

PQ POWER QUICK Pre-Cleaning Spray

Medical Device Reprocessing System

PQ POWER QUICK Series Line-up

	Enzyme Cleaner for Manual Cleaning	Enzyme Cleaner for Manual Soaking	Enzyme Cleaner for Manual Soaking	Multitype Enzyme Cleaner for Manual Soaking	Disinfecting Enzyme Cleaner for Manual Soaking	Multi-Purpose Enzyme Cleaner	Cleaner for Automated Washers M	Cleaner for Automated Washers
Cleaning method	Manual Cleaning	Soaking	Soaking Ultrasonic cleaning	Soaking Ultrasonic cleaning	Soaking Ultrasonic cleaning	Soaking, Jet cleaning, Ultrasonic cleaning	Jet cleaning Ultrasonic cleaning	Jet cleaning Ultrasonic cleaning
pH	Neutral	Neutral	Neutral	Weak Alkaline	Weak Alkaline	Weak Alkaline	Neutral	Neutral
Dilution rate	No dilution	1.0% (100mL per 10L of warm water)	● Soaking 1.0% (100mL per 10L of warm water) ● Jet cleaning 0.5% (50mL per 10L of water) ● Ultrasonic cleaning 1.0% (100mL per 10L of water)	● Jet cleaning 0.5% (50mL per 10L of water) ● Ultrasonic cleaning 1.0% (100mL per 10L of water)	● Jet cleaning 0.5% (50mL per 10L of water) ● Ultrasonic cleaning 1.0% (100mL per 10L of water)			
Foaming	Foaming	Foaming	Low foaming	Low foaming	Foaming	Low foaming	Low foaming	Low foaming
Rinse	Necessary	Necessary	Necessary	Necessary	Necessary	Necessary	Necessary	Necessary
Compatibility	Stainless steel, copper, brass and aluminum	Stainless steel, copper and brass	Stainless steel, copper, brass and aluminum	Stainless steel, copper and brass	Stainless steel, copper and brass			

	Cleaner for Automated Jet Washers	Cleaner for Ultrasonic Washers	Pre-Cleaning Spray	Lubricant, Rust Inhibitor, and Drying Aid Power Forge	Heat stain Remover	Rust Remover S	Rust Remover	Residual Protein Detector
Cleaning method	Jet cleaning	Ultrasonic cleaning	Spraying	Soaking Jet cleaning	Soaking	Soaking	Soaking	Direct application
pH	Alkaline	Alkaline	Neutral	Neutral	Acidic	Neutral	Mild Acidic	Acidic
Dilution rate	0.5% (50mL per 10L of water)	0.5% (50mL per 10L of water)	No dilution	0.5% (50mL per 10L of water)	5% (200mL per 4L of water)	50% (500mL per 500mL of water)	50% (500mL per 500mL of water)	No dilution
Foaming	Non-foaming	Non-foaming	Non-foaming	Low foaming	Non-foaming	Low foaming	Low foaming	Non-foaming
Rinse	Necessary	Necessary	Unnecessary	Unnecessary	Necessary	Necessary	Necessary	Necessary
Compatibility	Stainless steel and aluminum	Stainless steel	Stainless steel, copper, brass and aluminum	Stainless steel, copper, brass and aluminum	Stainless steel	Stainless steel	Stainless steel	Test before using

Optional products



Thermostatic chamber TB35

Maximizing enzyme detergent efficacy.



500mL Measuring cup

For measuring

Product	Content	Quantity	JAN Code
Power Quick Pre-Cleaning Spray	500mL with spray	12	49-87696-50330-4

- For product development purposes, products are subject to change without notice.
- Because print and photo qualities vary, products may appear different than depicted in this brochure.
- The information in this catalog is current as of December 2011.

