

PACIFIC TECHNO FILTER



■ Selling agency

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PACIFIC TECHNO FILTER

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Next generation filter coming

▶ Guaranteeing Food Safety - PACIFIC TECHNO FILTER (PTF) -

Demand for maintaining food safety for consumers is increasing on a yearly basis, and food suppliers that fail to respond to the demand are at risk of severely damaging their reputations. In other words, companies that have made improvements and implemented efforts to maintain safety as part of their corporate philosophy will be highly acclaimed. Of all the many machines used in the various manufacturing processes as food chain from the production of raw ingredients to the dinner table, strainers are used to prevent one of the biggest threats that foreign matters mix into food. Here we will introduce the PACIFIC TECHNO FILTER (PTF), which is used by many food suppliers.

▶ What is Foreign Matter?

The Food Sanitation Law defines foreign matter as substances that can cause harm to the human body. However, even minuscule invisible matter sinking to the bottom of beverages and unpleasant feelings in mouth tend to be regarded as complaints. Visible foreign matter is categorized into two types. The first one indicates harmful substances such as metal, glass, stones and plastics, which may cause harm to human body. The second one means other materials such as fragments of packaging, hair, insects and burnt fragments, which may cause discomfort. For example, foreign matters that are found in beverage consist of solidified liquids originated from products themselves or fragments of packaging in the production line. Both can lead to severe incidents.

▶ Role of PTF

PTFs are used in various production processes. The role of it is to remove foreign matters from raw ingredients and previous processes as well as keeping the quality of our customer's products during the operation. Furthermore, our strainers are designed not to make problems like mixing fragments from the strainers themselves.

▶ Examples of the Use Processes

- ▶ Raw material delivery process
- ▶ Melting powdered material and extraction process
- ▶ Pasteurization and filling process
- ▶ CIP line

▶ Applicable Products

Delivery record more than 6,500 items.

- ▶ Milk, cheese, butter, margarine
- ▶ Yogurt
- ▶ Mayonnaise
- ▶ Edible oil
- ▶ Carbonated beverages
- ▶ Fruit juice beverages
- ▶ Tea
- ▶ Food additives
- ▶ Sauce
- ▶ Ice cream
- ▶ Chocolate
- ▶ Soup
- ▶ Shochu white spirit
- ▶ Other foodstuffs

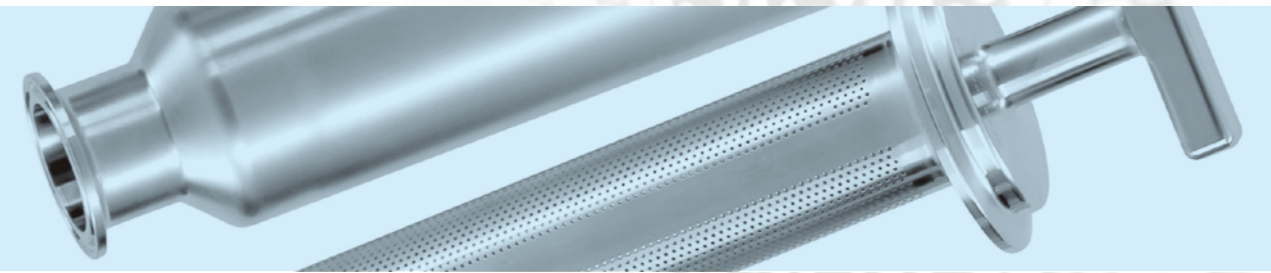


▶ Mesh Size Examples for Substances Trapped

Substances Trapped	Mesh Size	Usage (Process)
Powder Lumps, Packaging Fragments	840µm	Melting
Solid Dirt		CIP
Sand, Straw Fragments, Brush Hairs, Animal Hairs, Packaging Fragments	250µm	Receiving
Residual Tealeaf Particles, Residual Fruit Pulp Particles	180µm	Compounding
Packing Fragments, Milk Deposits, Heat Scald Deposits (Burnt Deposits)	150µm	Pasteurization and filling
Foreign Matters Produced During Processing, Chaff from Pump Moving Parts	70µm	



Our filter can be designed to meet your applications with 3A.



