

Single-use?
Multi-use?

THE SOLUTION!



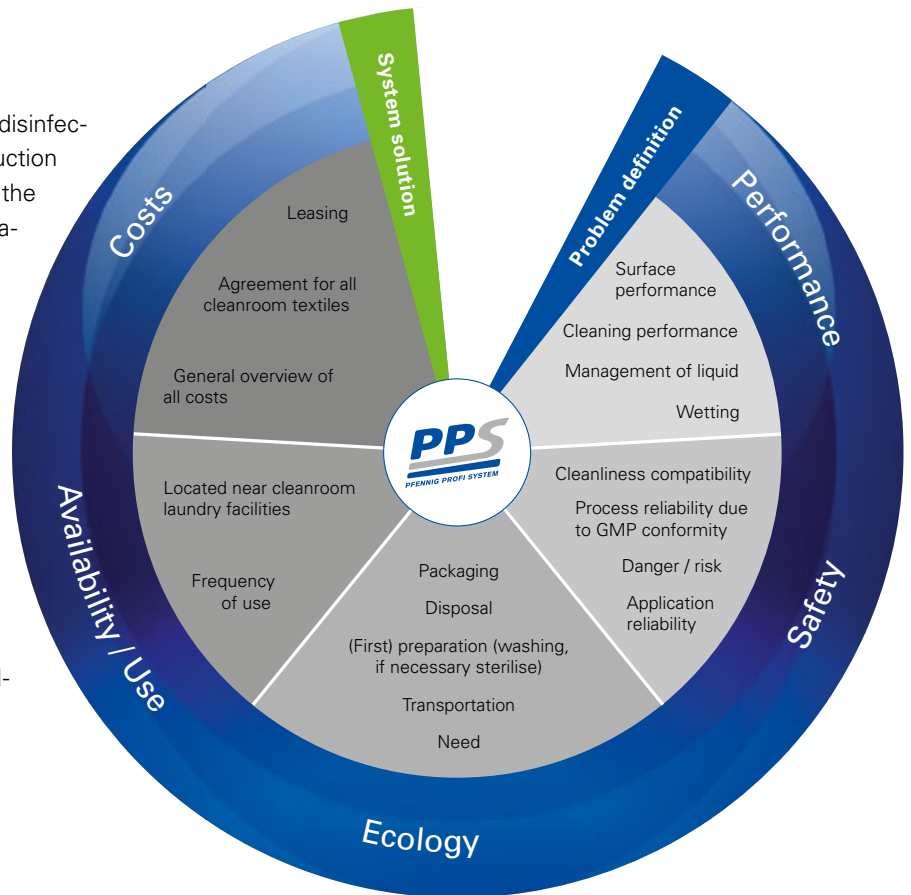
PPS
PFENNIG PROFI SYSTEM

PPS cleanroom textiles
Concept brochure for selecting
cleaning textiles in the cleanroom

Single-use or multi-use?

In the implementation of a cleaning and disinfection process for the cleanroom production area, the user is often confronted with the question of what solution is more advantageous: single-use or multi-use?

There is no general answer, but instead it depends on numerous factors that each business weighs and assesses differently. Ultimately, it is important to find – in consideration of all operational- and process-specific requirements – the least expensive solution per square-metre area that needs to be cleaned and/or disinfected. The purchase price is only one of many factors that should be considered in the following.



Performance:

+ Surface performance:

Due to their design, multi-use mop covers achieve a clearly higher square-metre performance, i.e., the number of required mop covers is significantly lower.

+ Cleaning performance:

Multi-use mop covers have a significantly larger fibre surface and can therefore more effectively bind contamination due to the use of higher quality materials.

+ Wetting:

Even the liquid absorption and release capacity is much higher with multi-use textiles. Therefore, they create safe wetting of larger surfaces with active substances.



In all performance-specific parameters, multi-use textiles are clearly superior.



Depiction of the different material thickness between a single-use mop cover (white) and multi-use mop cover (white/blue).

Security:

+ Cleanliness compatibility:

The material of the wiping cloths must be such that no undesired impurities are introduced. This depends on the material selection, workmanship and the preparation prior to use.

+ Process reliability due to GMP conformity:

There is evidence that suggests that the processing of multi-use textiles in a cleanroom laundry facility does not influence the cleanliness compatibility and guarantees a validated process. The same demands must be placed on the preparation of single-use textiles after production.

+ Danger and risk:

In industrial areas in which substances are being used that pose a risk to both humans and the environment (e.g., cytostatic drugs), the use of single-use textiles can represent an improvement in safety insofar as a suitable disposal concept has been implemented.



The above-mentioned items must be critically reviewed for both concepts.

An extensive study of the cleanliness-compatible reprocessing of multi-use mop covers can be found here:

www.pps-pfennig.de/study-mopcovers

Ecology:

+ Logistics:

Single-use textiles must be transported through a separate logistics chain to the end user and stored there. However, multi-use textiles are normally delivered by the cleanroom laundry facilities together with the cleanroom-specific clothing.

+ Resource usage:

The significant differences are listed in the table below:

+ Disposal:

It must be considered that a suitable disposal concept aligned to the operating area is in place to handle the large amount of single-use textiles that will be disposed.



The ecological advantages of a multi-use concept are, as expected, very high.

