Prefilters

Custom products for optimal air environments

Multiple models Small-lot production

AQC Corporation

JAB
QMS,EMS
CM027

ISO 9001
ISO 14001

Head office 1-2-29, Nankokita, Suminoe-ku, Osaka,
559-0034 Japan
Tel: 81-6-6612-7700 Fax: 81-6-6612-7701

Tokyo Office Kayabacho Ekimae Bldg. 7F, 2-11-8, Nihonbashi-Kayabacho, Chuo-ku, Tokyo
103-0025 Japan
Tel: 81-3-3662-8858 Fax: 81-3-3662-8860

http://www.aqcnet.com

Contact

Introduction

With countless applications, air filter units (each comprising several components pre-assembled into one product) are widely used to filter air in buildings and plants. The range of applications includes (1) filters for equipment/facilities such as packaged air conditioning systems, air handling appliances, and fan coil appliances; (2) mist eliminator filters for humidifiers; (3) medium- to high-performance odor eliminating filters; (4) prefilters for electric dust collectors; and (5) kitchen extraction filters.

This trend has intensified because filter units are the most cost efficient solutions and offer the most benefits in aspects such as installation space, equipment cost, and maintenance, compared with other types of filtration products. Various filter units are manufactured to meet different conditions and needs.

To enable effective comparisons, our company uses the same laboratory systems to measure filter efficiency and to obtain the data values shown in this catalog. To select a filter type, firstly select the optimal filter media and specifications, based on the figures for arrestance (or filtration efficiency) and pressure drop provided in the following tables.

Filter Selection Standards

Criteria for selecting air filter (media) / Air Filter Media Type	Requirements												Applications							
	Dust size	Super fine dust	Fine dust	Coarse dust	Eliminating water droplets	Eliminating oil droplets	High temperature (up to 150°C)	High temperature (up to 400°C)	Chemical rl	Minimal resistance	Washability/reusability (many times)	Washability/reusability (standard)	Ventilator	Air conditioner	Packaged air conditioner	Fan coil unit	Cooler	Louver	Eliminator	Painting factory (booth)	Kitchen extraction
	Arrestance	High	Middle	Low																	
Viledon® (PS600N)			○								○		○	○							
Viledon® (PS400N)			○								○		○	○	○						
Viledon® (Type PA)		○												○						○	
Viledon® (Type FS)				○						○		○			○	○	○	○			
Saran Lock™				○	○					○	○		○	○	○				○		
Glass Fiber			○							○			○	○						○	
Micro Glass		○					○						○	○							
Polyolefin/Polyolefin Eliminator				○	○					○		○		○	○	○	○	○	○		
Molto Filter				○						○		○			○	○	○				
SARAN HONEYCOMB™				○						○		○			○	○	○	○			
Aluminum Filter				○	○	○	○		○	○	○			○					○		○
Aluminum Demister				○	○	○	○		○	○	○		○	○	○				○		
Copper Demister				○	○	○	○		○	○	○		○	○	○				○		
Stainless Steel Demister				○	○	○	○	○	○	○	○		○	○	○				○		
Zinc Demister				○	○	○	○		○	○		○	○	○	○						
Stainless Steel Mesh				○		○	○	○	○	○	○		○	○	○			○			
Zinc Mesh				○		○	○		○	○		○	○	○	○			○			
Craft Filter									○											○	

Performance Testing for Air Filters

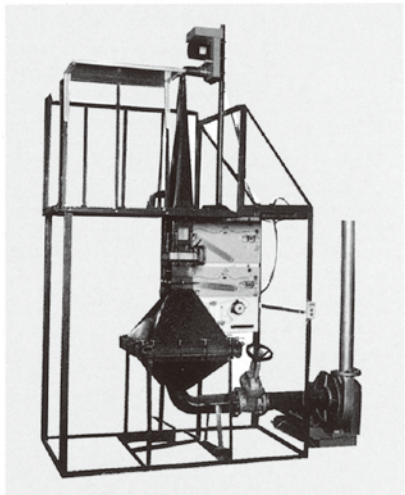
1. Summary of JIS B9908

JIS B9908, the Japanese Industrial Standard defines air filter units used for ventilation purposes. The range of applications is as follows.
* This Standard defines air filter units as those that specifically utilize filter media to remove airborne dust particles in buildings, factories, and offices for ventilation purposes (“filter unit” hereinafter).
In addition, JIS B9908 classifies types of filter units in greater detail, based on filter media, particle size of the dust captured, and particle collection efficiency. The classification of filter units based on particle size is as follows.