PKL/PKI Series Strainers



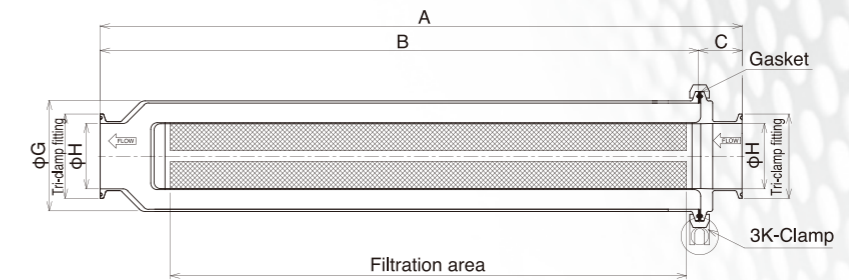
Housing Specifications

- Standard Joint: 3-A Tri-clamp Fitting
- Material: SUS316L
- Surface Finishing: From #200 to #400
- Maximum Pressure: 145psi(1MPa)

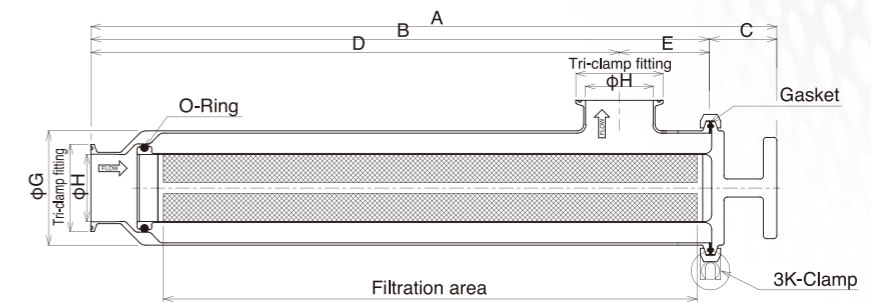
Features

- Simple and easy-to-clean structure
- Tiny holes with thick plates (Anxiety-free high-pressure operations)
- Superior filtration performance
- Safety that will not produce metal foreign matter
- Designed for CIP models

PKI Series



PKL Series



* Direction of Flow : Inside to Outside

- Strong points -

Durability

Extended life expectancy with high material properties in terms of thickness, corrosion-resistance and strength.

Sanitation

Tapered hole edges facilitate washability and keep functionality without clogging.

Improved Performance

Thick plate and fine holes can lead to unnecessary of buck-up materials and reduce pressure losses.

Workability

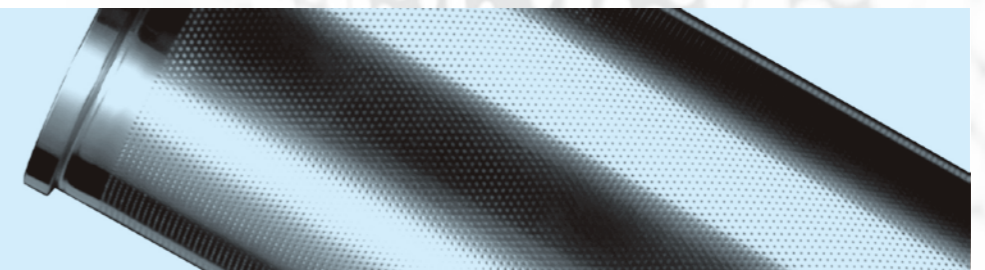
The weight is light and the size can be compact.

