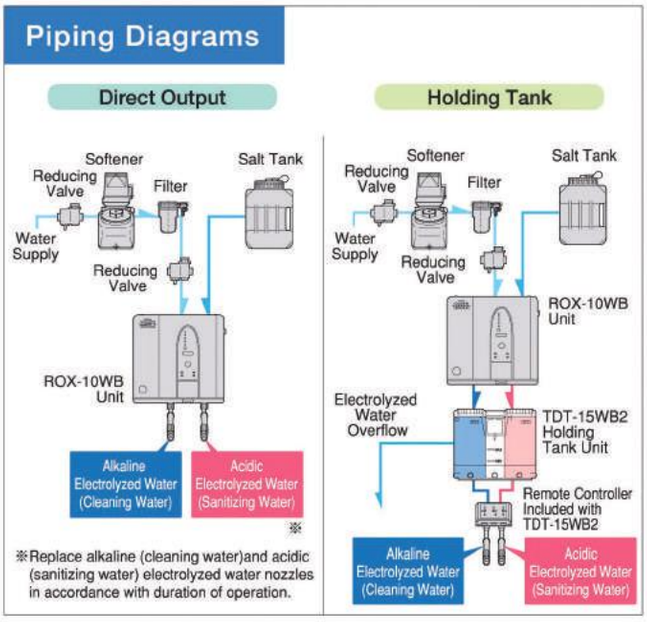
Alkaline Electrolyzed Water (Cleaning Water)
Approx. 1.5L/min

Acidic Electrolyzed Water (Sanitizing Water)
Approx. 1.5L/min

Flow Adjustment Criteria

Sample Installation

Piping Diagrams

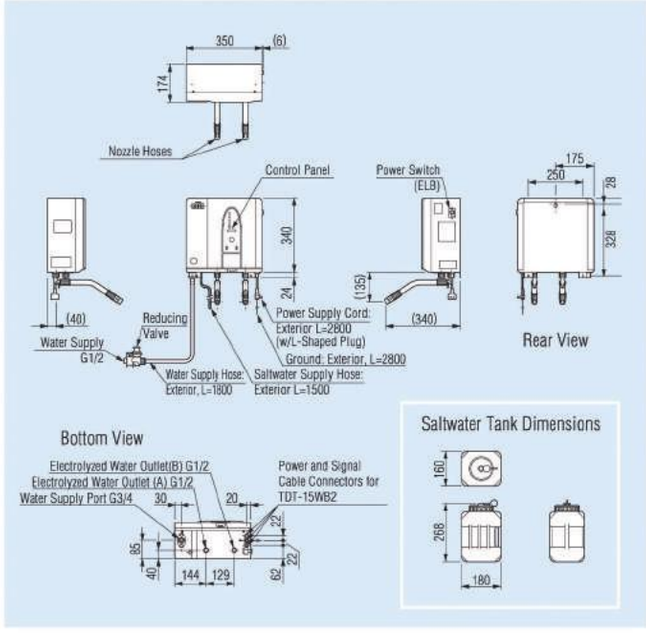


ROX-10WB

Power Supply		Single-phase 100 V, 50/60 Hz, 0.5 kVA (5.0 A)
Power Consumption		150/150 W
Standard Performance	Electrolyzed Water Output	Acidic electrolyzed water (sanitizing water), alkaline electrolyzed water (cleaning water): approx. 1.0 L/min
	Available Chlorine Concentration	Acidic electrolyzed water (sanitzing water): 20-60 mg/kg
	Electrolyzed Water pH	Acidic electrolyzed water (sanitizing water): approx. 2.7 or under; Alkaline electrolyzed water (cleaning water): approx. 11.3 or above (with Toyoake City water)
Reference Performance	Electrolyzed Water Output	Acidic electrolyzed water (sanitizing water), alkaline electrolyzed water (cleaning water): approx. 0.7-1.5 L/min (however, minimum supply water pressure of 0.15 MPa required for generation at 1.0-1.5 L/min)
	Available Chlorine Concentration	At production rate of approx. 1.5 L/min: ACC for acidic electrolyzed water (sanitizing water): 10 mg/kg or above
	Electrolyzed Water pH	Acidic electrolyzed water (sanitizing water): approx. 2.9-3.3; alkaline electrolyzed water (cleaning water): approx. 10.5-11.0 or above (Note) May vary according to quality of water source and water temperature.
Exterior Dimensions		W: 350 mm x D: 174 mm x H: 340 mm
Connections		Supply: G3/4 (reducing valve G1/2); outlet G1/2
Weight		Approx. 13 kg (16 kg packaged)
Water Supply		Must conform to waterworks standards, with water softener and filter required
Usage Temperature Range		Ambient temperature range: 5-35℃; water temperature: 5-30℃; relative humidity: 85% max. (condensation not permissible)
Installation Siting		Must meet interior specifications, with ventilation required
Allowable Voltage Range Salt		±10% of rated voltage Table salt (sodium chloride) from Salt Industry Center of Japan (min.purity 99%)
Accessories		Concentrated salt tank (5 L), cap, hose/water supply, nozzle hoses (2), pH tester (TB, AZY), chlorine tester, beaker, gasket, reducing valve (0.15MPa) operation instruction sheet, screw collar, anchor plug, wood screw, rubber syringe, shower nozzle, straight nozzle, O-ring, elbow fitting AY