SARAYA

PQ POWER QUICK

To prevent coagulation and drying

Pre-Cleaning Spray



SARAYA

2-2-8 Yuzato, Higashiumiyoshi-ku, Osaka 546-0013 Japan
Phone: +81-6-6703-6556 Fax: +81-6-6703-4466
E-mail: hands@global.saraya.com URL: <http://worldwide.saraya.com>

Table 4. Changes in the outer appearance of test pieces

	SUS304	SUS430	SUS420J2	Aluminum	Copper	Brass
PQ Pre-Cleaning Spray						
Brand A						
Brand B						
Brand C						
Tap water						
Untreated Control						

For hospitals, clinics and other medical facilities.

	Page
1. COMPONENTS AND PROPERTIES.....	1
2. FEATURES.....	1
3. USAGE / DOSAGE.....	2
4. EFFECT / EFFICACY.....	3
4-1. ANTI-DRYING EFFECT.....	4
4-2. SUSTAINED ANTI-DRYING EFFECT.....	5
4-3. BACTERIOSTATIC EFFECT.....	6
4-4. ANTI-CORROSIVE EFFECT.....	7

PQ POWER QUICK
Pre-Cleaning Spray

1. COMPONENTS AND PROPERTIES

Components..... Moisturizer, blood coagulation inhibitor, corrosion inhibitor, anti-microbial agent

Properties..... Appearance – Clear, colorless liquid
Odor– Raw material odor

pH..... 6.0-8.0

Use..... To prevent drying and coagulation of blood or soil on medical instruments

2. FEATURES

EXCELLENT ANTI-DRYING EFFECT

Formulated with a moisturizer and blood coagulation inhibitor which prevent soil from drying on instrument surfaces and improves the efficacy of the subsequent washing process. The anti-drying effect lasts for at least 3 days.

SUSTAINED BACTERIOSTATIC EFFECT

Formulated with an anti-microbial agent that inhibits the growth of bacteria on instruments, preventing proliferation for at least 3 days.

GOOD ANTI-CORROSIVE EFFECT ON MANY METALS

Compatible with stainless steel, aluminum, copper and brass products. It also shows an excellent anti-corrosive effect on stainless steel products even in the presence of chloride ions (found in blood and saline solution).

NON-FOAMING

Non-foaming formulation does not require rinsing before putting instruments into a washer disinfectant.

4-3. BACTERIOSTATIC EFFECT

While pre-cleaning is effective in preventing soil from drying on instrument surfaces, the risk of bacterial growth increases over time. The sustained bacteriostatic effect of **PQ Pre-Cleaning Spray** was evaluated by comparing it with those of other commercially-available products.

<Method>

PQ Pre-Cleaning Spray and other commercially-available products were diluted 10-fold with tap water. 0.3% of dried bouillon was added as a contaminant. 104CFU/mL of bacteria were inoculated to these solutions and left at 37°C for 3 days. The number of surviving bacteria was observed daily. *Staphylococcus aureus* ATCC 25923 and *Pseudomonas aeruginosa* ATCC 27853, frequently associated with healthcare-associated infections, were used as the test bacteria.

<Results>

When treated with **PQ Pre-Cleaning Spray**, neither *S. aureus* nor *P. aeruginosa* were observed after 3 days. When treated with the other products, on the other hand, both of the test bacteria were observed. Bacterial growth was also noted in some products. From these results, it was confirmed that **PQ Pre-Cleaning Spray** has a superior bacteriostatic effect.

Table 2. Bacteriostatic effect

		Initial (CFU/mL)	No. of surviving bacteria (CFU/mL)		
			After 1 day	After 2 days	After 3 days
<i>S.aureus</i> ATCC 25923	PQ Pre-Cleaning Spray	1.5×10^4	< 10	< 10	< 10
	Brand A	1.5×10^4	2.8×10^2	< 10	< 10
	Brand B	1.5×10^4	2.8×10^7	1.2×10^8	3.9×10^7
	Brand C	1.5×10^4	9.0×10^2	2.8×10^2	4.1×10^3
<i>P.aeruginosa</i> ATCC 27853	PQ Pre-Cleaning Spray	2.2×10^4	< 10	< 10	< 10
	Brand A	2.2×10^4	7.9×10^5	4.1×10^7	3.9×10^7
	Brand B	2.2×10^4	2.8×10^8	2.7×10^7	1.8×10^8
	Brand C	2.2×10^4	4.9×10^3	1.4×10^4	9.1×10^3