Filter Elements of UHC Series

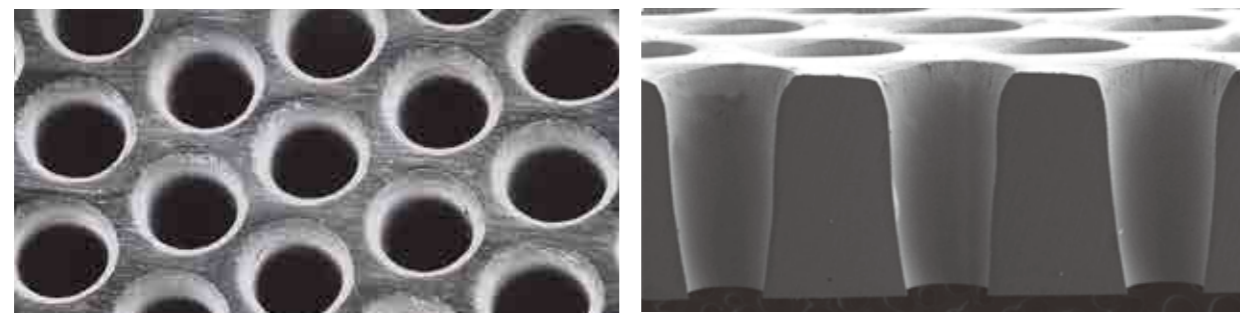


- It is possible to replace your strainers with PTF without changing your housing.
- We can measure your strainers and produce new elements in accordance with 3-A.


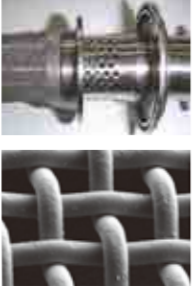
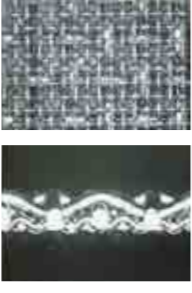
Model	Tri-clamp fitting (3-A)	mm							psi (MPa)		Filtration area	Recommended flow rate
		A	B	C	D	E	φG	φH		in ² (cm ²)	gal/min (L/H)	
PKI40	1.5inch	325	285	40	—	—	63.5	34.8	276~506 (1.90~3.49)	34.1 (220)	22 (5,000)	
PKI50	2.0inch	480	440	40	—	—	76.3	47.5	206~378 (1.42~2.61)	80.6 (520)	52.8 (12,000)	
PKI64	2.5inch	590	550	40	—	—	101.6	60.2	165~303 (1.14~2.09)	131.8 (850)	88 (20,000)	
PKI76	3.0inch	700	660	40	—	—	101.6	72.9	136~249 (0.94~1.72)	198.4 (1,280)	132 (30,000)	
PKI100	4.0inch	815	770	45	—	—	139.8	97.4	102~186 (0.70~1.28)	317.8 (2,050)	211.2 (48,000)	
PKL40	1.5inch	345	285	60	235	50	63.5	34.8	276~506 (1.90~3.49)	34.1 (220)	22 (5,000)	
PKL50	2.0inch	500	440	60	380	60	76.3	47.5	206~378 (1.42~2.61)	80.6 (520)	52.8 (12,000)	
PKL64	2.5inch	610	550	60	470	80	101.6	60.2	165~303 (1.14~2.09)	131.8 (850)	88 (20,000)	
PKL76	3.0inch	720	660	60	560	100	101.6	72.9	136~249 (0.94~1.72)	198.4 (1,280)	132 (30,000)	
PKL100	4.0inch	835	770	65	650	120	139.6	97.4	102~186 (0.70~1.28)	317.8 (2,050)	211.2 (48,000)	