Resource usage		
	Multi-use concept (mop cover can be used for 100 cleaning cycles)	Single-use concept (mop cover can be used for 1 cleaning cycle)
Weight per mop cover (in grams)	110	50
Square-metre performance of mop cover	20–25 m ²	approx. 10 m ²
Number of mop covers		
for 1 cleaning cycle	5 pieces	10 pieces
for 100 cleaning cycles	5 pieces (must be replaced thereafter)	1,000 pieces
in ... g material		
for 1 cleaning cycle	5.5 g	500 g
for 100 cleaning cycles	550 g	50,000 g
Resource usage ratio	1	91

Table 1:

Calculation of the resource usage for a 100 m² cleanroom with ISO 7/8 purity class. If one views the entire throughput volume of the single-use mop covers and the volume of waste created by them, then there is no way one can view a single-use mop concept as an environmentally friendly concept.

Single-use or multi-use?

Availability and frequency of usage:

+ Availability:

Ideally, a multi-use concept is integrated into the existing garment logistics of a cleanroom laundry facility. Therefore, it does not lead to any additional expense and is very flexible. If a cleanroom laundry facility is not available, then a single-use concept can be more practical. However, this should not be coupled with a fixed order quantity.

+ Frequency of usage:

For intermittently operated and very small cleanrooms, a single-use concept usually makes more sense.

+ Back-Up:

As a back-up for potential special cleaning or unscheduled activities, it makes sense to keep a small depot of single-use mops.



For special cases or intermittent operations and very small cleanrooms, the single-use solution makes the most sense.

Costs:

In the following, we will use a cost calculation of an exemplary GMP C/D cleanroom of 100 m². The prices used represent approximate values that can deviate from customer to customer;

however, they accurately reflect the market conditions. The application quantity for multi-use covers, which is only half as large, is a result of the approximately doubled square-metre

performance, the circulation factor of 2.3 ensures the cycle of the multi-use system.

Efficiency		
	Multi-use concept <small>(mop cover can be used for 100 cleaning cycles)</small>	Single-use concept <small>(mop cover can be used for 1 cleaning cycle)</small>
Square-metre performance mop cover	20–25 m ²	approx. 10 m ²
Required quantity / costs		
for 1 cleaning cycle	5 pieces x 2.3 (circulation factor) x € 0.65 (preparation and wear) = € 7.48 per cleaning cycle	10 pieces x € 3.50 = € 35.00 per cleaning cycle (not including transport, storage and disposal costs)
for 100 cleaning cycles	€ 748.00	€ 3,500.00
Cost ratio	1	4.7

Table 2: Example of a cost calculation for determining the cost ratio of both systems.



Although no transport, storage and disposal costs have been calculated, the single-use concept turns out to be significantly more expensive. The difference is so big that even an increase in the square-metre performance or reduction of the price may reduce the difference, but ultimately it still leaves the single-use concept as the more expensive option.

Conclusion

In small or intermittently operated cleanrooms – as well as when handling dangerous substances or in cases where no cleanroom laundry facilities are available – the single-use concepts provide advantages.

In all other areas of application, a holistic **view of all factors** – not only the costs – usually points to the multi-use solution as the better alternative – It can also be said that the advantages of the multi-use solution increase with the size of the cleanroom.

In this context, **long-term leasing contracts** containing **fixed order quantities** must be **avoided**, since in cases of supply or quality problems as well as operational changes there is **no opportunity to react** accordingly.

Mop concept – multi-use



Our multi-use cleanroom mop covers represent the state-of-the-art in cleanroom cleaning. Innovative materials, that can withstand the demands of many washing and sterilization cycles, but at the same time achieve validated cleaning and disinfection results.

The characteristics:

- +** Made from cleanroom-suitable high-tech materials
- +** Cleaning efficiency and particle emissions approved by an expert report*
* for models with an IPA certificate
- +** Qualified for use in sterile conditions GMP A/B
- +** Up to 50 sterilisation cycles are possible; up to 100 non-sterile preparation cycles
- +** Therefore, low costs per use
- +** Available in a leasing model

EasyFlow pocket system

NEW

Comfortable operation and washability

The innovative EasyFlow pocket system makes the attachment and detachment of the MicroSicuro CR/A or MicroSicuro CR much easier and ensures a better, residue-free washability and shortened drying times.

The characteristics:

- +** Considerably improved mop attachment because of open pockets
- +** Pockets can be flushed through cleaning; no dirt residues
- +** Extremely long life cycle through closed-off edges



The reference class

Individualisation



Individual labelling of different areas through printing (colour or black-and-white)



Attaching bar-code labels



Stitching RFID chips into fabrics

Any form of special solution can be implemented quickly

Clino® CR

Special mop covers – multi-use



King GMP

Art.-No.: 3500051



- ⊕ Removes 99.9% of all particles in a single-stage process
- ⊕ Safe disinfection of GMP areas through validatable wetting behaviour
- ⊕ Autoclavable for up to 50 preparation cycles; resistant to disinfection solution and gamma rays
- ⊕ Optimised for the pre-preparation method EasyMop GMP
- ⊕ Minimal particle emission from the mop itself

Floor types All standard cleanroom and pharmaceutical floors

Work materials 100% Polyester-microfibre yarn in a cleanroom-suitable, high-tech workmanship Hollow-knitted bagging with sealed edges

Equipment Outer bagging the same as the work material, with a cover particularly suited for the impregnation process; polyester pocket with drainage function.