Filter unit classification with corresponding performance measurement methods

Type 1 Extremely fine dust (counting method)
Type 2 Fairly fine dust (colorimetric method or lightscattering accumulation method)
Type 3 Fairly coarse dust (gravimetric method)

Under the guidance of Professor Kouichi Iinoya, Professor Emeritus at Kyoto University, we have created testing equipment to test the performance of Type 3 air filters. To enable apples to apples comparisons of filter media efficiency, all data presented in this catalog were obtained using this test equipment.



● JIS B9908 Type 3 Test Equipment

2. Performance Test

2-1 Arrestance

For measurements of dust particle arrestance, JIS B9908 specifies the use of Test Dust No. 15 and dust concentration of 70 ±30 mg/m^3 under stable conditions.
The equation below gives arrestance as follows:

$$\eta = \left(1 - \frac{Wp}{Wf}\right) \times 100\%$$

where
η : Arrestance (%)
Wf : Total mass of dust supplied (g)
Wp : Total mass of dust collected by back-up filter (g)

This catalog gives the value for average arrestance (%) at each air velocity for each type of air filter media.

2-2 Pressure drop (Initial pressure drop)

Initial pressure drop, is measured at each air flow rate.
In addition, the transition in the pressure drop is measured until the final pressure drop is reached for the total mass of airborne dust particles accumulated at the rated air flow rate. (For measured transition data, refer to our company’s technical data.)

2-3 Dust Holding Capacity

JIS B9908 defines dust holding capacity as follows:
Dust holding capacity is the lower of the following two values: 1) the total mass of dust collected by a filter unit until the pressure drop at the rated flow rate of the filter unit reaches the ultimate pressure drop; 2) the total mass of dust collected by the filter unit until the particle collection efficiency reaches 85 % of its maximum value.
Dust holding capacity is expressed as the mass of dust (g) retained for 1 m^2 of the filter media of the air filter unit.

■ Composition of Test Dust No.15

Dust in Use	Test Dust No.8	Test Dust No.12	Cotton linter
Percentage of Mass	72%	23%	5%
Composition	0–5 μm 39%	0.03～0.20 μm	Diameter 1.5 μm Length Less than 1 mm
	5–10 μm 18%		
	10–20 μm 16%		
	20–30 μm 12%		
	30–40 μm 6%		
	40–75 μm 9%		
	Total 100%		
Remarks	Comparable to Arizona Road Dust	Same as the carbon black	

Types of Air Filter Media and Filtration Performance

*Based on Japan Vilene catalog

Type of Filter	Filter Media	Media Number	Standard Dimensions (width × length)	Thickness (mm)	Reusability	Fire Retardancy	Standard Air Velocity (m/sec)	Initial Pressure Drop (Pa)	Average Arrestance (%)	Maximum Working Temperature (℃)
For general reuse	Viledon®	PS600N	160 cm × 20 m	20	○	○	2.5	90	82	80
		PS400N	160 cm × 20 m	14	○	○	2.5	64	76	80
		PS300N	160 cm × 30 m	10	○	○	2.5	54	73	80
		PS150N	160 cm × 30 m	8	○	○	2.5	30	63	80
For special equipment		FS1710	100 cm × 50 m	11	○	○	2.5	35	74	60
		FS1705	100 cm × 50 m	5.5	○	○	2.5	20	68	60
		FS1705W	100 cm × 50 m	6.5	○	○	2.5	20	68	60
For capillaries/ draining		SS3300	500 mm × 500 mm	50	○	○	2.5	30	66	60
		SS1500	500 mm × 500 mm	25	○	○	2.5	15	52	60
For coating booths		PA350HL	160 cm × 20 m	18	×	○	0.5	45	> 98	80
		PA305HL	160 cm × 20 m	19	×	○	0.5	45	≥ 98	80
Heat-resistant for drying ovens		AI100W	500 mm × 500 mm	20	×	○	1.0	45	90	240
		AE100 with 2 sheets	500 mm × 500 mm	20	×	○	1.0	45	90	180
		AE100	160 cm × 20 m	10	×	○	1.0	25	88	180
General purpose disposable type		FR585	173 cm × 20 m	18	×	○	2.5	59	85	60
		FR580	160 cm × 20 m	20	×	×	2.5	54	80	60
		FS6200	160 cm × 15 m	14	×	○	2.5	54	78	60
		PE205HL	160 cm × 20 m	18	×	○	1.0	40	90	60

