PROCESS CLEANING SOLUTIONS
Bringing Science to the Art of Cleaning

processcleaningsolutions.com

PCS HYPOCHLOROUS WATER SURFACE CLEANING WITHOUT HARMING

PCS TORAYSEE™ PROGRAM FOR HEALTH CARE

Reduced impact on the environment.

One Toraysee cloth can prevent the wasteful discharge of thousands of single use pre moistened wipes.

About Toraysee™

Toraysee™ is a cleaning cloth made using Toray's ultra-fine fibres.

Reusable Toraysee™ cloth a single cloth can be used all day to repeatedly clean and disinfect frequently touched surfaces and equipment.

Toraysee™ cloths are currently used in more than a thousand health care facilities and clinics in Japan.

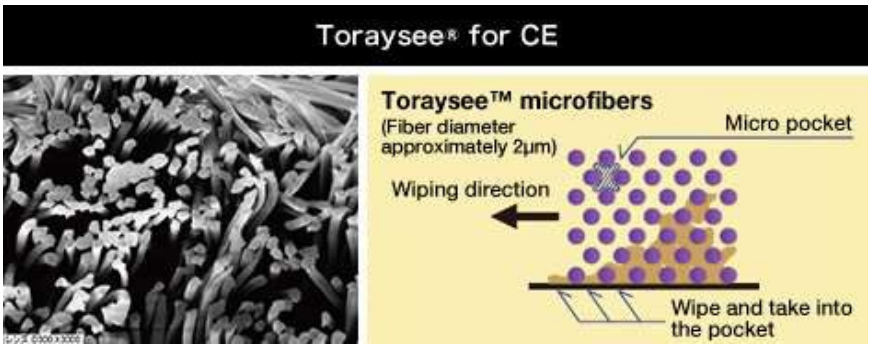
In the cleaning of medical equipment and instruments, priority is given to the "washing" process (removal of organic materials and dirt).

Toraysee™ is a cloth that specializes in the removal of organic materials and other dirt and washing without the use of chemicals.

It can be used wet or dry according to requirements, and can also be impregnated with disinfectant.

Wiping Mechanism of Toraysee™

Cleaning the touched surfaces : CONTACT POINT



Toraysee™ has ultra-fine (2 μm) fibers arrayed at high densities. Even if the first fibre were to leave some oil film behind, the next fibers will be sure to pick it up.

The greater fiber density also creates Micro Pockets that act as efficient reservoirs of the wiped contaminant preventing transfer and recontamination of other surfaces.

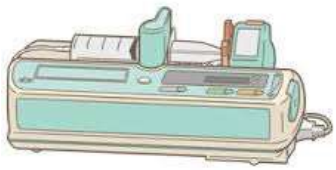
Instructions to clean keyboards, screens, iPads, iPhones and eyeglasses.

Hypochlorous Water
Suggested use instructions.

- Turn off the power to the device.
- Dampen Toraysee™ cloth with PCS Hypochlorous Water.
- Wipe surfaces with just damp Toraysee™ cloth.
- Place Toraysee™ cloth on top of a Hypochlorous Water container when not used.
- Wipe frequently used equipment often.
- Launder or wash cloth regularly.

Example of Reuse Toraysee™ in Medical Institutions

Example of Reuse



- An average of 30 infusion pumps and syringe pumps are cleaned with one Toraysee™ a day. (for 9 inch size of Toraysee™)
- After use, it is disinfected by immersing it in a cleaning and disinfecting solution containing sodium hypochlorite as the main component.
- To wipe off any obvious source of infection, such as bloods, use a disinfectant cloth to wipe off it before using Toraysee™.
- The time to dispose of Toraysee™ depends on the object to be cleaned and the nature of the dirt, so it is necessary to set criteria at the hospital.
- Toraysee™ and disinfectant cloth are used properly according to the purpose and effect.
- Since switching from disinfectant cloth to Toraysee™ the amount of garbage discharged has decreased.

PCS Hypochlorous Water

What are PCS Hypochlorous Water products?

PCS Hypochlorous Water products are a family of surface cleaners, *Wound Cleansing solutions and surface disinfectants that contain PCS proprietary stabilized Hypochlorous Water solutions*.

We create our Hypochlorous Water by diluting PCS concentrated stabilized sodium hypochlorite disinfectant with purified water to the desired concentration of sodium hypochlorite and add dilute solution of acetic acid to the desired pH range 6 to 8.5 creating PCS Hypochlorous Water solutions.

PCS Hypochlorous Water creates PCS proprietary hypochlorous acid formulations.

Hypochlorous acid is generated by our white blood cells. It has become one of the most popular wound cleansing solutions used in many hospitals worldwide. In fact, PCS is developing a PCS Canadian manufactured Hypochlorous Water wound cleansing solution.

PCS Hypochlorous Water

Surface cleaning without harming
Ready To Use Solution

Ingredients - Purified water 99.99% Hypochlorous acid less than 0.008% 80 ppm less than 0.002% sodium chloride, inorganic salts and acetic acid. Keep out of reach of children.

* Dry Surface Biofilms are on most if not all surfaces indoors.

PCS Hypochlorous Water removes soils without harming dry surface biofilm integrity. Dry Surface Biofilms react to treatment with disinfectants and toxic cleaners by releasing microbes to the surface of the biofilm. Dry surface biofilms when not disturbed by toxic cleaners and disinfectants release very few microbes to the surface of the biofilm.