Weight 190 g

Dimensions 40 cm

Packaging Packaging unit: 10 pieces
Also deliverable in smaller amounts



MicroSicuro CR/A

Art.-No.: 2700268



- ⊕ Removes 99.9% of all particles in a single-stage process
- ⊕ Safe disinfection of GMP areas through validatable wetting behaviour
- ⊕ Maximal square-metre performance through use of innovative combination of materials; ideal for removing disinfectant residues
- ⊕ Autoclavable for up to 50 preparation cycles, resistant to disinfection solution and gamma rays
- ⊕ Through maximal capillary effects, optimally suited for all PPS cleaning methods

Floor types All standard cleanroom and pharmaceutical floors, perforated plates and anti-slip flooring

Work materials 100% PES microfibre and soft-brush special

Equipment With a water-permeable mop cover, with EasyFlow pocket system, with back-lining for high square-metre performance

Weight 110 g

Dimensions 40 cm

Packaging Packaging unit: 10 pieces
Also deliverable in smaller amounts

Art.-No.: 2700310 Cleanroom mop MicroSicuro CR/A 50 cm

A complete overview can be found in our "Consulting catalogue for cleanroom cleaning and disinfection systems" or under www.pps-pfennig.de/multiuse-mop

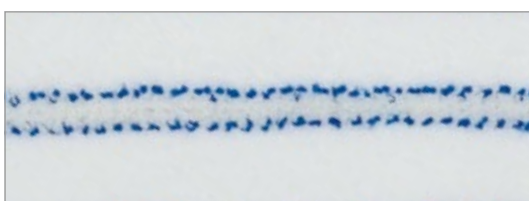
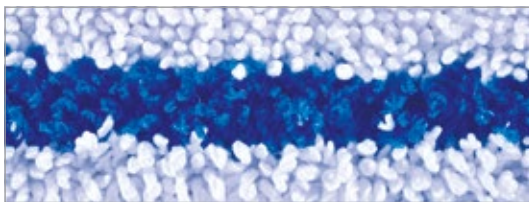


MicroMopp Standard CR/A

Art.-No.: 3500067

- + Fully enclosed workmanship made from 100% polyester micro loops, right-angled mop design for optimally reaching into corners.
- + Excellent gliding characteristics, even on rough and uneven floors
- + Suitable for loosening adhesive impurities
- + Suitable for impregnation and flat wringers
- + Autoclavable

Floor types	All standard cleanroom and pharmaceutical floors
Work materials	100% PS microfibre with polypropylene bristle
Equipment	With a water-permeable mop cover with polyester pocket with drainage function with PU-back-lining for high square-metre performance
Weight	110 g
Dimensions	40 cm
Packaging	100 pieces per carton Also deliverable in smaller amounts



MicroSicuro CR

Art.-No.: 2700266

- + Maximal cleaning performance through 2-component work material
- + Ideally suited for loosening adhesive impurities
- + Germ reduction of bacteria, yeast and mould by over 99% is already achieved when using just water (test method DGMH, 2001. Standard method 14)
- + Very large square-metre performance
- + Through maximal capillary effects, optimally suited for all PPS cleaning methods

Floor types	All standard cleanroom floors, pharmaceutical floors, perforated plates and anti-slip flooring
Work materials	100% PES microfibre with PA bristle-like material
Equipment	With a water-permeable mop cover with EasyFlow pocket system, with back-lining for high square-metre performance
Weight	120 g
Dimensions	40 cm
Packaging	Packaging unit: 10 pieces Also deliverable in smaller amounts



Clino® CR

Special mop covers – multi-use

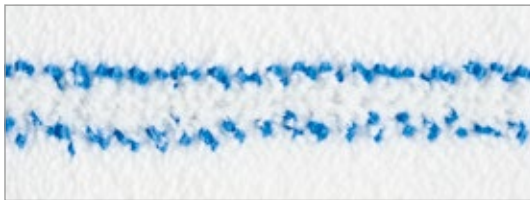


MicroSicuro Trapez CR/A

Art.-No.: 2700293

- ⊕ Removes 99.9% of all particles in a single-stage process
- ⊕ Safe disinfection of GMP areas through validatable wetting behaviour
- ⊕ Maximal square-metre performance through use of innovative combination of materials; ideal for removing disinfectant residues
- ⊕ Autoclavable for up to 50 preparation cycles; resistant to disinfection solution and gamma rays
- ⊕ For the surface cleaning of, for example, isolators and cleaning of difficult-to-reach areas
- ⊕ Suitable for all mop frames Trapez [▶ pg.21](#)

Floor types All smooth surfaces
Work materials 100% PE microfibre and soft-bristle special
Equipment With water-permeable cover, with polyester pocket with drainage function, with back-lining
Weight 80 g
Dimensions Long side: 27 cm; short side: 22 cm
Packaging Packaging unit: 10 pieces
 Also deliverable in smaller amounts



Mopp CR for wall cleaning device

Art.-No.: 3580038

Art.-No.: 3580039 MicroSicuro CR/A for wall cleaning device [▶ pg.21](#)

- ⊕ 100% Polyester microfibre continuous filament yarn
- ⊕ For the cleaning of walls, ceilings and difficult-to-reach areas
- ⊕ Autoclavable, resistant to disinfection solution
- ⊕ High-quality stainless steel push buttons

Surfaces All smooth surfaces
Work materials 100% polyester microfibre yarn in clean-room-suitable high-tech workmanship – hollow-knitted bagging with sealed edges, medium-sized bagging.
Equipment High-quality stainless steel push buttons
Weight 160 g
Dimensions 40 cm
Packaging Pre-washed, single- or double-packaged, can be combined with stainless steel wall cleaning unit

Art.-No.: 3580033 [▶ pg.14](#)



A complete overview can be found in our "Consulting catalogue for cleanroom cleaning and disinfection systems" or under www.pps-pfennig.de/multiuse-mop



Mop concept – single-use



In small areas where the logistical effort would be too high for the use of multi-use textiles, single-use mop covers are a practical solution. When working with materials that pose health risks such as cytostatic drugs, they ensure added safety.