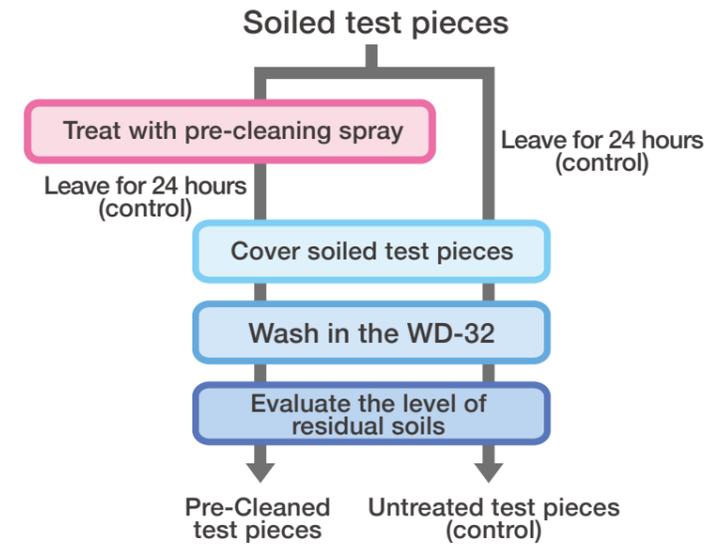


Figure 1. Detergency test procedure

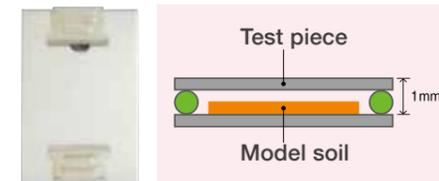


Figure 2. Covered soiled test pieces



Figure 3. Covered soiled test pieces placed in the WD-32 washer disinfectant

Table 1. Evaluation standards for residual soil on test pieces

0	1	2	3	4
All removed	10% remained	20% remained	30% remained	40% remained
5	6	7	8	9
50% remained	60% remained	70% remained	80% remained	90% remained

<Results>

As Figure 4 shows, the untreated test pieces had a residual soil level of 8.7, suggesting that the soil was hardly removed, and that the presence of dried soils can significantly reduce the detergency. The pre-cleaned test pieces, on the other hand, showed much lower residual protein levels, clearly indicating the significance of pre-cleaning. Among the products tested, **PQ Pre-Cleaning Spray** had the lowest residual soil level due to the moisturizer and coagulation inhibitor. From these results, it can be assumed that **PQ Pre-Cleaning Spray** is effective in preventing soil from drying and improving the detergency during jet cleaning.