Surface and Cross Section of Our Filter Elements



Issues with Conventional Filter Elements

Type	Element Characteristics	Filter Structure	Issues
Wedge Wire		Triangular edges running along a frame wrapped in wire.	<ul style="list-style-type: none"> The wire is welded onto the frame, and foreign matters accumulates between the gaps. Due to the slit structure, it is easy for liner foreign matters to pass through wedge wires. Although very durable, it is extremely heavy.
Wire mesh		Overlapped wire mesh outside or inside surface of the cylindrical punching plate.	<ul style="list-style-type: none"> The use of mesh that overlaps the punching plate reduces the filtration area. Foreign matters can easily accumulate on the surface where the metal mesh overlaps. The wire is very fine and lacks strength, leading to the risk of warping and damage. The wire mesh can be changed easily under heavy pressure. It means you cannot expect long life of the usage. There is a risk of the wire being damaged or being fallen.
Sintered wire mesh		Diffusion bonded wire mesh for multiple layers.	<ul style="list-style-type: none"> The use of overlapping mesh reduces the filtration area. Foreign matter can easily accumulate on the surface where the metal mesh overlaps. It is very difficult to remove the foreign matter that has accumulated in the mesh. The wire is very fine and lacks strength, leading to the risk of warping and damage.

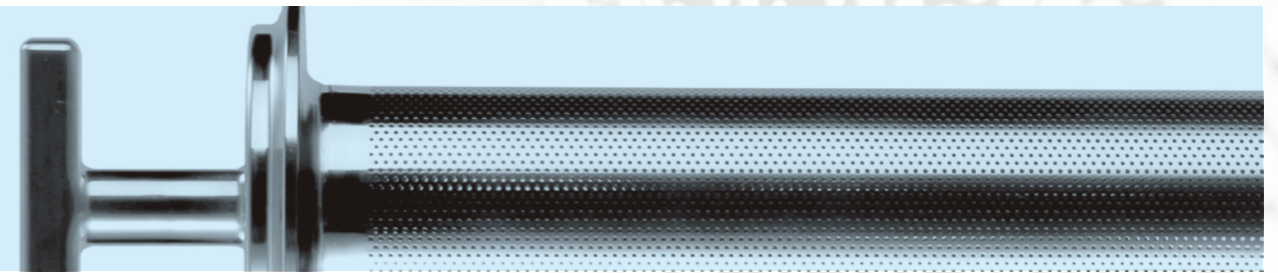
Hole Diameters and Plate Thicknesses

Hole Diameter µm	Standard Plate Thickness mm (inch)					
	0.50 (0.019)	0.80 (0.031)	1.00 (0.039)	1.20 (0.047)	1.50 (0.059)	2.00 (0.078)
70	0.30 (0.011)					
	4.93					
100	0.30 (0.011)					
	10.07					
130	0.30 (0.011)					
	17.01					
150	0.30 (0.011)					
	22.65					
180	0.36 (0.014)					
	22.65					
250	0.50 (0.019)					
	22.65					
280	0.56 (0.022)					
	22.65					
380	0.76 (0.029)					
	22.65					
540	1.08 (0.042)					
	22.65					
840	1.68 (0.066)					
	22.65					
1000	2.00 (0.078)					
	22.65					

cannot be processed
 Upper Stage : Minimum hole pitch
 consult with us
 Lower Stage : Maximum opening rates (%)

Possible for hole diameters that exceed $\phi 1.0\text{mm}$, so contact us for further details.





Line Strainers and Basket Filters



Milk Production Line
Line Strainer (Material : SUS316L)
Hole Diameter : 70µm, Plate Thickness : 0.5mm (0.019 inch)



Margarine Production Line
High-Pressure Line Strainer, Withstand Pressure : 710psi (4.9MPa)
Hole Diameter : 500µm, Plate Thickness : 3.7mm (0.14 inch)



Yogurt Production Line
Basket Filter (Material : SUS316L)
Hole Diameter : 150µm, Plate Thickness : 0.8mm (0.031 inch)



Margarine Production Line
Medium-Pressure Line Strainer, Withstand Pressure : 284psi (1.96MPa)
Hole Diameter : 500µm, Plate Thickness : 1.5mm (0.059 inch)