<Important Notes>

1. Grounding is mandatory. 2. Environment must be free of dust, with good ventilation. 3. Piping outside equipment must be insulated; condensation is not permissible. 4. Pipe resistance in piping outside equipment must be uniform. 5. Rated values indicated are measured values based on technical standards for electric devices, with 30℃ ambient temperature, water temperature of 25℃, water supplied by Toyoake City. 6. Optional Hoshizaki TDT-15WB2 Holding Tank Unit is available if 3-5 L/min performance is desired. 7. Notes regarding installation requirements: Ensure system is used properly in accordance with conditions regarding placement, water supply and drainage, power supply, and other stipulations in the operation manual and installation manual. As actual space for installation may differ slightly, allow approximately 10 mm additional space in dimensions (space for ventilation and piping is in addition to the space required for installation of the unit).

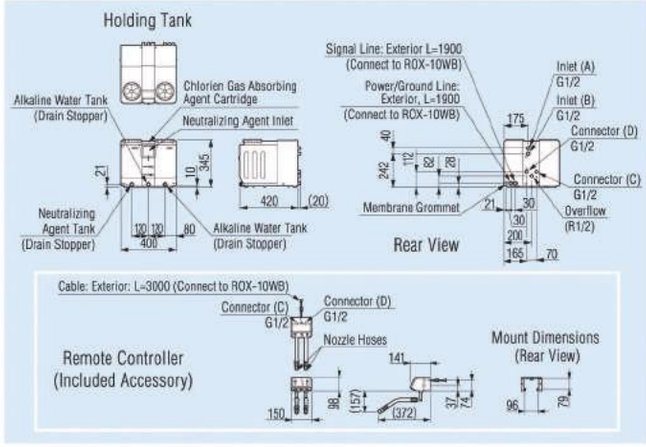


TDT-15WB2 Holding Tank Unit for ROX-10WB (Optional)

Power Supply	Single-phase 100 V, 50/60 Hz, 0.23 kVA (2.3 A)
Power Consumption	22/23 W
Output	Acidic electrolyzed water (sanitizing water): approx. 3/5 L/min (1 m head, 50/60 Hz); Aalkaline electrolyzed water (cleaning water): approx. 3/5 L/min (1 m head, 50/60 Hz)
Tank Capacity	Acidic electrolyzed water (sanitizing water): approx. 12 L (effective tank capacity approx. 10.6 L); Alkaline electrolyzed water (cleaning water): approx. 12 L (effective tank capacity approx. 10.6 L)
Exterior Dimensions	W: 400 mm x D: 420 mm x H: 345 mm
Acidic Water Neutralizer	Neutralization of acidic water overflow with neutralizing agent (max. capacity approx. 2 kg)
Chlorine Gas Treatment	Chlorine gas treatment with chlorine gas absorbing agent
Weight	Approx. 19 kg (approx. 23 kg packaged)
Usage Conditions	Ambient temperature range 5-35℃, within ±10% of rated voltage

<Important Notes>

1. Grounding is mandatory. 2. Used only when connected to ROX-10WB electrolyzed water production system. Due to the possibility of back flows due to siphoning, be sure that the TDT-15WB2 is set up lower than the ROX-10WB. 3. The neutralizing agent is a consumable-replenish regularly. Use only genuine Hoshizaki neutralizer, and maintain level above the MIN line. 4. Chlorine gas absorbing agent must be replaced annually or after every 360 hours of operation. 5. Notes regarding installation requirements: Ensure system is used properly in accordance with conditions regarding placement, water supply and drainage, power supply, and other stipulations in the operation manual and installation manual. As actual space for installation may differ slightly, allow approximately 10 mm additional space in dimensions (space for ventilation and piping is in addition to the space required for installation of the unit).



What type of Electrolyzed Water does each system produce?