* Based on Yamashin Filter data

Type of Filter	Filter Media	Media Number	Thickness (mm)	Reusable	Temperature Resistance	Air velocity (m/sec)	Pressure Drop (Pa)		Average Arrestance (%)	Dust Holding Capacity (g/m²)	Supplied dust (g/m²)
							Initial	Final			
For low arrestance	Saran Lock™	OM150	15t	○	60°C	1.5	7.5	9.0	21.5	176	820
		OM150	25t	○	60°C	1.5	9.3	13.2	27	540	2000
		OM150	50t	○	60°C	1.5	12.7	21.3	38	1255	3300
For medium arrestance		UM150	10t	○	60°C	1.5	23	100	70	590	840
For low arrestance	Glass Fiber	CM25	25t	×	60°C	1.5	14.2	123	61	1160	1900
		CM50	50t	×	60°C	1.5	14.7	120	65	2400	3700
For medium arrestance	Micro Glass	CKR080	50t	×	250°C	1.0	78	300	93	482	520
For high arrestance		CKR040	50t	×	250°C	1.0	157	300	98	196	200
For low arrestance	Polyolefin	Polyolefin	2t	○	80°C	1.5	9.8	50	43	256	595
	Polyolefin Eliminator	Polyolefin Eliminator	6t	○	80°C	1.5	29	150	68	387	570
For medium arrestance	Molto Filter	MF08	10t	○	80°C	1.5	3.5	4.5	19	112	590
		MF13	10t	○	80°C	1.5	9.0	40	44	963	2190
		MF20	10t	○	80°C	1.5	18	70	71	670	945
		MF30	10t	○	80°C	1.5	36	200	77	292	380
		MF40	10t	○	80°C	1.5	50	200	80	252	315
		MF50	10t	○	80°C	1.5	80	200	83	141	170
For low arrestance	SARAN HONEYCOMB™	S9600	1t	○	80°C	1.5	6.5	17.6	22	54	245
		S9600W	2t	○	80°C	1.5	12.2	50	38	150	400
	Polypropylene Honeycomb	PH3800-1	1t	○	60°C	1.5	5.6	30	18	112	625
	Aluminum Foil	Aluminum Foil	25t	○	140°C	1.5	17.6	19.6	60	960	1600
	Demister	Stainless Steel Demister (Six-fold with Wave)	25t	○	140°C – 480°C	1.5	5.4	6.4	15	175	1150
		Stainless Steel Demister (Twelve-fold with Wave)	50t	○	140°C – 480°C	1.5	7.8	12.3	34	850	2500
		Stainless Steel Demister (Twenty-fold without Wave)	25t	○	140°C – 480°C	1.5	14.7	30	52	555	1070
	Mesh	Stainless **Steel Mesh** (ø 0.29 × 20MS)	10t	○	480°C	1.5	2	3	11	59	533
		Zinc Mesh (ø 0.5 × 12MS)	10t	○	140°C	1.5	3	4	11	61	549
	Craft Filter	Craft Filter (2 sheets)	50t	×	60°C	1.5	40	47	52	1605	3065

Filter Media Information

Viledon®

Viledon® is a trademark of Freudenberg Group.

Non-directional fabric with complete adhesion between fibers

The basic fiber structure of the filter media remains unchanged, with no loosening of fibers on the outlet side when cut, during use, or during cleaning. This helps maintain constant air filtration efficiency and high dust holding capacity.

Optimal density gradient for air filters

Low pressure drop; efficient dust collection and good dust holding capacity

Allows rational cost-effective product selection

Select 1) reusable or washable products, or 2) low-cost disposable products based on your needs.

Easily reused

The filter media can be reused repeatedly after water cleaning, vacuum cleaning, or air cleaning.