PCS Hypochlorous Water surface cleaner is not hazardous under WHIMIS and requires no use of PPP's is not corrosive to surfaces, ready to use solution has almost no detectable odour, will not stain cloths or require rinsing. Use PCS Hypochlorous Water to clean frequently touched surfaces, floors, walls, equipment, and most surfaces not damaged by water. PCS Hypochlorous Water routine surface cleaning without disinfecting to encourage dry surface biofilms to include beneficial bacterial populations.

Our Indoor Microbiome Includes Difficult to Remove Biofilms on Dry Surfaces

Biofilms can be thought of as a 'microbial village', with an identifiable infrastructure supporting a disparate mesh of bacteria, viruses, fungi, protozoa and spores embedded in exopolymeric substances (EPS) comprising 90% of biofilm.
*Dry surface biofilms: what you need to know

A natural community of microorganisms that inhabit most if not all environments. If we stop attacking them with harsh cleaners and disinfectants biofilms can be and are a very beneficial part of our ecosystem.

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Directions for use.
Use to clean frequently touched surfaces.
Spray on surface and wipe with PCS microfiber cloth.
To clean walls, tables, counters, and floors apply undiluted solution with a coarse trigger spray to mop or cloth and wipe surfaces of visible soil.
Storage store this product in a cool dry area away from sunlight or heat.
Degrades with age and exposure to sunlight and heat.

This chemical does not meet the hazardous criteria set forth by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Ready-to-Use

Code	Description
6080-4	(Open stock) 3.78L x 4
6080-6	946ml x 6

Reference

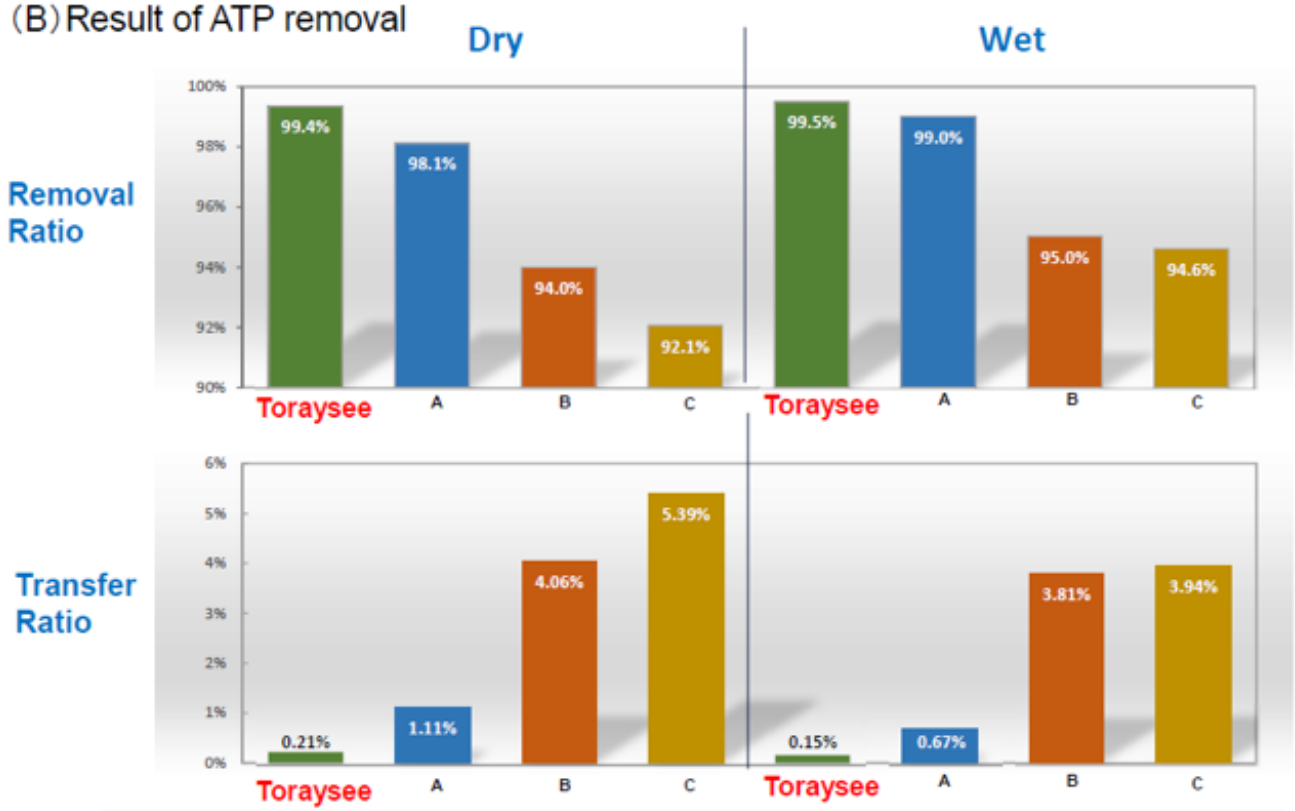
Dry surface biofilms: what you need to know
Ledwoch K, Vickery K, Maillard J-Y. Dry surface biofilms: what you need to know. Br J Hosp Med. 2022. https://doi.org/10.12968/ hmed.2022.0274

