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# 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.

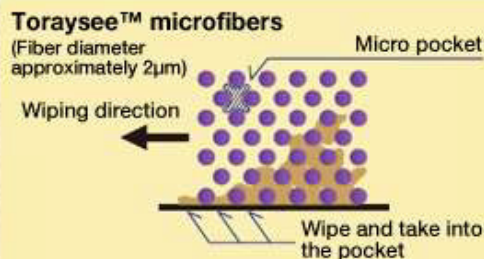
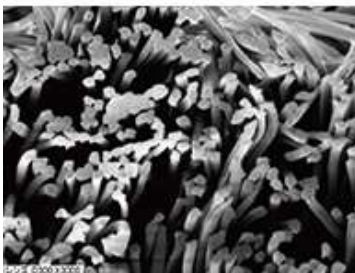


It can be used wet or dry according to requirements, and can also be impregnated with disinfectant.

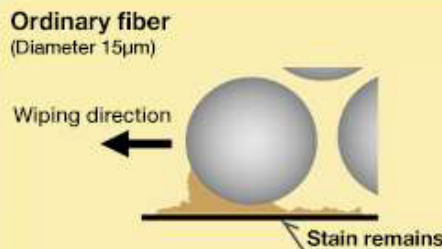
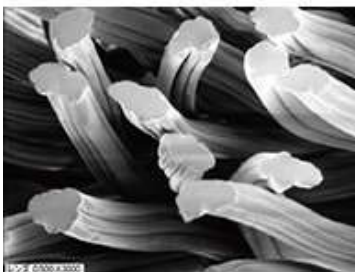
## Wiping Mechanism of Toraysee™

Cleaning the touched surfaces : CONTACT POINT

### Toraysee® for CE



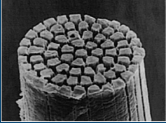

### Conventional cleaning cloth (ordinary fibers)



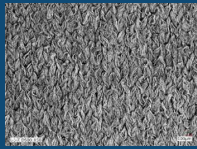

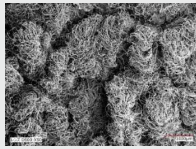
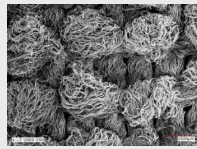
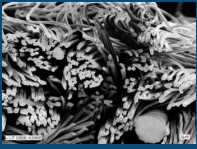
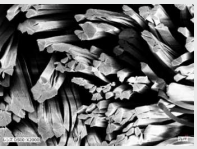
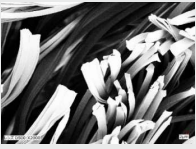
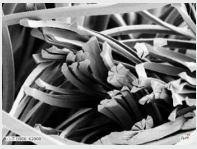
Toraysee™ has ultra-fine (2 µm) fibers arrayed at high densities. Even if the first fibre were to leave some oil film behind, the next fibers will be sure to pick it up.