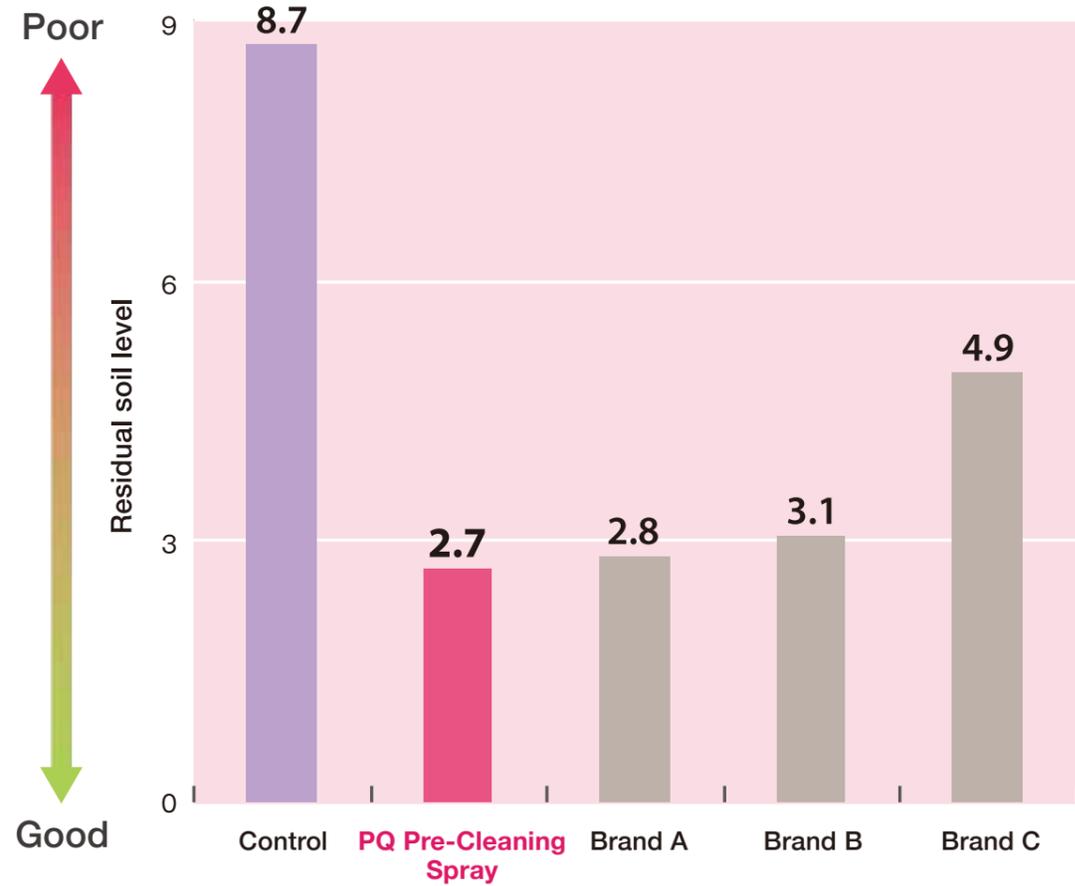


Figure 4. Anti-drying effect

4-2. SUSTAINED ANTI-DRYING EFFECT

It is strongly recommended that reprocessing of contaminated instruments should be performed in the CSSD for infection prevention purposes. However, there are instances that they are not always reprocessed immediately. Since it is important to prevent soil from drying, the sustained anti-drying effect of **PQ Pre-Cleaning Spray** was investigated.

<Method>

Test pieces were soiled, pre-cleaned, and washed in the same way as in 4.1. The sustained anti-drying effect was evaluated at 10 minutes, 1 hour, 4 hours, 1 day and 3 days after treatment with **PQ Pre-Cleaning Spray**. The test controls were soiled and washed immediately and after 3 days without pre-cleaning.

<Results>

Ideally, instruments should be washed immediately after use. However, as Figure 5 shows, there are cases when washing was performed immediately, yet some degree of soil remained (yellow bar). This is presumably due to the fact that the model soil was a composite soil made of proteins, carbohydrates and fats, and that the covered soiled test pieces used were relatively difficult to wash in a jet washer. However, when treated with **PQ Pre-Cleaning Spray**, the residual soil level decreased significantly up to 4 hours. This indicates that pre-cleaning, if performed properly, can not only help achieve the desired detergency, but also improve it. Although the residual soil level increased over time, it remained below the desired level of 2.9 up to 3 days. Based on these results, it can be said that the anti-drying effect of **PQ Pre-Cleaning Spray** lasts for at least 3 days. With regard to the control left untreated for 3 days, the soil was hardly removed.