The characteristics:

- + Made of **special yarn, suitable for cleanrooms**
- + **Water reservoir** for high square-metre performance
- + If desired, **double-packaged** in **sterile** fashion (gamma ray irradiated with lot documentation, batch documentation and indicator): Therefore, it can be **introduced in areas under sterile conditions GMP A/B**
- + **Different variants and packaging units** are available
- + Compatible with all Clino mop frames

The practical solution – with certainty

Made & processed
 **in Germany**

Our single-use mop covers in the UnoSicuro S Series [▶ pg.10](#) are entirely manufactured, prepared and packaged in Germany. They therefore promise the maximum protection in terms of being:

- + Particle-free
- + Cleanroom compatible
- + Sterile and fully documented



Pocket mop system for easy mop changing, even with single-use mops



Processing with ultrasonic technology



Can be delivered sterile, if desired

Clino[®] CR

Special mop covers – single-use



UnoSicuro S PW 40 cm, non-sterile

Art.-No.: 3500321



*Made & processed
in Germany*

Premium quality in the area of single-use mops. Manufacturing, preparation and packaging in Germany in a controlled environment.

- ⊕ The premium single-use mop with coverage of up to 15 m² mopping performance
- ⊕ Lowest particle emission and excellent liquid management
- ⊕ Can be reused outside of the cleanroom

Floor types	All standard cleanroom and pharmaceutical floors
Work materials	100% polyester with structured wiping surface – excellent particle retention properties
Equipment	With water-permeable mop cover, pocket and back-lining for high square-metre performance
Weight	58 g
Dimensions	40 cm
Packaging	5 pcs. double-packaged, 1 PU: 5 pieces, 10 PUs per carton
Preparation	Validated washing process under cleanroom conditions as per ISO purity class 5, batch documentation as per the ASTM method

UnoSicuro S PW / I 40 cm, sterile

Art.-No.: 3500331



*Made & processed
in Germany*

Premium quality in the area of sterile single-use mops. Manufacturing, preparation and packaging in Germany with all required documents and certificates.

- ⊕ The premium single-use mop with coverage of up to 15 m² mopping performance
- ⊕ Gamma ray irradiated with validated process
- ⊕ Ideal for small areas under sterile conditions

Floor types	All standard cleanroom and pharmaceutical floors, including areas under sterile conditions
Work materials	100% polyester with structured wiping surface for better binding of particles
Equipment	With water-permeable mop cover, pocket and back-lining for high square-metre performance
Weight	58 g
Dimensions	40 cm
Packaging	Packaged individually under sterile conditions, 5 pcs with outer packaging 1 PU: 5 pieces, 10 PUs per carton
Preparation	Validated washing process under cleanroom conditions of the ISO purity class 5, batch documentation as per the ASTM method, gamma ray irradiated, including certificate

A complete overview can be found in our "Consulting catalogue for cleanroom cleaning and disinfection systems" or under www.pps-pfennig.de/singleuse-mop





ISO	3	4	5	6	7	8	9
GMP		A/B	C	D			



King CR Wiper Mop

Art.-No.: 3500055

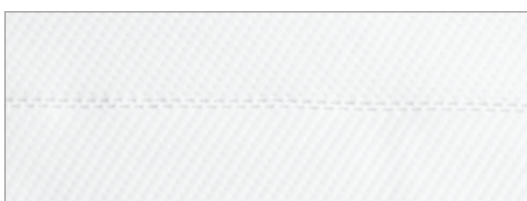
Art.-No.: 3500056, gamma ray irradiated

- + Economical single-use mop cover
- + If desired, gamma ray irradiated, available in double packs
- + Ideally suited for cytostatic areas
- + High degree of area coverage through back-lining
- + High-quality, cleanroom-suitable workmanship

Floor types	All standard cleanroom and pharmaceutical floors
Work materials	100% Polyester
Equipment	With polyester pocket with back-lining
Weight	50 g
Dimensions	40 cm
Packaging	Pre-washed, individually double-packaged



ISO	3	4	5	6	7	8	9
GMP		A/B	C	D			



King CR Wiper Mop S



Art.-No.: 3500063

Art.-No.: 3500068, gamma ray irradiated

- + Excellent cleaning performance through 100% polyester micro-fibers
- + Special structure for optimal particle absorption
- + Very high-quality, cleanroom-suitable workmanship
- + High surface performance through back-lining
- + Also ideal for cleaning walls or ceilings; can be sterilised

Floor types	All standard cleanroom and pharmaceutical floors
Work materials	100% Polyester with special structure
Equipment	With polyester pocket with back-lining
Weight	64 g
Dimensions	40 cm
Packaging	Pre-washed, individually double-packaged



Clino® CR

Special mop covers – single-use



ISO	3	4	5	6	7	8	9
GMP			A/B		C	D	



Clino One Way Tech, non-sterile



Art.-No.: 3500323

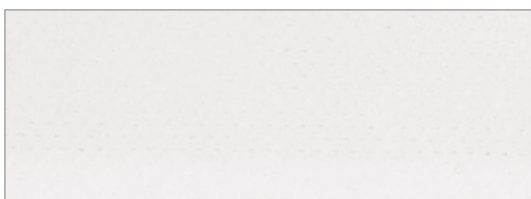
The economical alternative

- ⊕ With comfortable and low-particle opening mechanism
- ⊕ Performance: up to 14 m²
- ⊕ Framed edges

Floor types	All standard cleanroom and pharmaceutical floors
Work materials	100% Polyester, knitted
Equipment	With pocket and back-lining for high square-metre performance
Weight	40 g
Dimensions	40 cm
Packaging	5 mops double-packaged, 1 PU = 5 pieces, 20 PUs per carton
Preparation	Washed and packaged under cleanroom conditions