How Do Biofilms Affect Surface Cleaning in Hospitals?
by Stephanie J. Dancer
Department of Microbiology, NHS Lanarkshire and School of Applied Sciences, Edinburgh Napier University, Edinburgh EH10 5DT, UK Hygiene 2022, 2(3), 132-135; https://doi.org/10.3390/ hygiene2030011 Received: 2 August 2022 / Revised: 16 August 2022 / Accepted: 19 August 2022 / Published: 2 September 2022

Mayo Clinic Study 2021 H2O2 vs HOCL
In Vitro Antibacterial Activity of Hydrogen Peroxide and Hypochlorous Acid, Including That Generated by Electrochemical Scaffolds. These results suggest that HOCl has similar activity against planktonic and biofilm bacteria whereas the activity of H2O2 is less against biofilm than planktonic bacteria

Performance Wiping of ATP

(B) Result of ATP removal



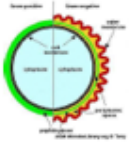
Toraysee™ removes ATP efficiently, and does not transfer much of ATP

Performance Wiping of Germs

P. Fluorescens
(Gram-negative Bacilli)

Reference:Matsumoto et al
J Antibact Antifung Agents 2018;46:181 (In Japanese).

Gram Positive
Weak for disinfectant



Gram Negative
- Many Pathogenic Germ
- Strong for disinfectant due to outer membrane
- Infectious in hospitals
  Pseudomonas,Serratia,, Acinetobacter

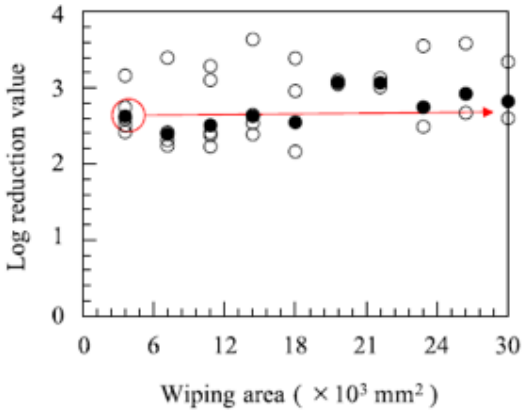


Fig.5. Effect of the wiping area on the logarithm reduction value of the adherent *P. fluorescens*. Symbols : ○, the logarithm value of reduction ; ●, the logarithm value of mean reduction.

Removal Ratio was more than 99.6%

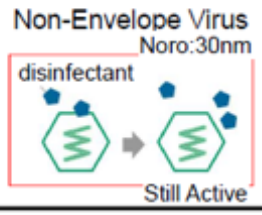
Toraysee™ is good for removing Micro size material such as Bacilli !

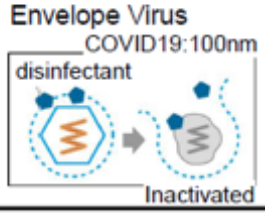
Confidential

Performance Wiping of Virus

Feline calicivirus F-9 (ATCC VR-782),
a norovirus-related species
(Non-Envelope Virus)

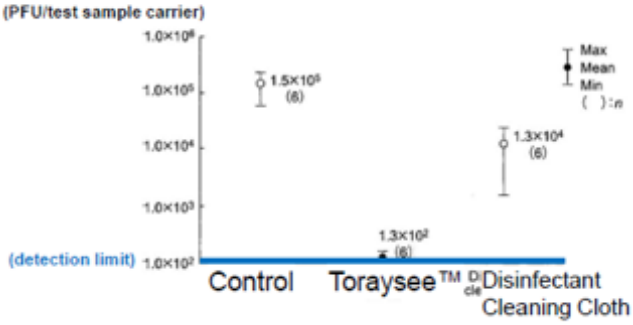
Reference:Tojo K, et.al., . Ther Res,2014;35:827-36





Comparison between Toraysee and Disinfectant cleaning cloth

	Contr01	Toraysee™ (Wet)	Disinfectant cleaning cloth
1	1.8×10^5	1.5×10^2	6.0×10^3
2	2.3×10^5	2.0×10^2	1.6×10^3
3	1.9×10^5	$<1.0\times10^2$	2.3×10^4
4	6.0×10^4	1.4×10^2	2.4×10^4
5	1.3×10^5	$<1.0\times10^2$	1.8×10^3
6	8.0×10^4	$<1.0\times10^2$	1.9×10^4
Mean viral titer	1.5×10^5	1.5×10^5	1.3×10^4
LRV Reduction ratio(%)		3.1 99.9	1.1 92.1



The reduction ratio of virus was
99.9% Removed with wet Toraysee
92.1% Deactivated with
wet Disinfectant Cleaning cloth.

Toraysee™ is good for removing nano size materials such as virus!