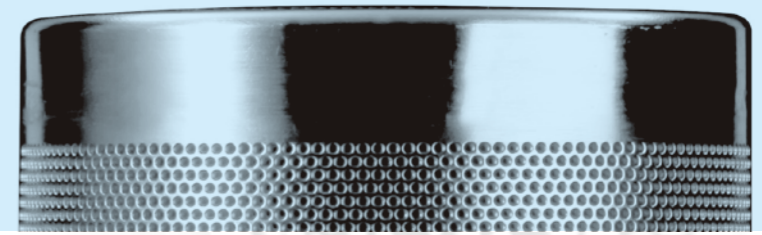


Canned Coffee Production Line
Basket Filter (Material : SUS316L)
Hole Diameter : 380µm, Plate Thickness : 1.0mm/1.5mm (0.039/0.059 inch)



Yeast Paste Production Line
Basket Filter (Material : SUS316L)
Hole Diameter : 600µm, Plate Thickness : 2.0mm/3.0mm (0.079/0.12 inch)





▶ Technical Data

▶ Washing Performance

Washing the facilities, equipment and machine tools used in the production of food brands is extremely important for maintaining food safety. Washing processes heavily depend on the methods used to eradicate toxic substances from food, microbiological contamination from products and foreign matter contamination.

Washing Methods for Food Industry

Washing Process	Washing Method	Machines Used	Forces Applied
Manual Washing (Hand Washing)	Immersion Washing	—	Swelling, Penetration, Scrubbing
	Flow Washing	—	Scrubbing
Machine Washing	Jet Washing	Automatic Washing Machine	Jet, Impact
		High-Pressure Washing Machine	
		Foam Washing Machine	Dissolving, Swelling
	Ultrasonic Wave Washing	Ultrasonic Wave Washing Machine	Swirling, Impact
	Steam Washing	Steam Cleaner	Heat, Impact
	Circulation Mixer	—	Flow Speed, Jet Flow
System Washing	CIP Washing	—	Jet, Impact, Flow Speed, Jet Flow

Reference Material: Food Brand Washing and Sterilization Manual issued by Science Forum Inc.

▶ Washing Sanitary Filters

Filter element blockages cannot be got rid of completely with CIP only, so strainers have to be removed from the housing and washed separately. The washing methods include penetration washing, brush washing, high-pressure washing and ultrasonic wave washing. Finally, the level of cleanliness is then checked with visual inspections.

▶ Production Facility Applications



Fruit Juice/Soy Milk Screw Press
Screen Case (Material : SUS316L)
Hole Diameter : 100µm, Plate Thickness : 0.5mm (0.019 inch)



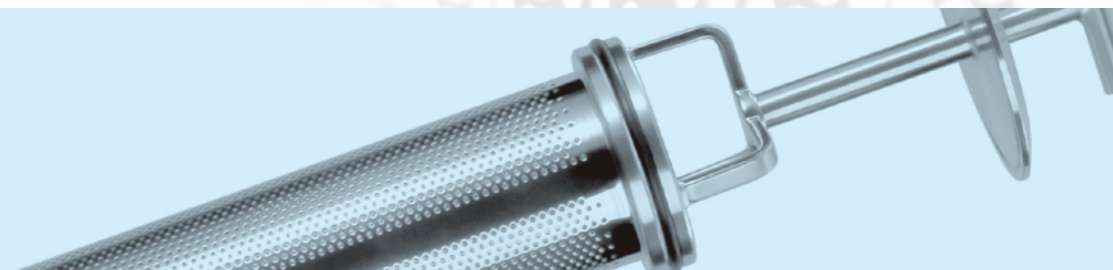
Pulper Finisher for Apple Pure and Tomato Paste (Material : SUS316L)
Hole Diameter : 500µm, Plate Thickness : 1.5mm (0.059 inch)



Centrifuge Screen (Material : SUS316L)
Hole Diameter : 70µm, Plate Thickness : 0.5mm (0.019 inch)



Dryer Ventilation Pipe (Material : SUS316L)
Hole Diameter : 100µm, Plate Thickness : 0.5mm (0.019 inch)



Technical Data

Washing Test

A wedge wire and PACIFIC TECHNO FILTER (PTF) were coated in yogurt and then have washed by high-pressure water and ultrasonic waves. The results are shown below.