ISO	3	4	5	6	7	8	9
GMP			A/B		C	D	



Clino One Way Max

Art.-No.: 3500340 non-sterile

Art.-No.: 3500345 gamma ray irradiated with at least 25 kGray

Maximum square-metre performance in the single-use area; optimal price/performance ratio

- ⊕ Surface performance of up to 20 m², therefore reduced need for mop covers
- ⊕ Maximal water absorption and release capacity
- ⊕ Safe wetting

Floor types	All standard cleanroom and pharmaceutical floors
Work materials	100% Polyester knitted fabric
Equipment	Pocket, back-lining with cellulose
Weight	60 g
Dimensions	40 cm
Packaging	5 pcs. double-packaged
Preparation	Manufacturing in a controlled environment

A complete overview can be found in our "Consulting catalogue for cleanroom cleaning and disinfection systems" or under www.pps-pfennig.de/singleuse-mop



Mop frames and handles



Clino Synchro CR and Hybrid: The special mop frames for cleanrooms

The Clino Synchro series mop frames, which were especially designed for the use in cleanrooms, were developed in accordance with the hygienic design guidelines and fulfil all requirements for the use in hygienically sensitive areas:

The characteristics:

- ⊕ Very easy to keep clean
- ⊕ Contactless operation with MopDrop CR
- ⊕ Developed for frequent steam sterilisation
- ⊕ 100% surface coverage – no slipping of the mop cover

The innovative opening mechanism in connection with the minimised weight enables an extremely comfortable handling – unmatched up until now. The design of the underside leads to a non-slip attachment of the mop cover to the frame so that a full surface application of the mop cover is ensured, and the mop is no longer pulled underneath the frame.

An unmatched safe and comfortable operation is attained in combination with the detachment mechanism MopDrop CR. The mop detachment occurs contactless and without exerting any force through an optimal ergonomic tilting movement.



MopDrop CR

Contactless and ergonomic detachment of the mop cover with the mop frames Clino Synchro CR and Clino Synchro Hybrid.



Clino Synchro CR and Clino Synchro Hybrid

Depending on the application area, available of autoclavable technical high-performance plastic (Clino Synchro CR) or in combination with stainless steel (Clino Synchro Hybrid).

Mop frame and handles



Clino Connect

Hygienically optimised connection system between mop frame and mop handle.

Mop frames and handles

Article No.: Description



Mop frame Clino Synchro CR 40 cm

Cleanroom-conform mop frame with the highest ergonomic and hygienic demands

- Symmetric opening, autoclavable
- Contactless operation with MopDrop CR
- With quick-change system Clino Connect Lock
- Grey

Work materials: Technical high-performance plastic on PA basis
Weight: 370 g, dimensions: 40 cm

Art.-No.: 3500921 with Clino Connect Lock



Mop frame Clino Synchro Hybrid 40 cm

Design in plastic stainless steel for areas under sterile conditions and highest product demands

- Symmetric opening, autoclavable
- Contactless operation with MopDrop CR
- With quick-change system Clino Connect Lock
- Grey / stainless steel

Work materials: Technical high-performance plastic on PA basis, winglets made of long-term stable V4A
Stainless steel, weight: 475 g, dimensions: 40 cm

Art.-No.: 3500926 with Clino Connect Lock

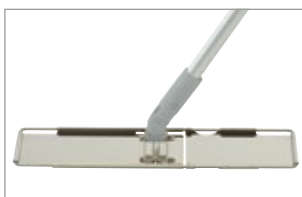


Mop frame Clino CR stainless steel

Robust and durable due to stainless steel

- Autoclavable
- Contactless mop cover detachment with MopDrop
- With quick-change system Clino Connect Lock

Art.-No.: 2009061 with Clino Connect Lock



Mop frame stainless steel inverse

Especially for single-use mop

- Autoclavable
- Contactless mop cover detachment with MopDrop
- Stainless steel plate on the underside
- Not suitable for a flat wringer
- With quick-change system Clino Connect Lock

Art.-No.: 2009461 with Clino Connect Lock



Stainless steel wall cleaning device

For wall and ceiling cleaning

- Made entirely of stainless steel, autoclavable
- With fastening screw
- With stainless steel handle receptor

Art.-No.: 3580033 Stainless steel wall cleaning device



Aluminium telescope handle

- Autoclavable

Art.-No.: 3516050 Aluminium telescope handle 1.0 to 1.8 m
with toggle lever, grey

Art.-No.: 3516051 Aluminium telescope handle 1.0 to 1.8 m
with toggle lever, grey, with sleeve and quick fastener
For ClinoConnect Lock

Suitable for
all PPS mop
frames

A complete overview can be found in our "Consulting catalogue for cleanroom cleaning and disinfection systems" or under www.pps-pfennig.de/mopframe



Wiping cloth concept – multi-use



While in areas under sterile conditions, double-packed single-use cloths ensure the maximum safety; in non-sterile areas the use of reusable microfibre cloths can be far more economical.