Resistance to Disinfectants • Sodium Hypoclorite

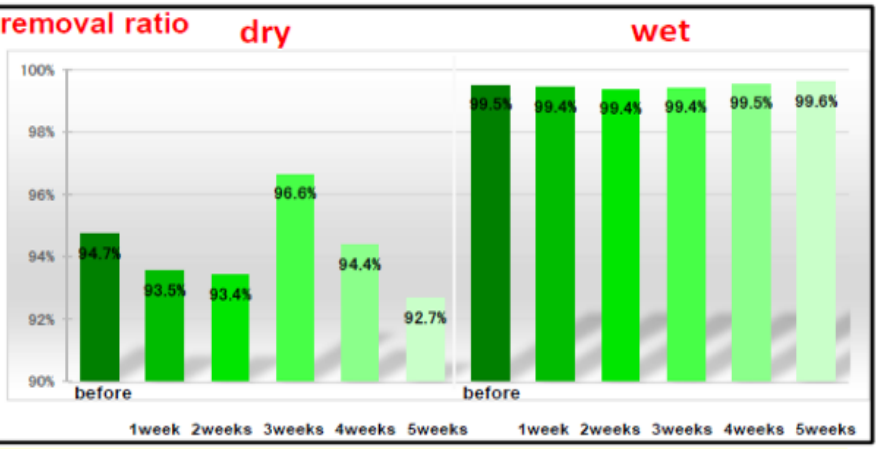
【material】 Sodium hypochlorite 1.0%

【method】 Toraysee was soaked in sodium hypochlorite 1.0% concentration.
Measurements were taken at 5 soaking times (1week to 5weeks).

A sample was removed after each of the 5 periods and ATP measurement kit was used to measure the ATP value.

【Result】

	removal ratio	
	dry	wet
before	94.7%	99.5%
1week	93.5%	99.4%
2weeks	93.4%	99.4%
3weeks	96.6%	99.4%
4weeks	94.4%	99.5%
5weeks	92.7%	99.6%

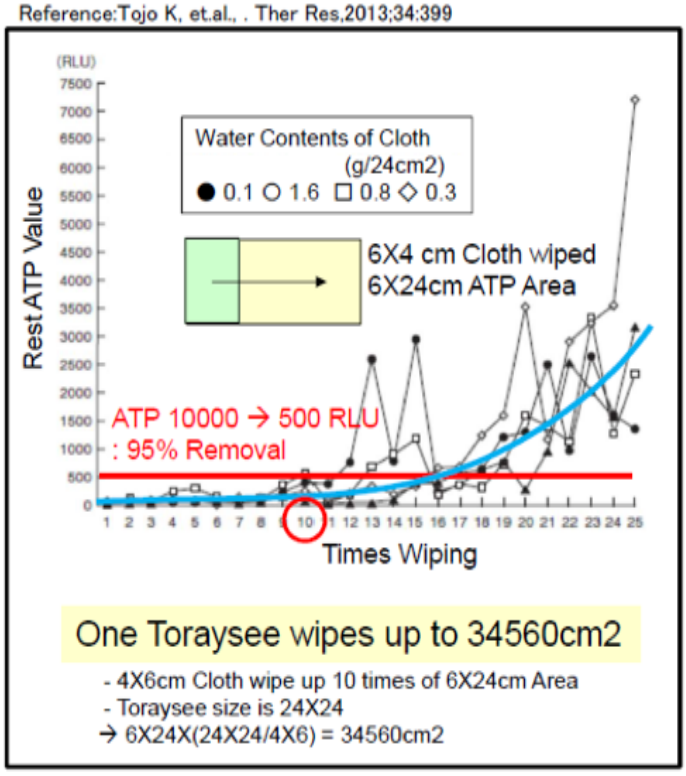


Toraysee kept the wiping performance after 5 weeks soaking in Sodium hypochrolite.

Maximum Area to Wipe Up

Repeat Wiping Test till 95% Removal Ratio

Reference:Tojo K, et.al., . Ther Res,2013;34:399



Scene		Wiping Image
MacBook Display 16inch		21units
MacBook Display 13inch		31units
iPhone11		1,100units
Table		23inchX70inch (1,610㎡) 3 tables

PCS custom size cloth you can wipe up to 57,600 cm 2

Microbial-control treatment provides hygiene and peace of mind

What is microbial-control treatment?

Microbial-control treatment is a treatment that aims to control microbial growth on the cloth's fibers.

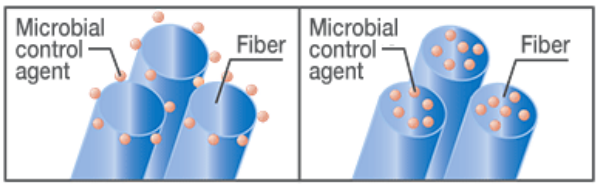
Microbes targeted by microbial-control treatment

Test method: JIS L 1902 Liquid culture absorption method

Tested microbes	Specific applications
Staphylococcus aureus	○
Klebsiella pneumoniae	○
Methicillin-resistant Staphylococcus aureus	○

※ Evaluation criteria: Antibacterial activity value > Control cloth multiplication value
＊Comparison between antibacterial/antifouling value and control cloth multiplication value

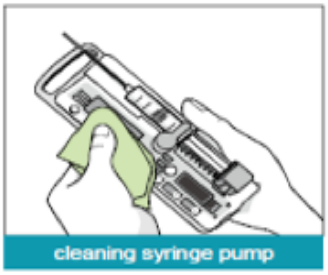
Mechanism of microbial-control treatment



Compared to ordinary treatment, in which the microbial-control agent adheres to the outside of the fibers, with Toray's microbial-control treatment (Makspec®), the microbial-control agent infiltrates the fibers, thus sustaining the microbial-control effect.