Testing Material: Yogurt

Surface After Ultrasonic Wave Washing

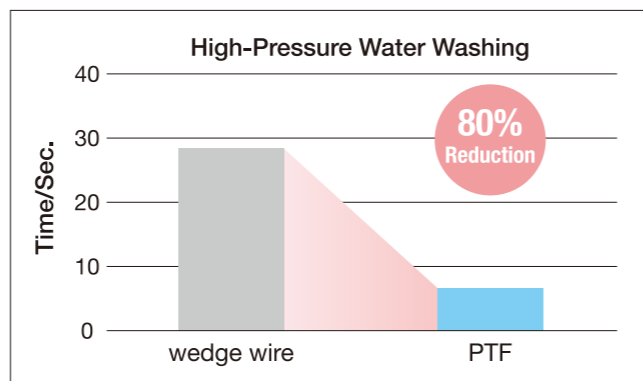
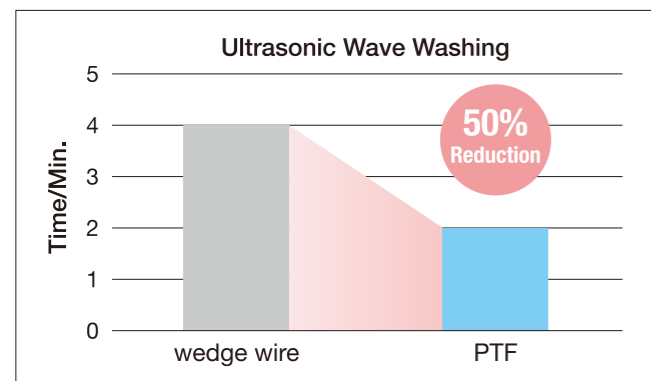


Inner structure of wedge wire filter



Inner structure of PTF

Residual detergent was observed on the reinforcement areas of the wedge wire, on the other hand, the simple structure of the PTF allowed washability to be completed within two minutes.



Washing performance on PTFs is far superior to that on wedge wire filters. In particular, excellent results can be achieved in less time in the high-pressure water washing. Also, ultrasonic wave washing can be effective in many food production plants.

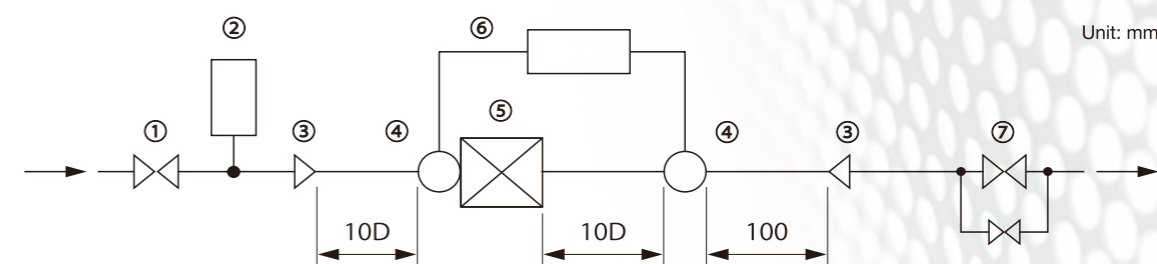
Technical Data

Pressure Loss Test

Strainer pressure loss is calculated in accordance with loss of hydraulic tests on water supply equipment (valves) stipulated by the Japan Water Works Association. The test apparatus consists of the components shown in the illustration below. Pressure differences, which have to be over 21.8 psi flow pressure, are measured before and after the apparatus that controls each flow volume.