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

# Micorfibre Comparison

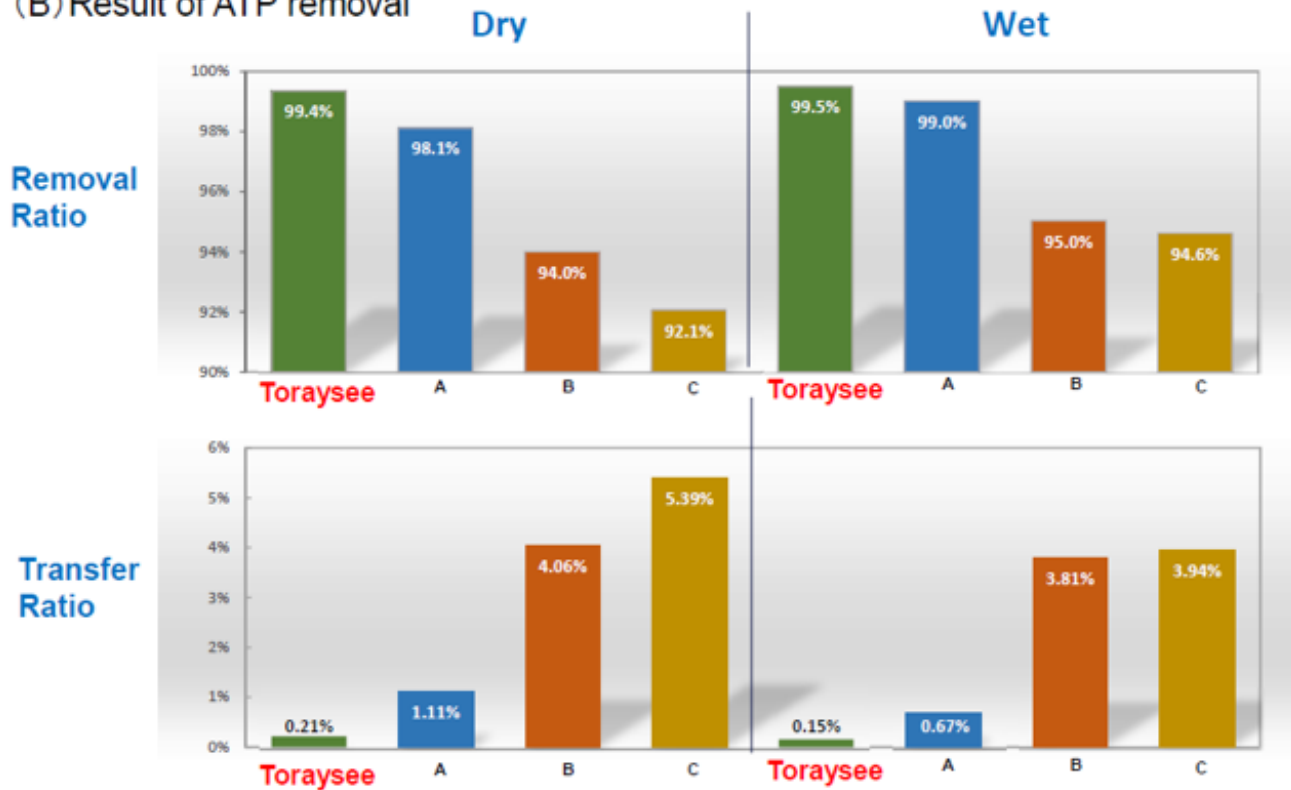
	Toraysee™	Other Microfibre
		
Component	PET	PET/Nylon
Type	Sea/Island	Split
Method	Chemically Dissolve Sea Carrier	Mechanical Rubbing (Sometimes Imperfect)
Ave. Diameter(μm)	2	5-8
Chemical Resistance	Higher	Lower
Wiping property	Higher	Lower
Cost	Higher	Lower

# Performance Wiping of ATP - Organic Compound

		Toraysee™	Competitors			
		Toraysee™ Ultra Fine Fiber(Sea Island)	A Fine Fibre (Split)	B Fine Fibre (Split)	C Fine Fibre (Split)	
SEM	Surfacex50					
	Cross Section x2000					
Fibre Diameter	(μm)	2-3μm/26μm	6μm/19μm	6μm/18μm	6μm/18μm	
Cloth Size	(mm)	240 x 240	308x305	305x307	305x305	
Thickness	(mm)	0.5	0.75	1.40	1.05	
Weight	(g/m <sup>2</sup> )	201	317	328	180	
Water Retention Rate	(%)	276	285	892	1105	
ATP Dry	Remain/Transfer	191 / 63	563 / 327	1,798 / 1,134	2,375 / 1,489	
ATP Wet	Remain/Transfer	151 / 45	293 / 201	1,499 / 1,087	1,629 / 1,127	

# 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*

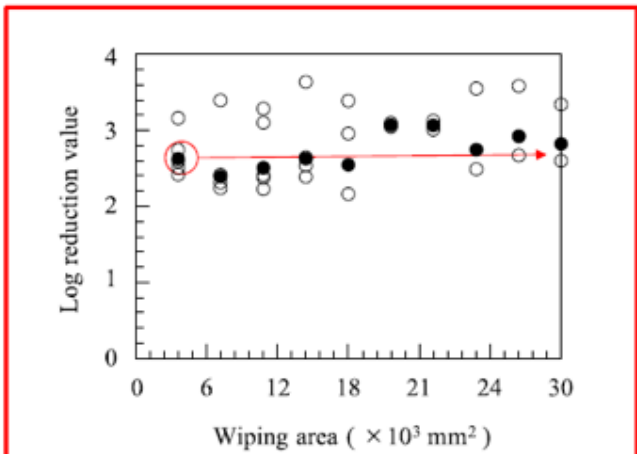


Fig.5. Effect of the wiping area on the logarithm reduction value of the adherent *P. fluorescens*. Symbols: ○, the logarithm value of reduction; ●, the logarithm value of mean reduction.