For Cleaning Various Medical Devices and Work Areas

(1) For Maintenance of Infusion Pump, Syringe Pump

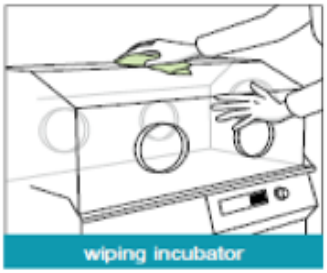

cleaning syringe pump


Infusion pump


Syringe pump

Wipe off even if a slightly sticky chemical solution adheres.

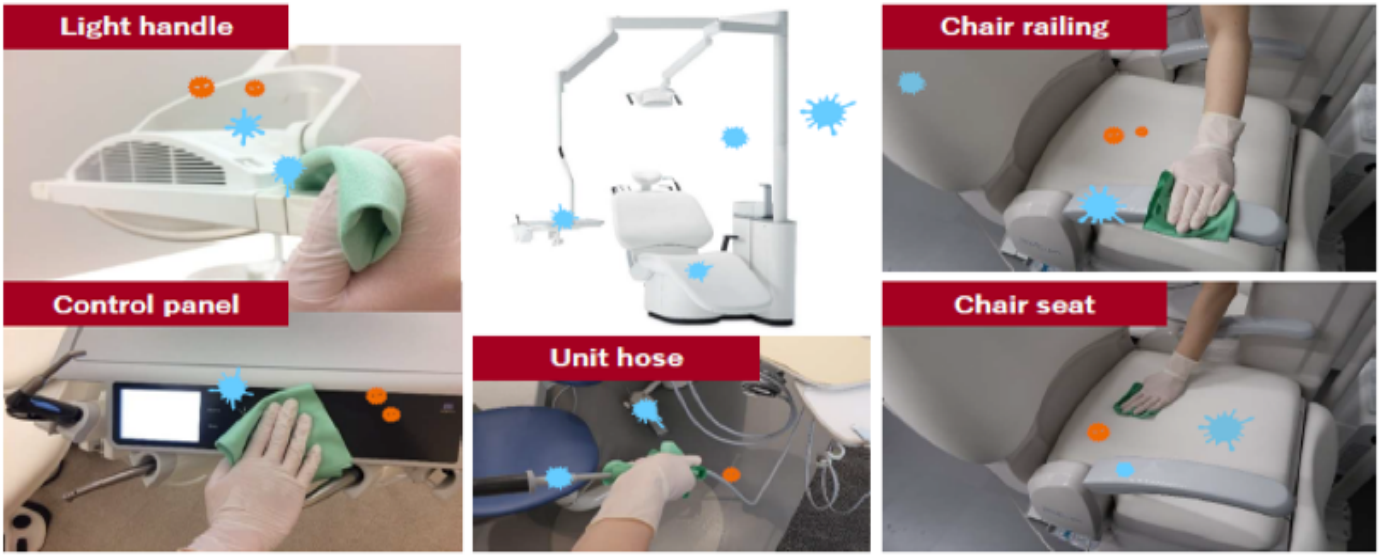
(2) For Maintenance of Incubator


wiping incubator

Considering the effects of newborns, it is preferred to avoid using chemicals for wiping the incubator as much as possible.

Toraysee™ has a high cleaning performance without using any chemicals.