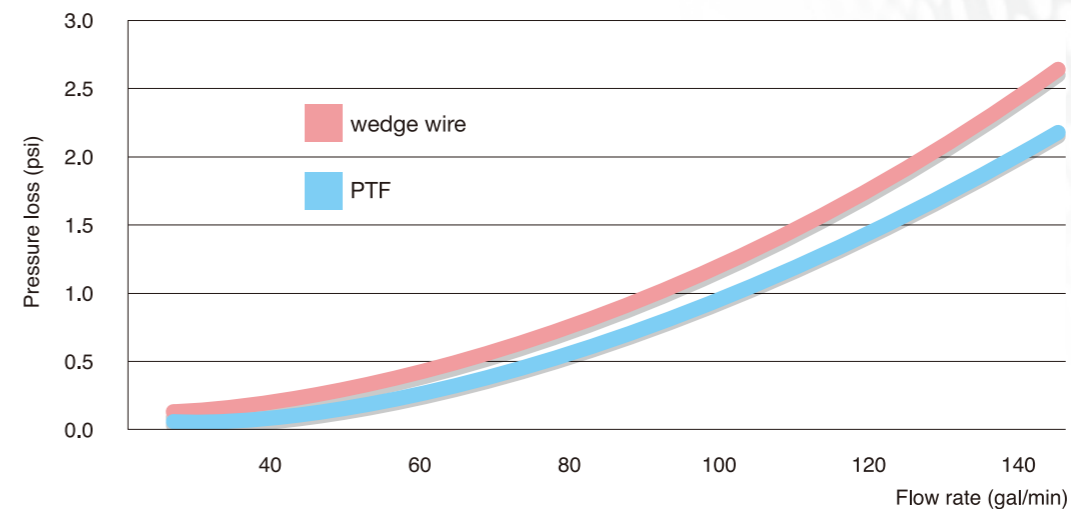
(Standard: JWWA B 108:2004)

Pressure Loss Test Apparatus Configuration



- (1) Supply valve (2) Flow meter (3) Unit connection unions (4) Pressure loss measurement heads (5) Differential pressure meter
 - (6) Differential Pressure Gauge (7) Adjustment valve
- 10D = Ten-fold length of the nominal diameter

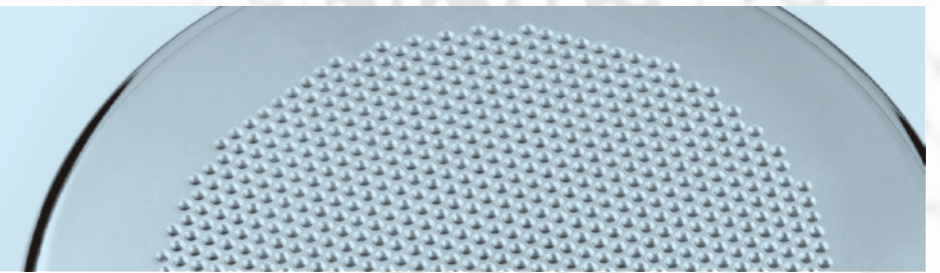
Pressure Loss Comparison (180µm)