Removal Ratio was more than 99.6%

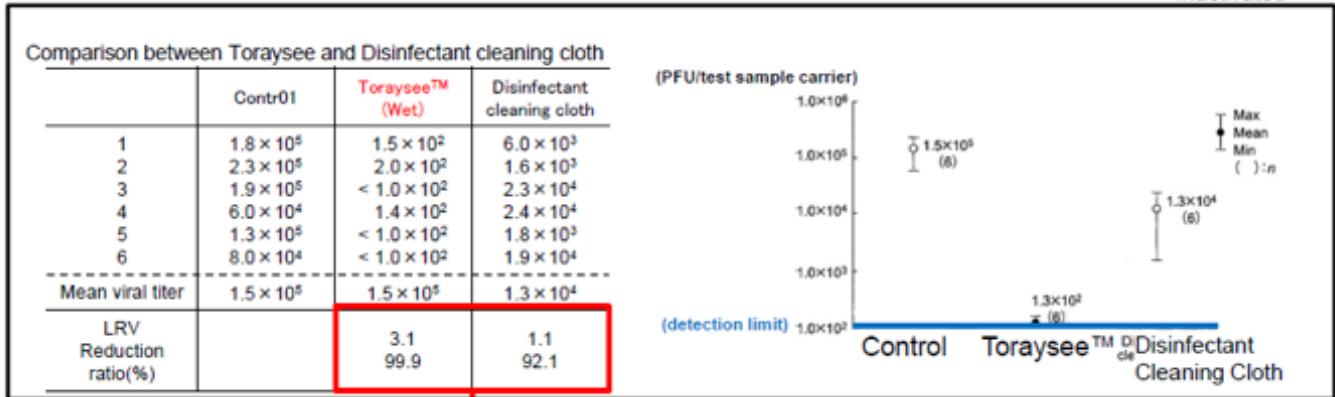
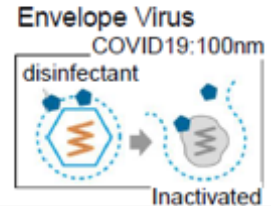
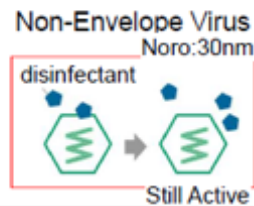
Toraysee™ is good for removing Micro size material such as Bacilli !

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



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 Hypochlorite

**[material]** Sodium hypochlorite 1.0%

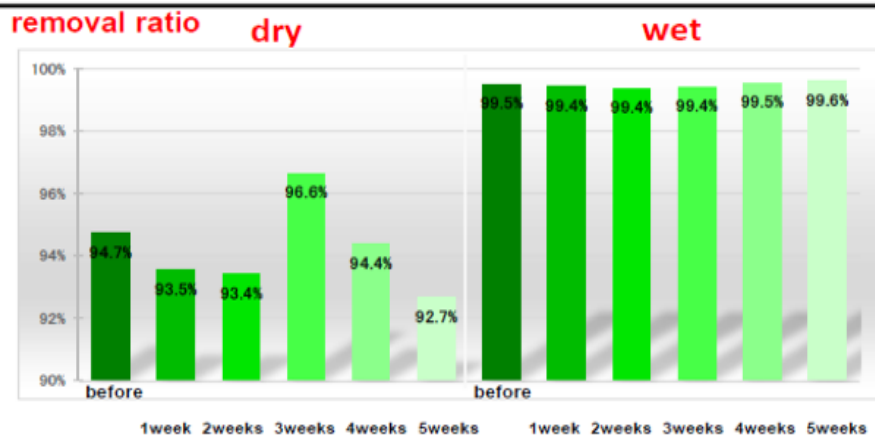
**[method]** Toraysee was soaked in sodium hypochlorite 1.0% concentration. Measurements were taken at 5 soaking times (1week to 5weeks).