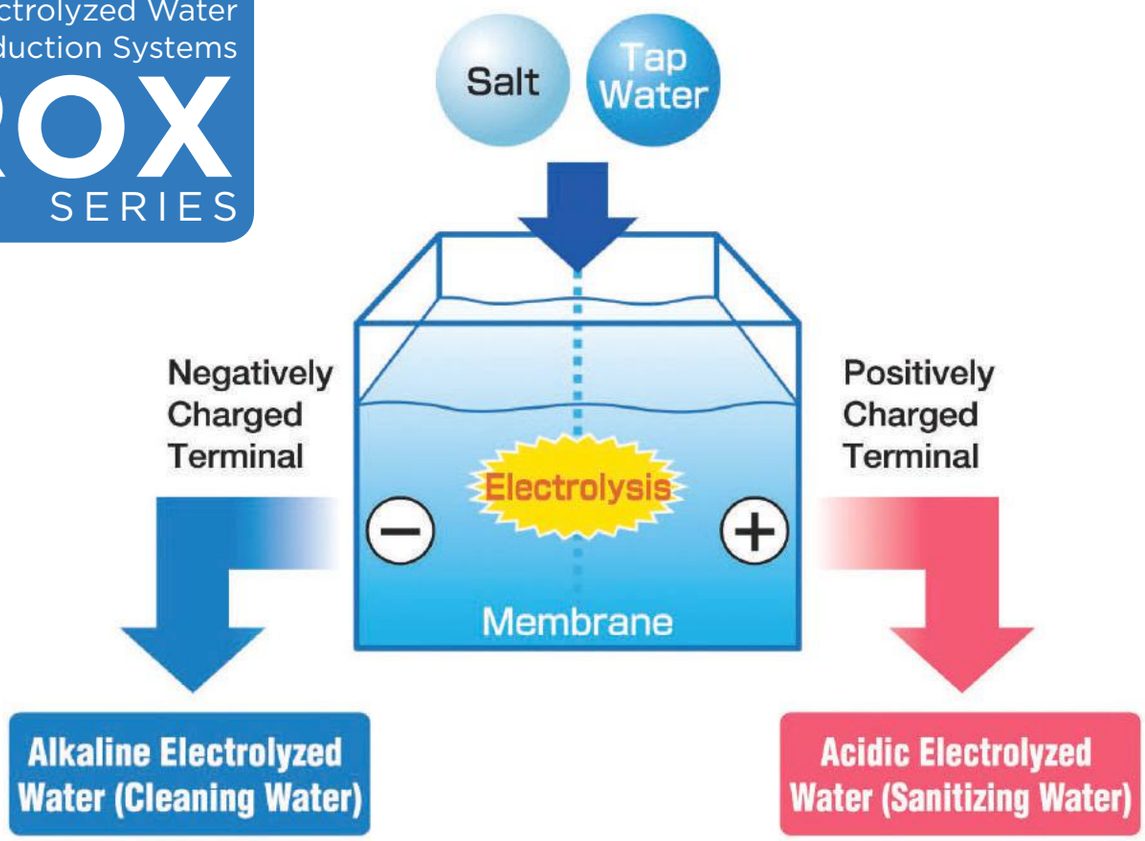
Electrolyzed water from ROX Series Systems is created from salt water through electrolysis using a membran, improving the efficiency of sanitation management in food processing environments, including food hygiene and washing and disinfecting of cooking utensils.

Created by non-membrane electrolysis of salt water, electrolyzed water from JIX Series systems exhibits an effect equivalent to that of sodium hypochlorite, providing a simple means of improving food hygiene.

Electrolyzed water is created in HOX Series units through electrolysis of plain water, with no addition of salt, bringing out foods' deleicious flavors and offering tremendous utlility in food processing.

All these "electrolyzed water"varieties are special types of water that are extremely useful in kitchens.

Electrolyzed Water Production Systems
ROX
SERIES



Generation Process

These systems produce alkaline electrolyzed water (cleaning water) effective for washing and acidic electrolyzed water (sanitizing water), which is effective as a disinfectant.

As the figure fro the top shows, membrane electrolysis of salt water with a concentration of 0.2% or lower results in the generation of alkaline electrolyzed water (cleaning water) at the cathode (negatively charged terminal), and acidic electrolyzed water (sanitizing water) at the anode (positively charged terminal). ROX systems utlize this priciple to produce alkaline electrolyzed water (cleaning water), which is of great utlility in washing contaminated items and acidic electrolyzed water (sanitizing water), which is effective for disinfecting and food sanitizing

ROX System: In Summary

ROX is the ultimate green solution from MGK.