(6) For Dental Clinic

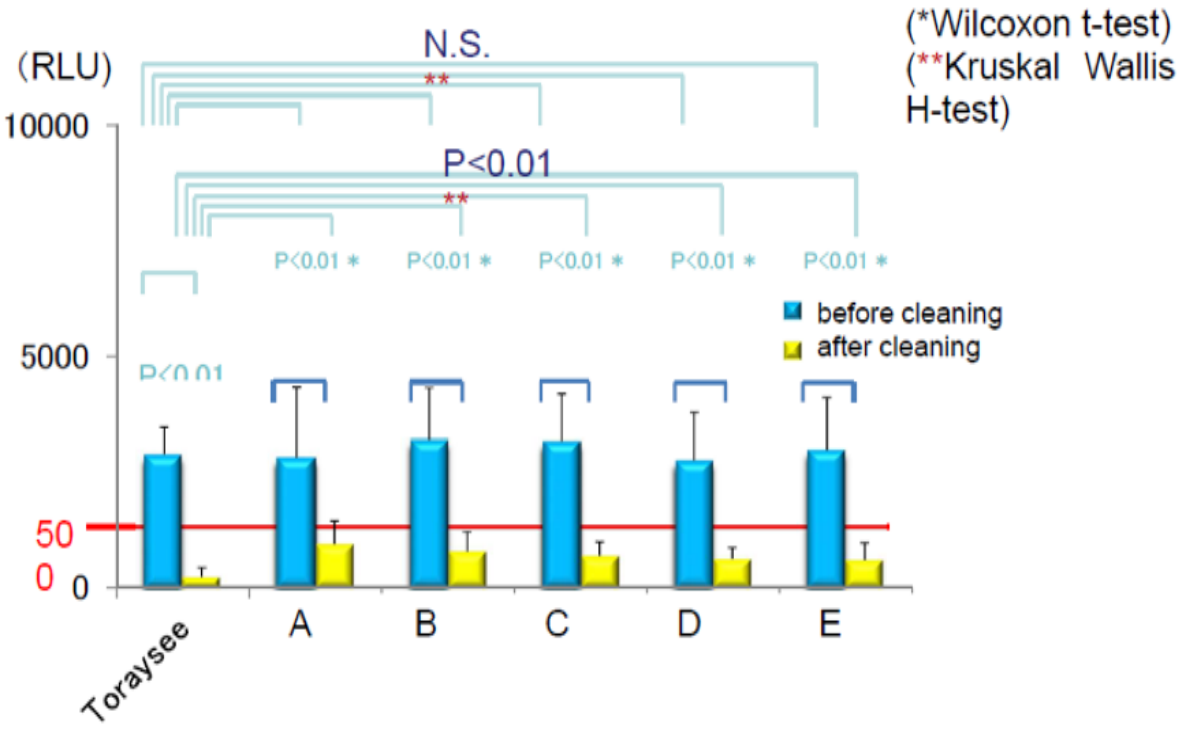


Dental treatment has a lot of splashes, it is important to wipe off the droplets properly with Toraysee™ as an infection control measure.

Cleaning the Syringe Pump

(1) Comparison of ATP values between Toraysee and disinfectant cloth

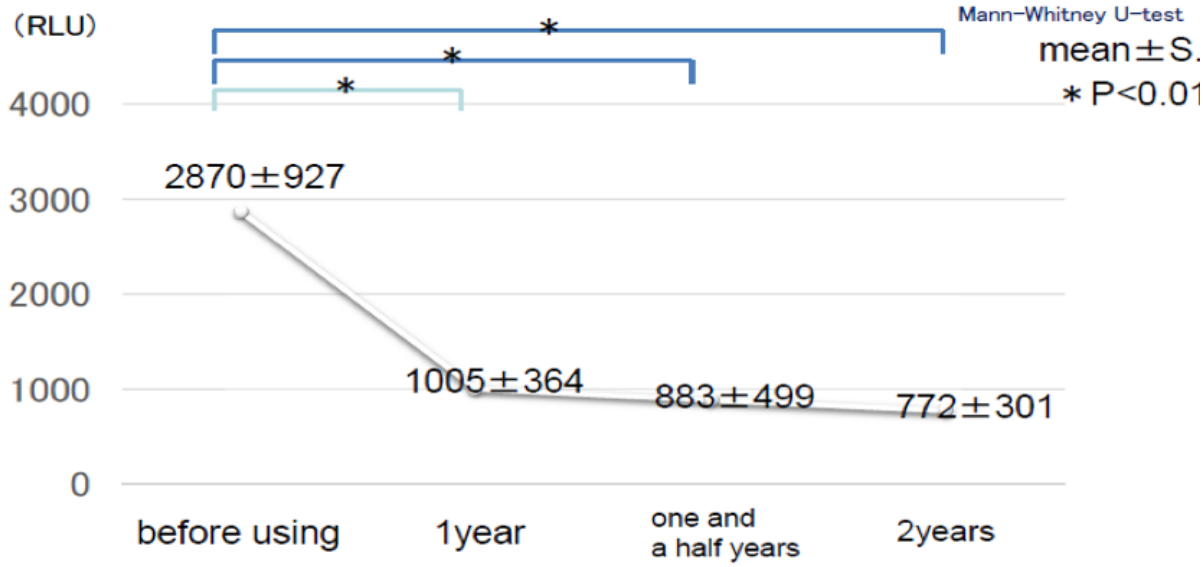
※Toraysee™ was soaked in tap water and then squeezed tightly before use.



Reference:Hatakeyama et al Jounal of Japan Association for Clinical Engineers N0.53,67-71 2015(In Japanese).