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%

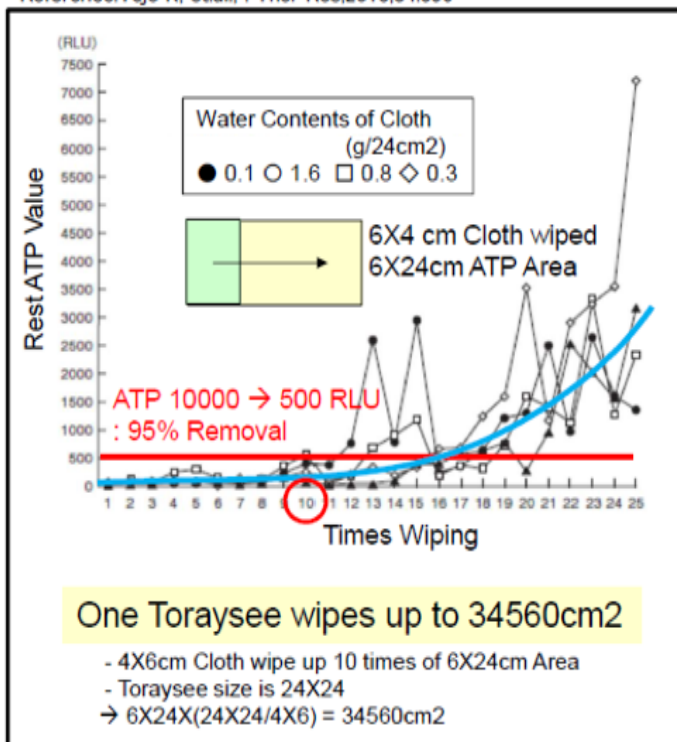


Toraysee kept the wiping performance after 5 weeks soaking in Sodium hypochlorite.

# 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 (1.610m <sup>2</sup> ) 3 tables

PCS custom size cloth you can wipe up to 57,600 cm<sup>2</sup>

# Microbial-control treatment provides hygiene and peace of mind

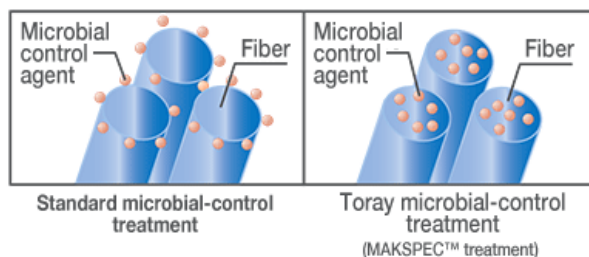
## What is microbial-control treatment?

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

## Microbes targeted by microbial-control treatment Mechanism of microbial-control treatment

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

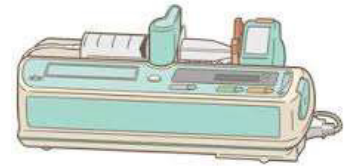


Compared to ordinary treatment, in which the microbial-control agent adheres to the outside of the fibers, with Toray's microbial-control treatment (Makspec®), the microbial-control agent infiltrates the fibers, thus sustaining the microbial-control effect.

# 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.



Use Toraysee™ cloth dampened with Neutral pH PCS 1000 Oxidizing Disinfectant Cleaner to clean and disinfect non critical medical equipment and frequently touched surfaces.

Toraysee™ cloth dampened with water only has proven to remove and prevent transfer of organic soils such as ATP, bacteria and viruses to lower levels than that achieved with pre moistened disinfectant wipes or split microfibre cloths.

Wiping surfaces with Toraysee™ cloth dampened with Neutral pH PCS 1000 Oxidizing Disinfectant provides the added benefit of Oxidizing/Disinfecting residual organic soils not removed by wiping .

Provides the additional environmental decontamination required by infection control and public health officials.