The characteristics:

- ⊕ Highest cleaning performance through polyester microfibers
- ⊕ Recyclable products can be reused up to 50 times
- ⊕ The PlusBox is ideal for impregnation

The Clino PlusBoxes can be selected in up to 6 different colours



Four-litre stainless steel container and PlusBox can be equipped with sterile disposal bags:



Single- and multi-use wiping cloths for cleanrooms



Ideally suited for the pre-conditioning method



Easy handling with the PlusBox



Electrostatic discharge capability

Clino® CR

Wiping cloth programme – multi-use



1

A

Clino® Carbon

Wiping cloth with electrostatic discharge capability

Art.-No.: 3600095

Art.-No.: 3600098

- Multi-use cloth
- Electrostatic discharge capability
- Autoclavable
- Low particle emission

Surfaces For all smooth, water-resistant surfaces

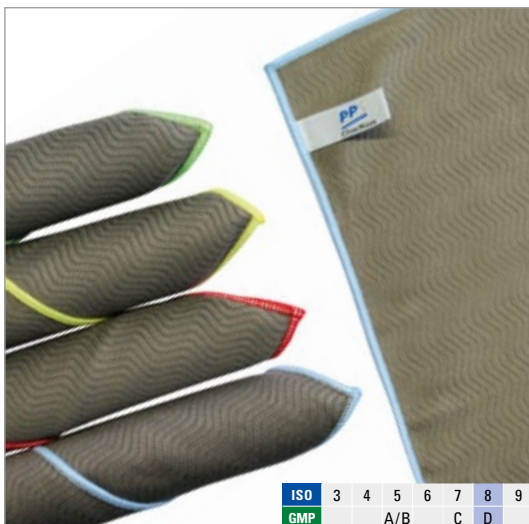
Material Polyester/carbon, with seam

Dimensions Art.-No. 3600095: 26 x 26 cm
Art.-No. 3600098: 35 x 34 cm

Weight Art.-No. 3600095: 10 g
Art.-No. 3600098: 16 g

Packaging Packaging unit: 5 pieces
Also deliverable in smaller amounts

ISO	3	4	5	6	7	8	9
GMP			A/B		C	D	



1

A

Clino® Wave

Innovative microfibre structure for cleaning difficult surfaces, such as stainless steel

Art.-No.: 2660061 anthracite with red seam ■

Art.-No.: 2660062 anthracite with blue seam ■

Art.-No.: 2660063 anthracite with yellow seam ■

Art.-No.: 2660064 anthracite with green seam ■

- Excellent particle absorption on the surface through the special, knitted structure
- Ideally suitable for stainless steel surfaces and glass
- 4 different colour codes to differentiate between different hygiene zones

Material 100% microfibre, knitted manufacturing form sturdy edge workmanship

Weight 45 g

Dimensions 35 x 35 cm

ISO	3	4	5	6	7	8	9
GMP			A/B		C	D	



1

A

Clino® glass cloth

The extremely fine super microfibre enables the streak-free cleaning of all smooth surfaces

Art.-No.: 2650002 – blue

Art.-No.: 2650004 – green

- Multi-use cloth
- Non-sterile

Surfaces For all very smooth surfaces such as glass, mirrors, etc.

Material Polyester / Polyamide (80:20), with seam

Dimensions 40 x 40 cm

Weight 48 g

Packaging Packaging unit: 50 pieces, 5 PUs per carton
Also deliverable in smaller quantities

ISO	3	4	5	6	7	8	9
GMP			A/B		C	D	

A complete overview can be found in our "Consulting catalogue for cleanroom cleaning and disinfection systems" or under www.pps-pfennig.de/multiuse-cloth



Wiping cloth concept – single-use



Excellent materials



Professional edge workmanship



Easy removal

The processing can largely be differentiated in:

- Non-wovens (fleece cloths) and crocheted fabrics/ knitted fabrics, whereby the latter is often of a significantly higher quality
- Open, laser-cut and/or sealed edges
- Dry or pre-moistened; always double packed
- Non-sterile or gamma ray irradiated with at least 25 kGray

Notice regarding selection of suitable products can also be found in the VDI 2083, Leaflet 9.2.

The suitability of cleanroom cloths depends on many operational and application-specific factors. For example, a wiping cloth that has been conceived for the absorption of high volumes of liquid is not usually suitable for the removal of particulate contamination, and vice-versa. In addition, different materials have their own specific properties that lead to certain advantages and disadvantages. Of course, processing and packaging also have an enormous influence on the cleanliness compatibility of the textiles. Even the extracted residues – and, if necessary, the requirements of sterility – must be considered.

Generally speaking, the properties must be tested and evaluated by the users. Therefore, it is not possible, e.g., to speak about a “ISO 7” cloth, since this is an air purity class and the suitability of the cloth for use in this type of area must be tested and validated with the various application-specific criteria.

For this, the various material properties serve as an aid:

- Cellulose: Very absorbent and low-priced, but not optimal in terms of the cleaning performance and particle emission; therefore, it is better suited for lower cleanroom classes and applications that are less critical.
- Polyester: Continuous filament, therefore very low particle emission and with a sufficient material thickness, very good water absorption capacity.
- Polypropylene: Continuous filament, therefore very low particle emission. Ideal for impregnated cloths due to very good release of moisture.
- Polyester microfibre: Very good performance in the removal of particulate contaminations as well as good water release capability.

These along with other details as well as our recommendations for application and use can be found with the respective products; detailed data sheets are, of course, available. However, usually there will be no way to avoid a practical product test in your business. Corresponding sample products and personal advice will be made available to you at any time.