Rolls can be cut to any dimensions

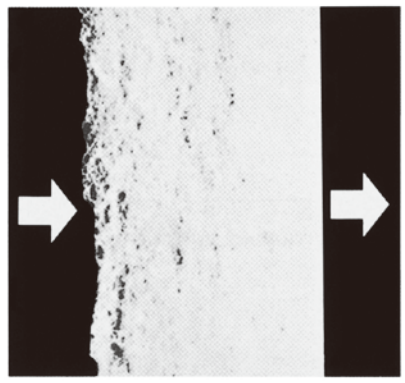
The filter media poses few sizing constraints, and can be supplied either as a roll or pre-cut sheets.

Excellent flame retardance for worry-free use.

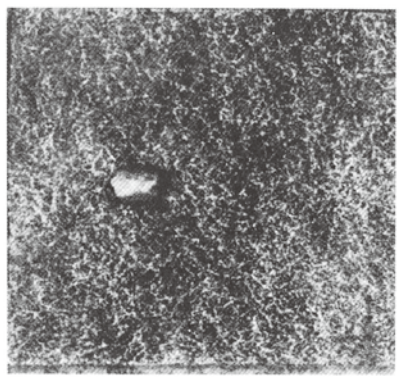
This media passed the 3rd section of the non-inflammable test of JIS L-1091.

Wide range of applications

Used for ventilation, air conditioning, or paint spray booth filtration in the automotive industry; for chemical air treatment in various industrial facilities; for air conditioning in typical factories; in household window air conditioners and other air conditioning units.

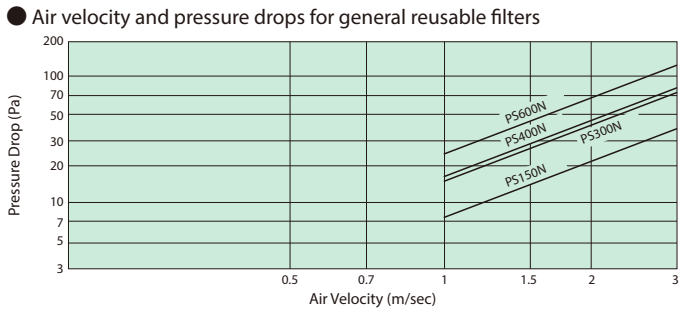


■ Magnified sectional photography of PS600N

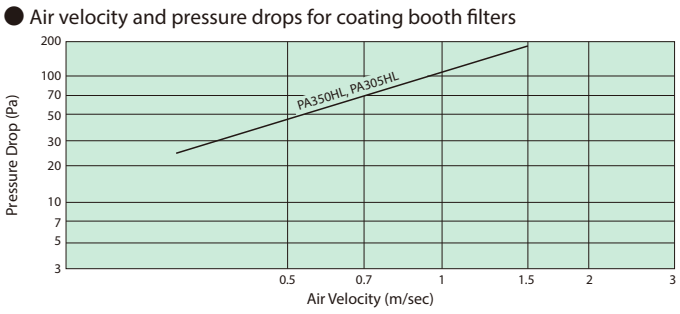


■ Flame retardancy test of Model PS400N

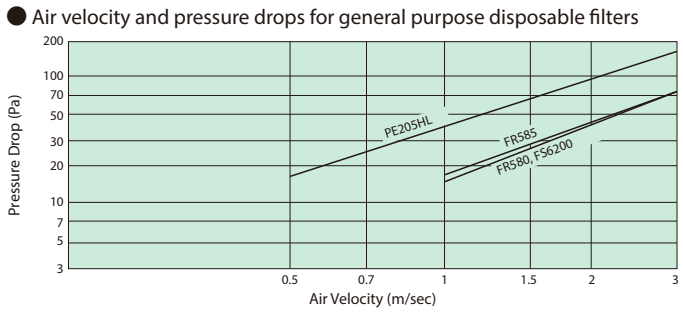
● Air velocity and pressure drops for general reusable filters



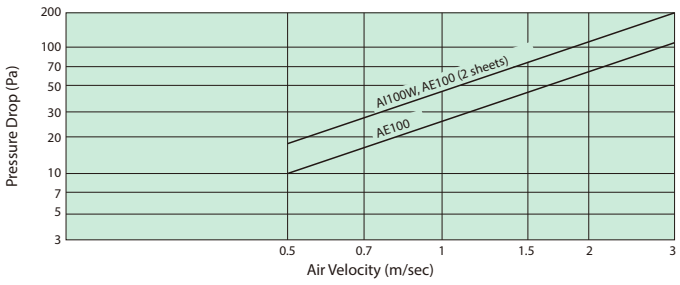
● Air velocity and pressure drops for coating booth filters