(3) Transition of ATP value after using of Toraysee™

＊Before cleaning

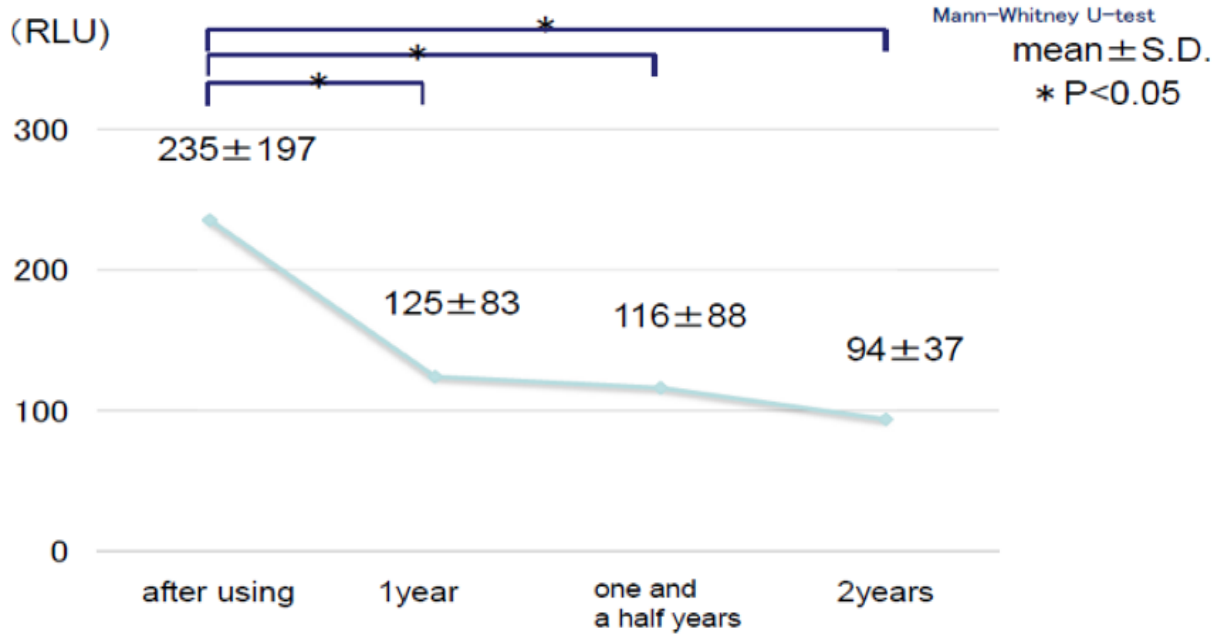


Reference:Hatakeyama et al Jounal of Japan Association for Clinical Engineers N0.56,100-103 2016(In Japanese).

Cleaning the Syringe Pump

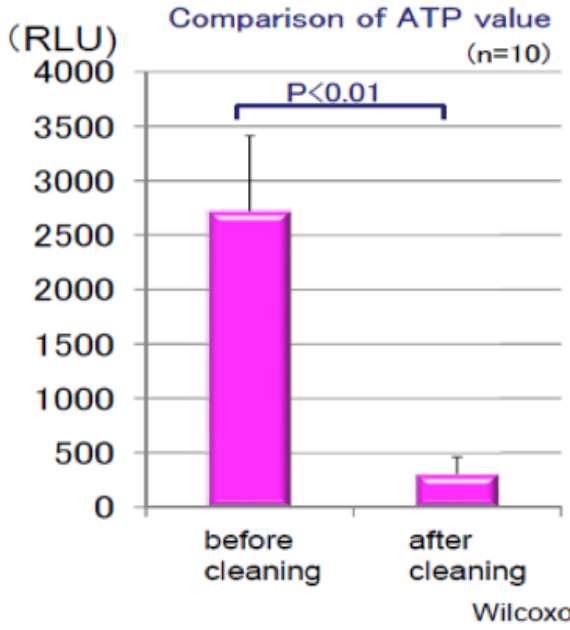
(4)Transition of ATP value after using of Toraysee™

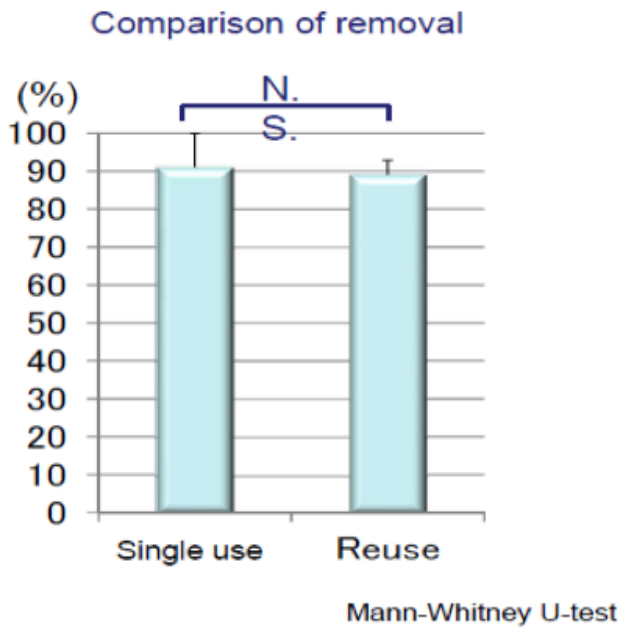
＊after cleaning



Reference:Hatakeyama et al　Jounal of Japan Association for Clinical Engineers　N0.56,100-103　2016(In Japanese).

Measurement result of using one Toraysee™ per day





Reference: Hatakeyama　Japanese Red Cross Akita Hospital

TORAYSEE™ PCS 5000 OXIDIZING DISINFECTANT CLEANING PROCESS AND COST OF USING ONE TORAYSEE™ PER DAY.

PROCESS

Materials

- Small oblong or square container with lid
- 250 mls of PCS 5000 Oxidizing Disinfectant/Disinfectant Cleaner
- Toraysee™ cloth
- Bucket with rinse water

PROCEDURE

- Add 250 mls of PCS 5000 to the container, add Toraysee™ cloth and check the lid is secure, ensure the container has a workplace label.

To clean and disinfect with Toraysee™ cloth

- Remove lid from container
- Squeeze out liquid from Toraysee™ cloth
- Wipe over surfaces in one direction with damp Toraysee™ cloth

How to reuse

- Rinse cloth with water squeeze out liquid
- Replace cloth in PCS 5000 Oxidizing Disinfectant Cleaner
- PCS 5000 Oxidizing Disinfectant Solution disinfects Toraysee™ and saturates cloth for next use

To clean delicate or chemically sensitive surfaces

- Remove Toraysee™ from PCS 5000 Disinfectant solution
- Squeeze out liquid
- Rinse cloth in water and squeeze out liquid from cloth
- Wipe delicate surfaces or equipment with damp Toraysee™

These processes can be used for prolonged periods of time but common practice is to rinse Toraysee™ cloth at the end of use for the day and empty and rinse container. Water rinse Toraysee™ after use for the day, squeeze excess liquid from cloth and allow to air dry.