Clino[®] CR

Wiping cloth programme – single-use



1

Extreme XCPP, non-sterile

The premium cloth made from polyester. Best materials and workmanship for the best cleaning and disinfection results

Art.-No.: 3600100

- Very high absorption capabilities
- Material and workmanship in the premium area ensure very low particle emission
- Very soft; high abrasion strength

Surfaces	For all smooth surfaces in the cleanroom
Material	Polyester continuous filament, knitted, two-layer structure Ultrasound welded, edges laser cut and sealed
Dimensions	30 x 30 cm (12 x 12 inches)
Weight	241 g / m ²
Packaging	100 pieces / PU – 4 PU / carton
Preparation	Washed and packaged in an ISO 4 cleanroom



1

Extreme XCPH, non-sterile

Single-layer premium cloth with high absorption capabilities and particle retention capabilities

Art.-No.: 3600110

- Very low amount of fibre and particle emission
- Very good liquid absorption qualities
- Very soft; high abrasion strength

Surfaces	For all smooth surfaces in the cleanroom
Material	Polyester continuous filament, knitted, single-layer, edges laser cut and sealed
Dimensions	30 x 30 cm (12 x 12 inches)
Weight	142 g / m ²
Packaging	100 pieces / PU – 8 PUs / carton
Preparation	Washed and packaged in an ISO 4 cleanroom



1

Purity 7225 GR, gamma irradiated

The inexpensive cleanroom cloth with an optimal price/performance ratio

Art.-No.: 3600120

- Smooth and durable multi-purpose polyester cloth for use in the cleanroom
- Gamma irradiated for the use in sterile areas
- Good folding characteristics and extremely low in particles
- Very good absorption capacity

Surfaces	For all smooth surfaces in the cleanroom
Material	Polyester continuous filament, knitted, cut edges
Dimensions	30 x 30 cm (12 x 12 inches)
Weight	136 g / m ²
Packaging	25 pieces / PU – 4 PUs / package – 8 packages / carton
Preparation	Washed and packaged in an ISO 4 cleanroom, gamma irradiated

A complete overview can be found in our "Consulting catalogue for cleanroom cleaning and disinfection systems" or under www.pps-pfennig.de/singleuse-cloth





1

Purity 7225 SE, non-sterile

Cleanroom cloth with very good price/performance ratio

Art.-No.: 3600130

- Smooth and durable multi-purpose polyester cloth for use in the cleanroom
- Good folding characteristics and extremely low in particles
- Very good absorption capacity

Surfaces	For all smooth surfaces in the cleanroom
Material	Polyester continuous filament, knitted, sealed cut edges, "sealed-edge technology"
Dimensions	30 x 30 cm (12 x 12 inches)
Weight	136 g / m ²
Packaging	75 pieces / PU – 10 PUs / carton
Preparation	Washed and packaged in an ISO 4 cleanroom

ISO	3	4	5	6	7	8	9
GMP		A/B	C	D			



1

LS 7030 Pouch, impregnated, non-sterile

Ready to use, impregnated cloth, low in particles

Art.-No.: 3600140

- Cleanroom cloth, impregnated with 70% IPA and 30% DI water
- Controlled consumption
- Ready to use
- Low aerosol emission, in comparison to spraying processes
- Comfortably packaged in re-sealable bags

Surfaces	All smooth surfaces, well-suited for small cleanrooms
Material	Polypropylene, melt blown non-woven, laser-cut edges
Dimensions	23 x 28 cm (9 x 11 inches)
Weight	37 g / m ²
Packaging	30 pieces / PU – 24 PUs / carton, 1 packaging unit in a re-sealable polyethylene bag
Preparation	Production in cleanroom and finishing in controlled rooms

ISO	3	4	5	6	7	8	9
GMP		A/B	C	D			



1

LS 7030 VS-PRO Pouch, impregnated, sterile

Ready to use, impregnated cloth, validated sterility, low in particles

Art.-No.: 3600150

- Pre-moistened, validated sterile cleanroom cloth with 70% IPA and 30% DI water
- Controlled consumption
- Ready to use
- Comfortably packaged in re-sealable bags

Surfaces	All smooth surfaces, well-suited for small cleanrooms
Material	Polypropylene, melt blown non-woven, laser-cut edges
Dimensions	23 x 28 cm (9 x 11 inches)
Weight	37 g / m ²
Packaging	30 pieces / PU – 27 PUs / carton, 1 packaging unit in a re-sealable polyethylene bag
Preparation	Production in cleanroom and finishing in controlled rooms

ISO	3	4	5	6	7	8	9
GMP		A/B	C	D			

Clino® CR

Wiping cloth programme – single-use



1

Clino® One Way Profi

Microfibre single-use cloth for the cleanroom

Art.-No.: 3600086

- High cleaning efficiency through special weaving and surface structure
- High durability and low abrasion, even with strong mechanical load
- For cleanrooms up to air purity class ISO 4
- If required, also deliverable as gamma irradiated

Surfaces	All smooth surfaces
Material	PE/PA-microfibre, woven, edges with ultrasonic sealing
Dimensions	30 x 30 cm
Weight	9 g/cloth
Packaging	PU: 1 package with 150 pieces, vacuum-packed in a double package, 1 carton contains 10 PUs



1

Clino® One Way Premium

Microfibre single-use cloth for the cleanroom

Art.-No.: 3600094

- High residue-free absorption capacity of particulate and organic contaminations such as dust and oily residues
- For highly sensitive surfaces
- For cleanrooms up to air purity class ISO 4
- If required, also deliverable as gamma irradiated

Surfaces	All smooth surfaces
Material	PE microfibre, knitted, laser-sealed edges
Dimensions	30 x 30 cm
Weight	19.5 g/cloth
Packaging	PU: 1 package with 150 pieces, vacuum-packed in a double package, 1 carton contains 6 PUs



1

Clino® One Way

Single-use cloth for the cleanroom

Art.-No.: 3600070

- Excellent absorption capacity
- High abrasion resistance
- Low particle and fibre emission

Surfaces	All smooth surfaces in the semiconductor and pharmaceutical industries
Material	Non-wovens, cellulose/polyester
Dimensions	23 x 23 cm
Weight	3 g/cloth
Packaging	PU: 1 package with 300 pieces, 1 carton contains 8 PUs