R: Reduction - Alkaline water
OX: Oxidation - Acidic water

ROX generates Alkaline water and Acidic water from only tap water and salt. Both ROX water by MGK can be used in food santitation.

To prevent food poisoning

If you will use ROX water, it is easy to disinfect utensils, equipment and ingredients diligently, because ROX water is safe. It is effective on most bacteria and viruses.

For Example...

Deodorant of rubbish

Disinfection of seafood

Hand washing

Washing and disinfection of utensils

Disinfection of Vegetables

mgk
HACCP AT ITS BEST!

Customer's voice

What do our customers say?

" I Can confirm that switching to Rox Water from MGK has being very beneficial for our operation at Zuma Dubai. Especially the sanitation of Fish, Meat, Vegetables and our Coldrooms as added a high value of Quality and longer shelf life to our valuable Products. We sanitize all our kitchen utensils as well as washing the floors to ensure the entire kitchen operation exeed the level of Hygiene versus conventional cleaning chemicals."

A.Refaie Othman Executive Chef
Zuma, DIFC Dubai

" I started with MGK's ROX in 2012 and since then sanitizing all our produce from Vegetable to meat,poultry, or even fish with the ROX Water. The Lab results are by far exceeding our expectations and we have adapt MGK's ROX as Brand Standard for all our future upcoming Restaurants!"

Luca Signoretti Executive Chef
Roberto's, DIFC Dubai

"At Vida Downtown Dubai we are continuously aiming to achieve the highest levels in environmentally-friendly solutions for our hotel. We want to express our thanks to MGK for their support and effort in implementing the ROX Electrolyzing Water System. We are more than satisfied with the use of ROX machine for cleaning and sanitizing the food, as well as the kitchen equipments."

Daniel Kingston - Hotel Manager
Vida Hotels and Resorts

Comparison with other disinfectants

Sodium hypochlorite 'bleach'

- It can't be used during cooking because of the strong residue. (The smell and slimy feeling remains.)
- Undiluted solution almost doesn't have disinfection power. It takes time to dilute.)
- The processing time is long.
- When it touches clothes, it makes decolorization.

Ethanol

- It is expensive.
- When surface is wet it doesn't have disinfection power.
- It is damaging to skin.

ROX water

- It can be used easily during cooking because it has no residue.
- Running cost is cheap and it can be used like a tap water.
- Disinfection time is fast it needs just 15 sec.
- It is safe to human body and environment.

Who trusts mgk

HACCP AT IT'S BEST!

GRAND HYATT DUBAI

Jumeirah MADINAT JUMEIRAH DUBAI

Radisson ROYAL HOTEL DUBAI

Fairmont THE PALM DUBAI

SOFITEL LUXURY HOTELS

BICE mare

WALDORF ASTORIA HOTELS & RESORTS

Hilton Dubai Jumeirah

VIDA HOTELS AND RESORTS

Manzil DOWNTOWN DUBAI MANAGED BY VIDA HOTELS AND RESORTS

OKKU DUBAI

قطر للغاز QATARGAS

CLAW BBQ Crabshack & Grill

HYATT PLACE

mint leaf

DETOX DELIGHT Well-being delivered.

Radisson BLU HOTELS & RESORTS

HYATT REGENCY

COYA

KATANA robata and sushi bar

وزارة الزراعة واستصلاح الاراضي Ministry of Agriculture and Land Reclamation ARC مركز البحوث الزراعية Agricultural Research Center

LA RÉSIDENCE restaurant & lounge

Proven Results by Independent Accredited Laboratories

National Inspection & Technical Testing Company.
(FAHSS)
Dubai Branch – P O Box 79123, Dubai, United Arab Emirates
Tel : 04 2585671 Fax : 04 2585674

Microbiological Analysis Report

Attention	:	Mr. Micro Beutler
Client name	:	MGK Electromechanical
Address	:	P.O. Box 71130,Dubai,UAE.
Tel	:	04 3200924
Fax	:	04 3201545
Contract No.	:	LAB-DXB-PRO-002-REV02-FEB15 -2012

Sample Type	Surface Swab	**Job No.**	JO/0225/M-12
Sampled In	Sterile Swab	**Report No**	FAHSS/FML/R- 1318
Sampled By	FAHSS	**Sampling Date/Time**	16/02/2012 /12.00AM
Sampling Source	Blue Knife	**Sample Received Date/Time**	16/02/2012 / 02.00PM
Sampling Location	Grand Hyatt Kitchen	**Analysis Dates**	16/12/2012-18/12/2012
Sampling Conditions	Ambient	**Reporting Date**	19/02/2012
Sample Preservation	Refrigeration Temperature	**Analyzed By**	KN