- Toraysee™ Antimicrobial finishing process has proven to discourage microbial growth on fibres even after 60 hospital laundering cycles.
- Dampened with water only Toraysee™ has demonstrated the ability to remove greater amounts of ATP, bacteria and viruses than pre-moistened disinfectant wipes and split microfibre cloths.
- Toraysee™ after soaking in 1% sodium hypochlorite for 5 weeks removed 99.6% of soil as compared to 99.5% before treatment. Demonstrating Toraysee™ maintained excellent removal of organic soils even with prolonged presence of strong concentrations of sodium hypochlorite.

Cost of use - Based on 50 use applications per day. Toraysee™ cloth cost based on sixty days of use. Cost per day = .20		
Cost per day	=	.20
Number of cloths used for sixty days	=	1
PCS 5000 use per day 500 mls	=	2.85
Toraysee™ / PCS 5000 cost per day	**=**	**3.05**
Cost per day 5990 • 50 12”x12” wipes per day	**=**	**22.00**
NUMBER OF WIPES USED IN SIXTY DAYS	=	3000
Cost per day 5987-6 • 7”x12” wipes per day	**=**	**12.27**
NUMBER OF WIPES USED IN SIXTY DAYS	=	3000
Bucket saturation of microfiber cloths 3 L	=	8.88
Cost of microfibre cloths 50 required launder cost + Cost of cloths	=	8.34
Number of cloths used sixty days	=	50
Split microfibre charged bucket system cost per day	**=**	**17.22**

Click here for a copy of validation study of one cloth per day process. PCS contracted CREMCO to perform six separate Quantitative Carrier Test #3 studies to validate Toraysee™ – PCS 5000 Oxidizing Disinfectant Cleaning Process in simulated real-world test to validate the process can.

(1) Remove large numbers of hospital pathogens.
(2) Prevent the transfer of pathogens to previously uncontaminated surfaces.
(3) Demonstrate that repeated use of the process that a single Toraysee™ cloth could be repeatedly used for extended periods of time.
(4) Provide repeated test demonstrating PCS 5000 Oxidizing Disinfectant Cleaner with Health Canada approved label claim to kill C. difficile spore form can remove organic and inorganic soils from Toraysee™ without the need for any additional decontamination processes.

Study No.: PCS210426-01
Assessment of the Durability and Activity of PCS Toraysee™ Cleaning Cloths for Decontaminating Hard, Non-Porous Environmental Surfaces: Testing with Coronavirus 229E (ATCC VR-740), Murine Norovirus (Strain S99), and Clostrioides difficile spores(ATCC 43598) as representative Healthcare-Associated Pathogens

The objective of this study was to:
a. Conduct laboratory-based testing on PCS Toraysee™ Cleaning Cloths for the microbial decontamination of hard, non-porous environmental surfaces representing those found in healthcare settings. The aim here was to evaluate the durability and efficacy of a cleaning/sanitizing process using PCS Toraysee™ Cleaning Cloths.
b. Test a single PCS Toraysee™ Cleaning Cloth in multiple studies to evaluate the efficacy of the cloth when it is used over and over and is decontaminated using PCS 5000 after each use.

TEST RESULTS
Table 1,2,and 3 summarize the result of efficacy tests on 229E, MNV and C. difficile spores, respectively.

Table 1: 229E virus inactivating/removing activity using PCS Toraysee™ cloth.

	PFU/cm2			Percent		Average Percent	
	Control	Contamination	Transfer	Reduction	Transfer	Reduction	Transfer
Test 1	**3,458**	**0**	**0**	**100***	**0***	**100**	**0**
Test 2	**8,292**	**0**	**0**	**100***	**0***		

*=No PFU were detected in the eluents tested.

Table 2: MNV virus inactivating/removing activity using PCS Toraysee™ cloth.

	PFU/cm2			Percent		Average Percent	
	Control	Contamination	Transfer	Reduction	Transfer	Reduction	Transfer
Test 1	**71,111**	**0**	**0**	**100***	**0***	**100**	**0**
Test 2	**142,500**	**0**	**0**	**100***	**0***		

*=No PFU were detected in the eluents tested.

Table 3: C. difficile spores inactivating/removing activity using PCS Toraysee TM cloth.

	CFU/cm2			Percent		Average Percent	
	Control	Contamination	Transfer	Reduction	Transfer	Reduction	Transfer
Test 1	**4.76 x10^6**	**0**	**0**	**100***	**0***	**100**	**0**
Test 2	**2.87 x10^6**	**0**	**0**	**100***	**0***		

*=No CFU were detected in the eluents tested.

Conclusions
The results of this study showed that, under the test conditions specified, PCS Toraysee™ cloth with PCS 5000 efficiently decontaminated the contaminated platform and also prevented the transfer of infectious virus and C. difficile spores to the clean platform. The PCS Toraysee™ cloth's integrity and efficacy also was not affected in 6 separate efficacy tests on the three microorganisms in two months.

The stability test also shows the potency of PCS 5000 did not dropped bellow the acceptable range (<5000 ppm) when the PCS Toraysee™ cloth was kept in PCS 5000 in a closed container for 10 days.