# Example of use ... Cleaning with Toraysee™ for CE

## Transfusion pump



Wipe the LCD screen



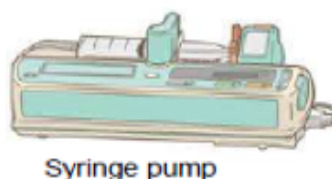
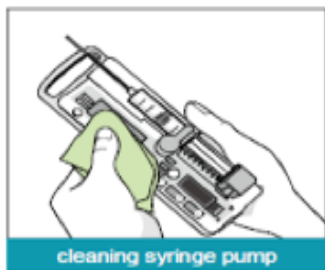
Remove the pole clamp and wipe inside the device and the unit itself.



Wipe the pole clamp

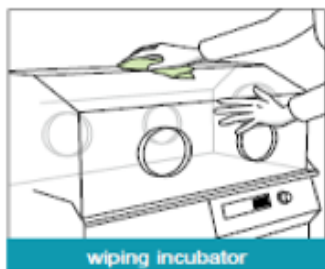
# For Cleaning Various Medical Devices and Work Areas

## (1) For Maintenance of Infusion Pump, Syringe Pump



Wipe off even if a slightly sticky chemical solution adheres.

## (2) For Maintenance of 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

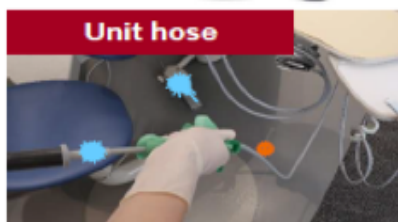
Light handle



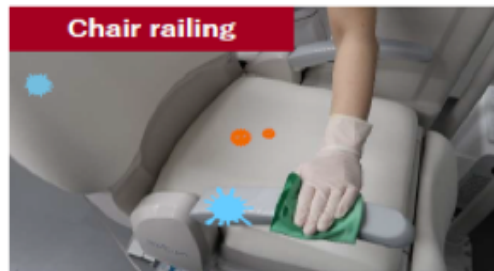
Control panel



Unit hose



Chair railing



Chair seat



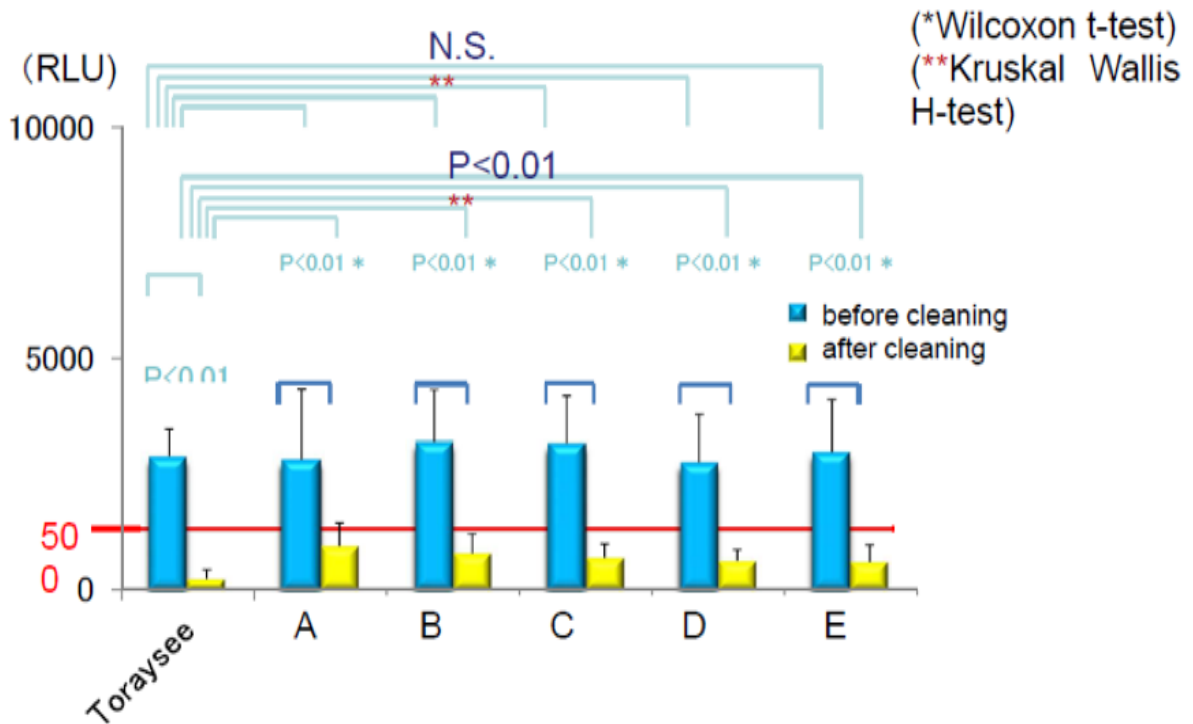
Dental treatment has a lot of splashes, it is important to wipe off the droplets properly with Toraysee™ as an infection control measure.