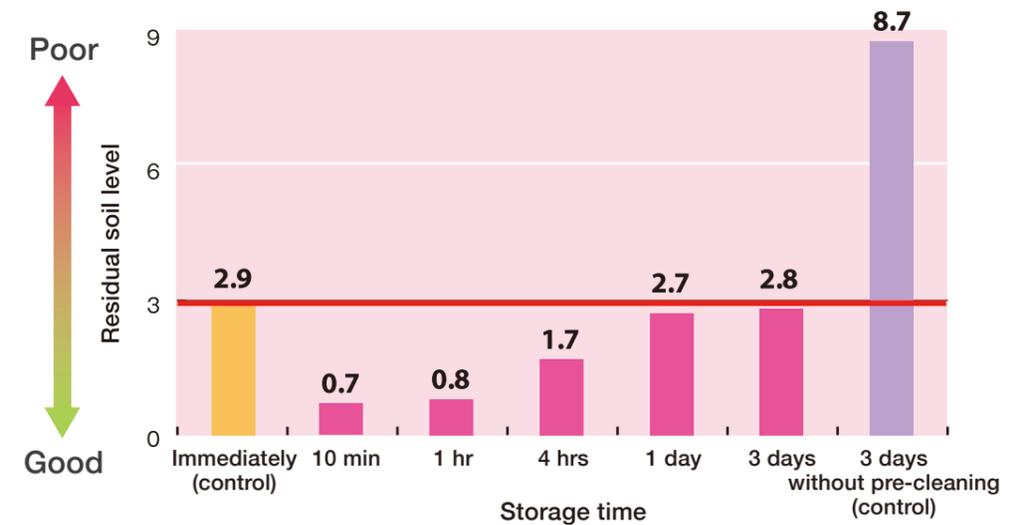


Figure 5. Sustained anti-drying effect

3. USAGE / DOSAGE

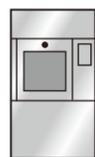
1. Spray directly on used medical instruments

- Use without dilution.
- Spray thoroughly.
- When cleaning tubular instruments, turn the spray nozzle to the “JET” position, making sure that all instrument surfaces are in contact with the liquid.
- The sooner it is used after contamination, the more effective subsequent washing will be.
- Keep the nozzle closed when not in use.



2. Put sprayed instruments into a jet washer.

- No rinsing is required as it is non-foaming.



4. EFFECT / EFFICACY

4-1. ANTI-DRYING EFFECT

Preventing soil from drying and adhering to instrument surfaces is very important in removing soil effectively. Pre-cleaning sprays are effective when cleaning cannot be done immediately after use. In this section, the effect of **PQ Pre-Cleaning Spray** on the efficacy of subsequent washing with a jet washer was evaluated and compared with other commercially-available products.

<Method>

One part by weight of distilled water was added to two parts of commercially-available raw beef liver and homogenized. The resulting solution was used as the model soil. This model soil is suitable for the evaluation of medical instrument cleaners as it is composed of proteins, carbohydrates and fats.¹⁾ 100 µL of the model soil was spread (20 mm x 20 mm) on SUS304 stainless steel test pieces (50 mm x 30 mm x 0.8 mm). The soiled test pieces were sprayed with 100 µL of **PQ Pre-Cleaning Spray** and other commercially-available products and left for 24 hours in a closed vessel. The soiled surfaces were then covered with another test piece simulating difficult-to-clean medical instruments (Figure 2). The covered soiled test pieces were washed with Neutral Detergent Power Quick in Saraya’s WD-32 washer disinfector (Figure 3). Untreated test pieces served as controls and were also washed in the same manner. For evaluation purposes, each test piece was stained with Saraya’s Residual Protein Detector and scored according to Table 1. The average was used to indicate the level of residual soils.

4-4. ANTI-CORROSIVE EFFECT

4-4-1. EFFECTS ON METALS

Medical instruments are made of various different metals. The corrosivity of **PQ Pre-Cleaning Spray** on metals was evaluated and compared with those of other commercially-available products.

<Method>

Stainless steel (SUS304, SUS430 and SUS420J2), aluminum, copper and brass test pieces with a size of 50 mm x 30 mm x 0.8 mm were sprayed with **PQ Pre-Cleaning Spray** and other commercially-available products and left for 3 days at 50°C. Then the test pieces were rinsed with water, dried and observed for changes in the outer appearance.