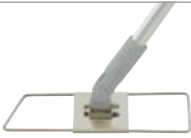






A complete overview can be found in our "Consulting catalogue for cleanroom cleaning and disinfection systems" or under www.pps-pfennig.de/singleuse-cloth



Problem solver for special cases



Problem solver

	Article No.	Description Properties	Application information
	2009580	Stainless steel frame trapeze for surface cleaning with Clino Connect Lock	<ul style="list-style-type: none"> • For surface cleaning • For insulator cleaning • For wall and ceiling cleaning • Autoclavable
	3516062	Aluminium handle 30 cm	
	3516082	Aluminium handle 50 cm	
	Suitable for all handles with Clino Connect Lock		
	2520300	Plastic frame trapeze for surface cleaning with Clino Connect Lock	<ul style="list-style-type: none"> • For surface cleaning • For insulator cleaning • For wall and ceiling cleaning • Autoclavable
	3516062	Aluminium handle 30 cm	
	3516082	Aluminium handle 50 cm	
	Suitable for all handles with Clino Connect Lock		
	2700293	Mop MicroSicuro Trapeze CR/A for surface cleaning	<ul style="list-style-type: none"> • For stainless steel (2009580) and plastic (2520300) frame trapeze • Autoclavable • For insulator cleaning
	3580039	MicroSicuro CR/A for wall cleaning device	<ul style="list-style-type: none"> • Removes 99.9 % of all particles in a single-stage process • Safe disinfection of GMP areas through validated wetting behaviour • Autoclavable, resistant to disinfection solution
	2700603	Flexible frame also deliverable with telescope handle	<ul style="list-style-type: none"> • Non-autoclavable • For grey areas
	2700602	Mop MicroSicuro for flexible frame	
	3590100	Broom for hygienically sensitive areas Material: Body: PP, border: PBT Dimensions (LxWxH): 300 x 70 x 120 mm	
	3590200	Handle for hygienically sensitive areas, length: 1.45 m Material: Anodised aluminium pipe	
	3590210	Telescope handle for hygienically sensitive areas, length: 2.2–4.0 m Material: Anodised aluminium pipe	

The PPS trolley systems for cleanrooms

For a reproducible and validatable cleaning and disinfection result, we recommend the Clino® CR series, which has been especially developed for use in the cleanroom. In the following, we offer a brief overview:

Clino® CR trolley systems with impregnation EasyMop GMP® and CR



The trolley series EasyMop GMP and CR guarantees process-reliable work, hygienic design and validatable cleaning results. These system trolleys are suitable for use in areas with the highest requirements (GMP A/B) or ISO areas with stringent cleaning requirements. Design, material and workmanship meet the highest demands and have been tested and certified by independent institutions. The systems are reproducible, guarantee a self-explanatory as well as contactless process, and are also validatable. For the use in areas under sterile conditions, the systems are autoclavable and the fully closed, smooth surface fulfil all hygienic design requirements. Through the design in the Clino modular construction system, object-specific adjustments can be easily made at any time.

More information about the impregnation with EasyMop GMP and CR can be found in our “Consulting catalogue for cleanroom cleaning and disinfection systems” or under www.pps-pfennig.de/en-easymopgmp



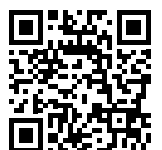
Clino® CR trolley systems with MopFloat® GMP and CR



If the cleanroom cleaning process doesn't have to be completed with a box system, the innovative impregnation process MopFloat GMP offers an open alternative: Through the use of mechanical intelligence, it is ensured that – independent of the user – the same results are always achieved during the impregnation of the mop covers. From the outset, developed under consideration of all pertinent requirements and guidelines for the requirements of highly critical areas, MopFloat GMP offers maximum safety at full flexibility.

MopFloat is a validatable process with maximum process reliability, offers built-in safety, and is reproducible. The entire system has been developed as per hygienic design requirements.

More information regarding impregnation with MopFloat GMP and CR can be found in our “Consulting catalogue for cleanroom cleaning and disinfection systems” or under www.pps-pfennig.de/en-mopfloat



Clino® CR trolley systems with flat wringer Ringo® GMP



In 1999, the system trolley Clino CR3 with the flat wringer (Ringo) GMP was the first cleaning and disinfection system for cleanrooms ever to be certified by Fraunhofer IPA. Its open design enables the use of a single- or two-stage cleaning technique and thereby turns it into the ideal tool for the preliminary or in-between cleaning process. Even so, the design, selection of material, and workmanship meet the highest requirements so that the product can be even used in areas under sterile conditions GMP A/B without restrictions.

More information about the flat wringer (Ringo) GMP can be found in our “Consulting catalogue for cleanroom cleaning and disinfection systems” or under www.pps-pfennig.de/en-ringogmp

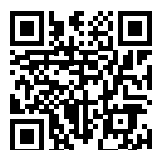


Trolley systems for grey areas



Sterile rooms or controlled areas are not subject to any regulated requirements such as is the case in classified cleanrooms, but contamination must be avoided or eliminated. The Clino system trolley for sterile rooms make professional cleaning technology available without incurring unnecessary costs. On the contrary: through the origin in the professional industrial cleaning, they have been consistently developed to ensure efficient work steps and therefore aligned to time- and cost-saving measures. The possible cleaning methods are thereby the same as with the cleanroom system trolleys – just a bit more inexpensive.

A complete overview can be found in our “Consulting catalogue for cleanroom cleaning and disinfection systems” or under www.pps-pfennig.de/mop-greyareas





Cleanliness
is in the details



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