# Cleaning the Syringe Pump

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

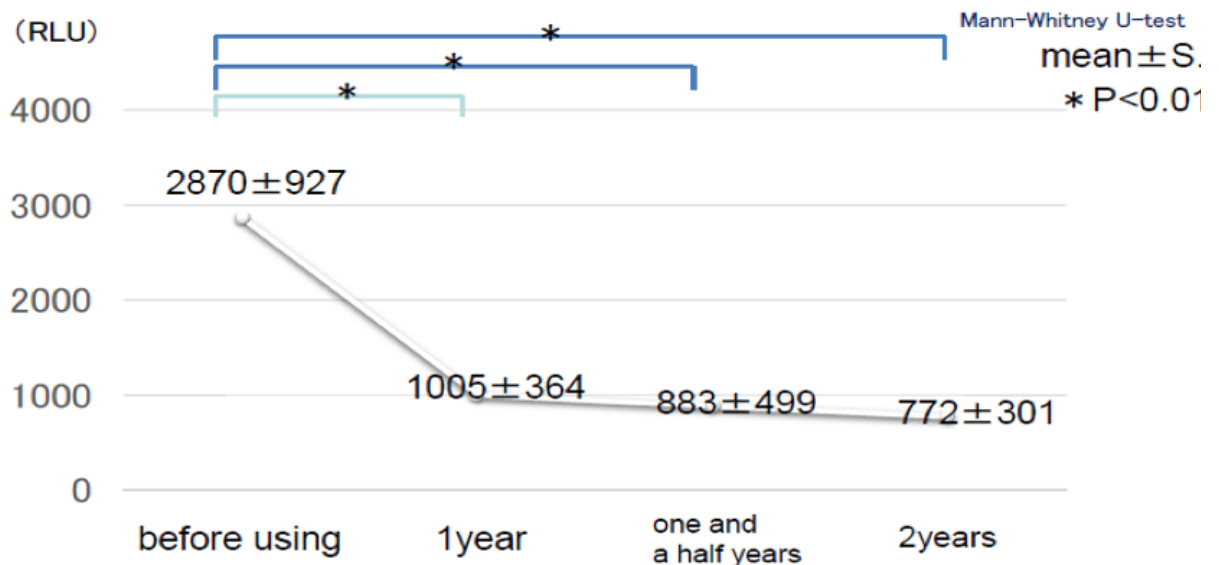
※Toraysee™ was soaked in tap water and then squeezed tightly before use.