<Results>

The aluminum test pieces turned white in color when Brands A, B and C were used. The copper and brass test pieces turned brown when Brands B and C were used. On the other hand, there were no changes observed on any of the test pieces after treatment with **PQ Pre-Cleaning Spray**, indicating that it is applicable to various types of medical instruments.

Table 3. Anti-corrosive effect on metals

	Stainless steel (SUS304, SUS430 and SUS420J2)	Aluminum	Copper	Brass
PQ Pre-Cleaning Spray (pH 7.6)	No change	No change	No change	No change
Brand A (pH 9.8)	No change	Turned white in color	No change	No change
Brand B (pH 8.3)	No change	Turned white in color	Turned slightly brown in color	Turned brown in color
Brand C (pH 7.0)	No change	Turned slightly white in color	Turned brown in color	Turned brown in color
Tap water	No change	Turned white in color	Turned brown in color	Turned brown in color

When contaminated instruments cannot be reprocessed immediately after use, a simple application of PQ Pre-Cleaning Spray onto instruments will prevent the drying of bodily fluids and coagulation of blood while enhancing cleaning efficiency.

The reprocessing of medical instruments usually involves cleaning, drying, preparation (inspection, reassembly and wrapping), sterilization (disinfection) and storage.

Among these steps, cleaning is particularly important because failure to perform good cleaning decreases disinfection efficacy, which may result in a reprocessing failure. Thorough and meticulous cleaning is required before any instrument may be decontaminated, disinfected and/or sterilized. Ideally, and whenever possible, used instruments should be returned to the central sterile supply department (CSSD) for reprocessing. However, there are cases where reprocessing cannot be performed immediately.

Power Quick Pre-Cleaning Spray (PQ Pre-Cleaning Spray) reduces the risk of reprocessing failure by preventing soil from drying and adhering to instrument surfaces. It also contains an anti-microbial agent to inhibit the growth of bacteria in soil.



Surgical instrument reprocessing and pre-cleaning.

PQ POWER QUICK PRE-CLEANING SPRAY

4-4-2. EFFECTS ON STAINLESS STEEL IN THE PRESENCE OF CHLORIDE IONS

Stainless steel is used for various medical instruments for its high corrosion resistance. However, it does corrode when in contact with chloride ions. Chloride ions are found, for example, in blood and saline solution; therefore, medical instruments are always at risk of exposure. In this section, the corrosivity of **PQ Pre-Cleaning Spray** on stainless steel was evaluated in the presence of chloride ions.

<Method>

SUS420J2 stainless steel test pieces were immersed in **PQ Pre-Cleaning Spray** and commercially-available products containing 0.6% chloride ions (1.0% sodium chloride) and left for 1 week at room temperature. Each solution was diluted 50% with tap water. 1.0% sodium chloride aqueous solution was used as control.

<Results>

Pitting corrosion was observed on the control test pieces immersed in 1.0% sodium chloride aqueous solution. Moreover, the solution color changed to brown. Pitting corrosion was also observed on the test pieces immersed in Brands B and C. On the other hand, no change was found on the test pieces immersed in **PQ Pre-Cleaning Spray**. From these results, it was confirmed that **PQ Pre-Cleaning Spray** has a superior anti-corrosion effect on stainless steel even in the presence of chloride ions.

Table 5. Anti-corrosive effect on stainless- steel

	After 1 week
PQ Pre-Cleaning Spray	No change
Brand A	No change
Brand B	Pitting corrosion observed (side surface)
Brand C	Pitting corrosion observed (side surface)
1.0% sodium chloride (control)	Pitting corrosion (side surface) and rust observed



Figure 6. Stainless steel test pieces immersed in each test solution

Reference

1) Yuka Oda, Yoshihiko Hirata, Taro furuta, "Evaluation of Cleaning Efficacy and Examination of New Test Soil Model", The Japanese Journal of Medical Instrumentation, 76(11):793-797, 2006.