wedge wire




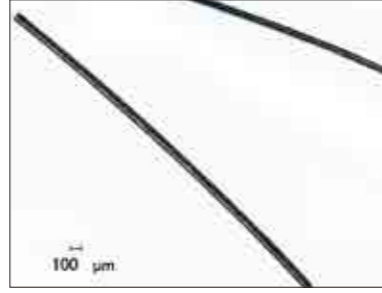
PTF



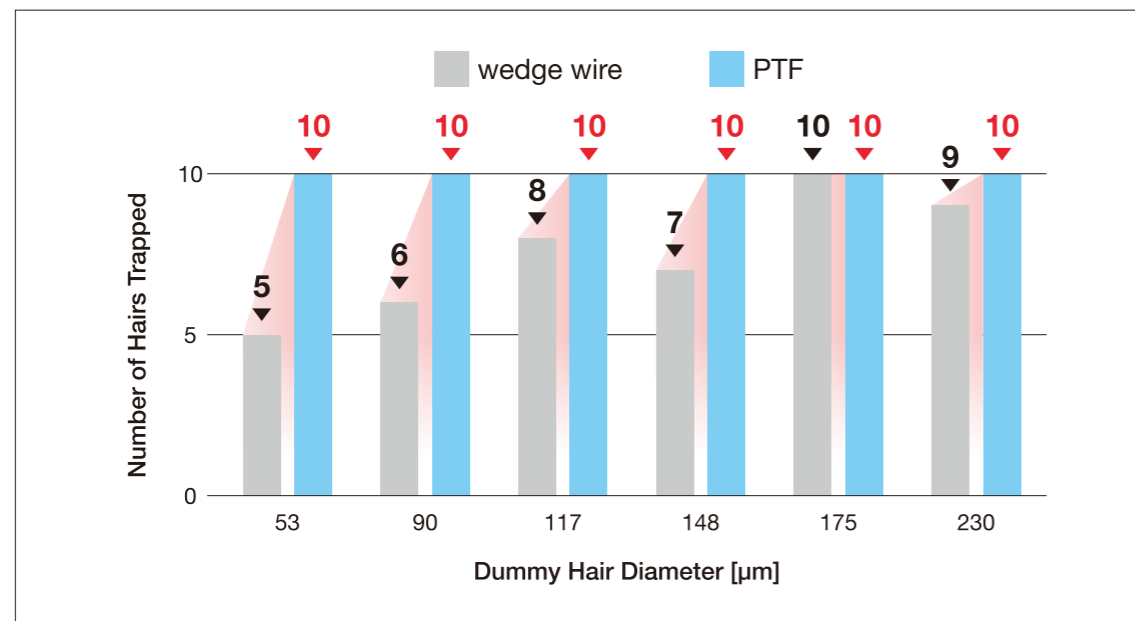
▶ **Technical Data**

▶ **Filtration Test**

Ten pieces of filament-shaped foreign matters (thickness 53 to 230µm × length 10 and 20mm) were passed through PTF and wedge wire with 180µm hole diameters. The number trapped by the filter counted.

Thickness of Dummy Hair [µm]	53	90	117	148	175	230
Length of Dummy Hair [mm]	L=10 and 20					
External View of Foreign Matters and Zoomed-in Image						

Reference
Human Hairs: Thin = 50µm, Average = 100µm, Thick = 150µm



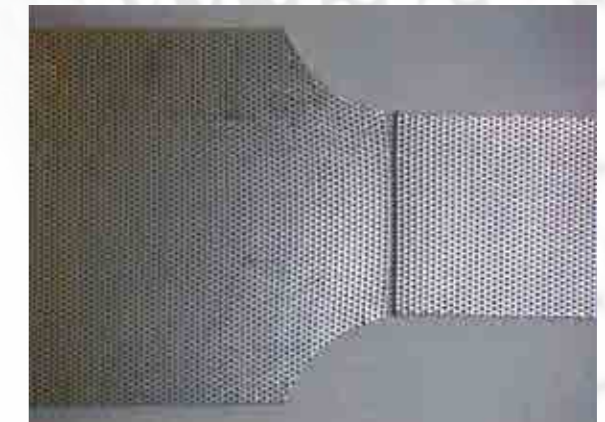
▶ **Technical Data**

▶ **Broken Test**

Mesh : 380µm × P760µm



Tension Tester



Broken Element Shape/Maximum Tensile Load : 1214 lbf (5.4KN)

▶ **Conclusion : No metal fragments dropped off when the filter was broken** ◀

▶ **Pressure Test**

Mesh : 380µm × P760µm



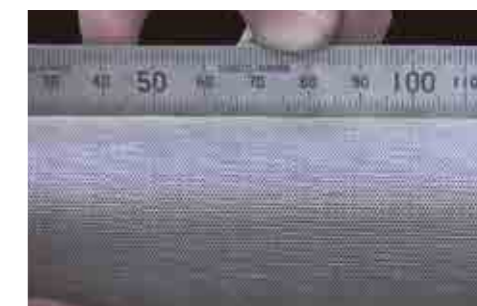
With the rubber tube set in place
Rubber tube set into the inside of the filter and water pressure applied



Testing in progress



Load of 290psi (2MPa)



Deformation checked (no deformation)