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

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

\* Before cleaning

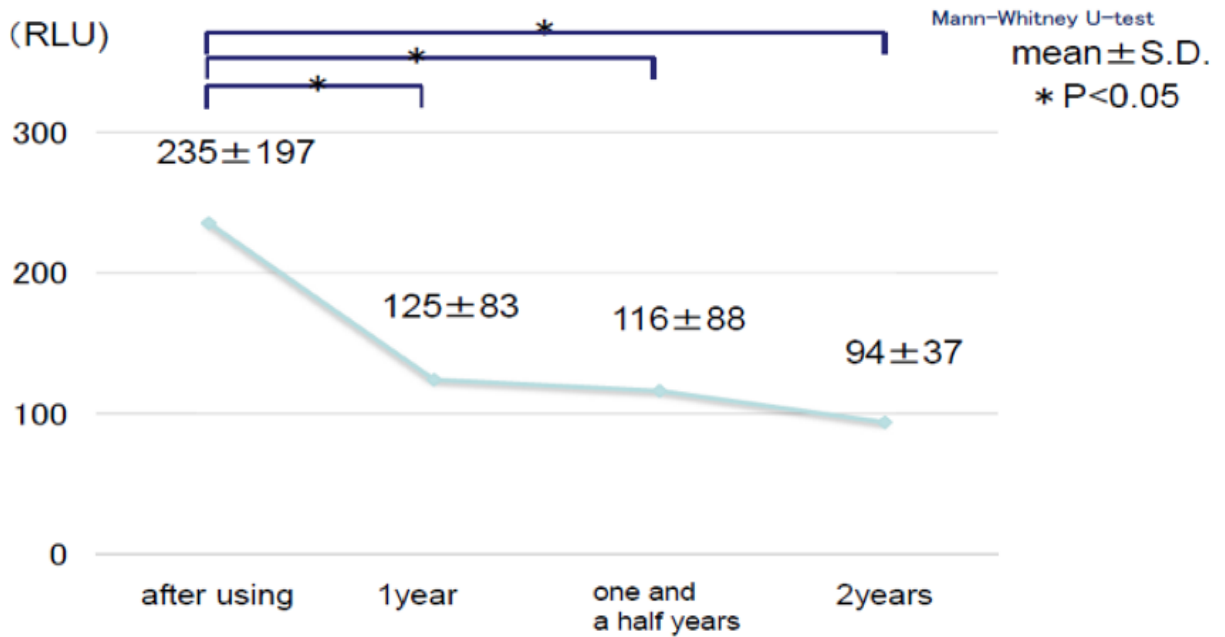


Reference:Hatakeyama et al Journal of Japan Association for Clinical Engineers N0.56,100-103 2016(In Japanese).

# Cleaning the Syringe Pump

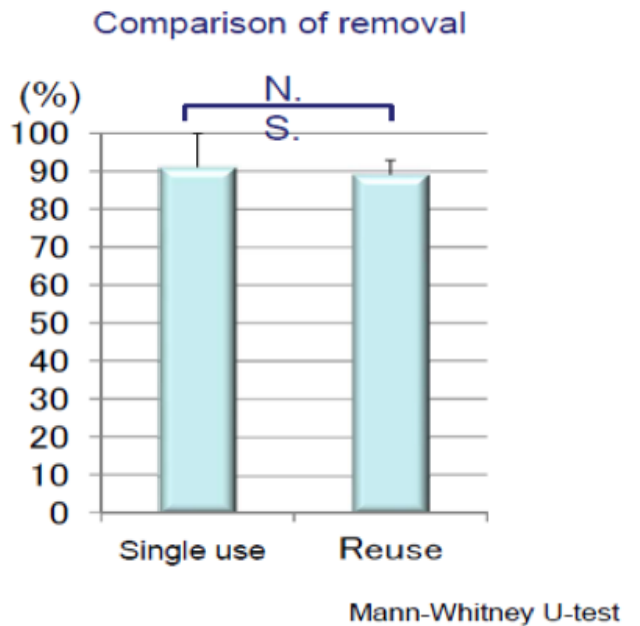
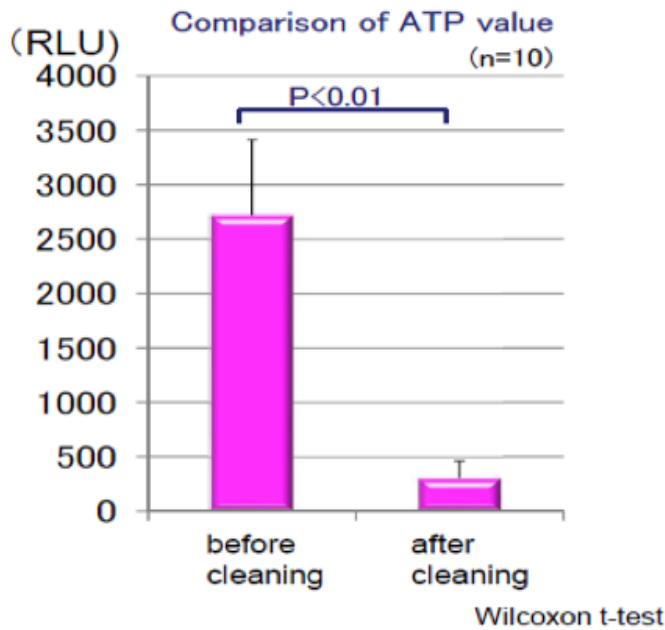
## (4) Transition of ATP value after using of Toraysee™