Sample Description	Sample Number
Butchery Kitchen Knife ,Blue(Washed & sanitized With ROX EO Water) (Test-Washing With 5% Sodium Hydroxide Solution Produced By Rox 20TB-E machine (Alkaline Water) At 32.5°C For 30Sec. And pH 10.3 Rinsed with 5%Hydrochoride Acid(Produce by Rox 20TB-E Machine (Acid Water) For 15sec At 31.2°C& pH 3.11Both Chemical are produce by Rox 20 TB –E Machine)	**1318**

S No.	Parameter	Test Method	Unit	Result	*Limits
01	Total Plate Count	**CCFRA 1.1.1:2007**	CFU/cm²	<10	100/ cm²
02	Total Coliforms	**CCFRA 2.2.1:2007**	CFU/cm²	ND	* ND
03	Staphylococcus aureus	**CCFRA 3.5.1:2007**	CFU/cm²	ND	^ ND

D– Detected **ND** – Not Detected **NA** – Not Analyzed **RTF** – Results To Follow **TNTC** – Too Numerous To Count **N/A**-Not Applicable

Test Method Variation : None
Sampling Method: LAB-PRO-002

*EIC of India Sep 2007, Issue 2 ^ Internal Limits.

*Client-Details of sample collection and transportation which may affect the accuracy of the results were not provided by the client.

Comments: The sanitation of the above food contact surface was satisfactory

For FAHSS

ANJU MATHEW
Technical In-charge

D - 1

An ISO 9001:2008 certified company

The results stated in this report refer only to the sample(s) tested unless otherwise stated. The test report cannot be reproduced, except in full, without prior written permission of the company.

Proven Results by DAC Accredited Laboratory

SGS

DAC
DUBAI ACCREDITATION CENTER
No.LB-027

ENAS
Emirates National Accreditation System
NAL 006
17025

TEST REPORT
HILTON DUBAI JUMEIRAH
MICROBIOLOGICAL ANALYSIS

Client Representative:	Mr. Alexis Suyat	No: of samples	4
Address:	P.O.Box 2431 Dubai,UAE	Sampled by	SGS Representative
		Sample Info:	Please refer table below
Tel:	04 3182177	Receiving Date:	24/03/2013
Fax:	04 3182263	Sample receipt temperature	Ambient
Email:	-	Test dates	24/03/2013 – 31/03/2013
Job No:	40004560	Tested by	SN/AN
Invoice No:	1014004379	Reporting Date	01/04/2013
Client reference No:, if any	March Samples	No. of pages:	1 of 4

No.	Client Ref No.	Sample Name	Other Info	Sample No.
1	Store	Unsanitized Orange, (Temp: Ambient)	P:24/03/13 E:25/03/13	4967

Parameters	Units	Method Used	Result of 4967	Microbiological Limit
E. coli	MPN/g	US FDA BAM, Sep 2002	<3.0	$<10^2$
Staphylococcus aureus	Per g	US FDA BAM, Jan 2001	<10	$<10^2$
Salmonella	In 25g	US FDA BAM, Dec 2007	ND	0
Bacillus cereus	CFU/g	US FDA BAM, Jan 2001	<10	$<10^2$

Test Method Variation :	None
Uncertainty:	Will be reported on client request
Sampling plan/procedure:	If sampling is done by SGS, SGS SOP, FL-SOP-TECH-019 Rev.2 is applicable and is available for client reference on request
Comments	As per the tests conducted and listed above, Microbiological status of the above product is satisfactory.

RTF=Results to Follow, P= Present/Positive, ND =Not Detected, NA =Not Analysed, N/A =Not Applicable, CC= Crowded Colonies, CFU-Colony Forming Units, TNTC=Too numerous to count ,EAPC=Estimated aerobic plate count NSW:New southwales food authority

SGS Gulf Limited

Signed for and on behalf of SGS Gulf Limited

CTS Laboratory Manager

SGS Gulf Limited | SGS Building, Street No. 1243, P.O. Box: 18556, Jebel Ali Free Zone, Dubai, U.A.E. t +971 4 883 22 22 f +971 4 883 24 24 e me.gcc@sgs.com www.sgs.com
Member of the SGS Group (SGS SA)

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Po Box 113558 - Dubai, Uae

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Direct Dial: + 9714 396 8263 (Operations and Accounts)
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Email: Info@mgk.ae

www.mgk.ae

MGK **ROX** Training Video

MGK Dubai

Mirco Beutler