\* after cleaning



Reference: Hatakeyama et al Journal 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

# Characteristics of Toraysee™

1. Toraysee™ is a high density fabric composed of ultra-fine fibers of 2um diameter. Cloth made from Toraysee™ have a large surface area with micro pockets that will efficiently wipe up, capture and hold contaminants.
2. Toraysee is a cloth specializing in cleaning.
3. Toraysee™ efficiently wipes up organic dirt such as ATP, and micro & nano size materials such as germs & viruses.
4. Toraysee™ is a reusable type of cloth that has extensive washing and disinfectant durability, and eliminates cloths' waste to a minimum.
5. Toraysee™ is good to use in both dry and wet condition. Wet use is recommendable due to its greater wiping and reservoir performance.
6. Toraysee™ is used to wipe various medical apparatus and work areas.



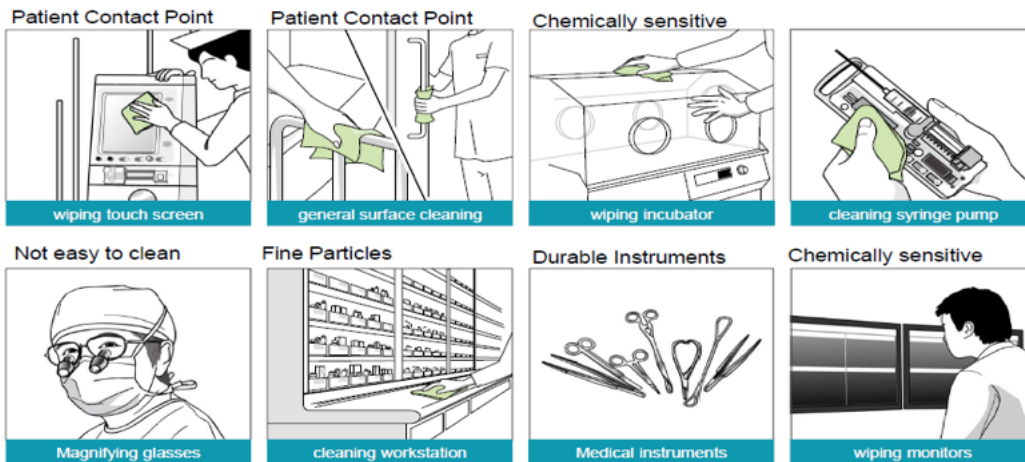
Dampen Toraysee™ cloth with PCS 5000 Oxidizing Disinfectant cleaner. Use dampened cloth to clean and disinfect surfaces or rinse with water squeeze excess liquid from cloth use to wipe chemically sensitive surfaces.

Use Toraysee™ cloth to clean and disinfect with PCS 5000 Oxidizing Disinfectant powerful disinfectant that kills C. difficile spores. Clean and disinfect equipment with the controlled moisture saturation of Toraysee™ cloth. Use to clean and disinfect frequently touched surfaces, critical care areas and for patient discharge clean.

Disinfect Toraysee™ cloth with PCS 5000 Oxidizing Disinfectant then rinse in potable water squeeze excess liquid from cloth and use to clean items sensitive to chemical damage.

## Application Examples • For The Medical Market

For cleaning various medical devices and work areas.





# 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 container add Toraysee™ cloth and check lid is secure, Insure container has work place label.

### To clean and disinfect with Toraysee™ cloth

- Remove lid from container.
- Squeeze out liquid from Toraysee™ cloth
- Wipe over surfaces 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
Number of cloths used for sixty days	=	1
PCS 5000 use per day 250 mls	=	.74
<b>Toraysee / PCS 5000 cost per day</b>	<b>=</b>	<b>.94</b>
<b>Cost per day 5990 • 50 12"x12" wipes per day</b>	<b>=</b>	<b>22.00</b>
NUMBER OF WIPES USED IN SIXTY DAYS	=	3000
<b>Cost per day 5987-6 • 7"x12" wipes per day</b>	<b>=</b>	<b>12.27</b>
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
<b>Split microfibre charged bucket system cost per day</b>	<b>=</b>	<b>17.22</b>