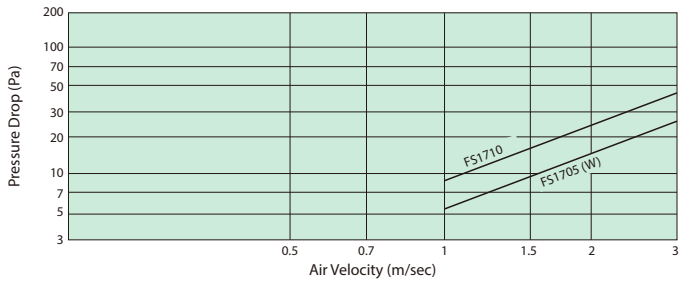
● Air velocity and pressure drops for general purpose disposable filters



● Air velocity and pressure drops for heat-resistant filters for drying ovens



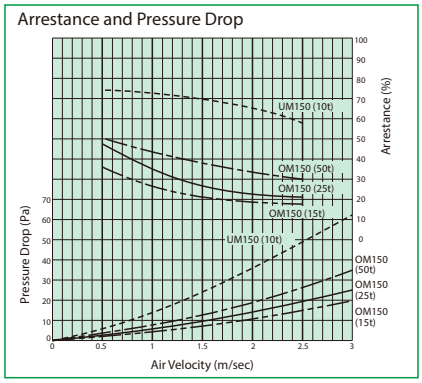
● Air velocity and pressure drops for special equipment filters



Saran Lock™

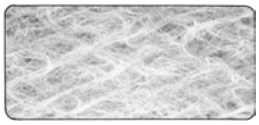
Saran Lock™ is a trademark of AsahiKASEI.

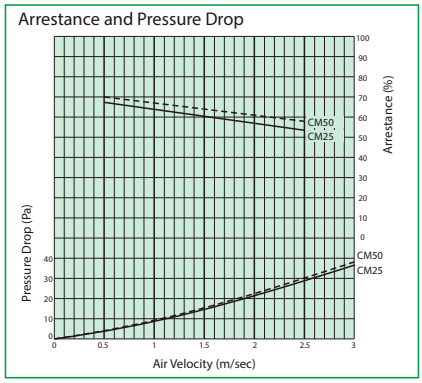
- Vinylidene chloride fibers spot-bonded and formed into shapes suitable for dust-eliminating air filters
- Select the media most suitable for your application based on fiber thickness, density, and sheet thickness.
- Resistant to acids, alkalis, and oils; easily reusable after cleaning.



Glass Fiber

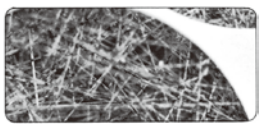
- Glass fibers are criss-crossed and curled to be formed into special filtration structures to provide high dust holding capacity.
- To enhance filtration efficiency, an optimal combination of fiber diameter and filter media density achieves the desired fiber density gradient.
- 30 µm filaments are mixed into the media at a lower density on the air inflow side; thinner filaments of 20 µ are mixed into filter media to achieve a greater density toward the air outflow side.

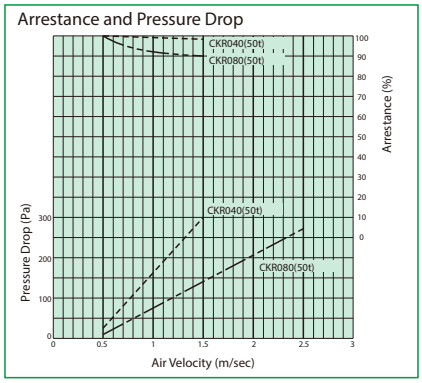




Microglass

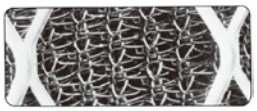
- The glass fibers arranged and stacked non-directionally and formed into sheets are (1) sprayed with achromatic, odorless, and non-inflammable cohesive oil; or (2) resined (resin-treated).
- Glass fiber filters: Filter media resistant to temperatures up to 450°C; resin-treated media can be used up to 120°C. (The frame material may affect temperature resistance.)
- Stable and resistant to most chemicals except strong alkalis and hydrogen fluoride; ideal for filtering corrosive gases

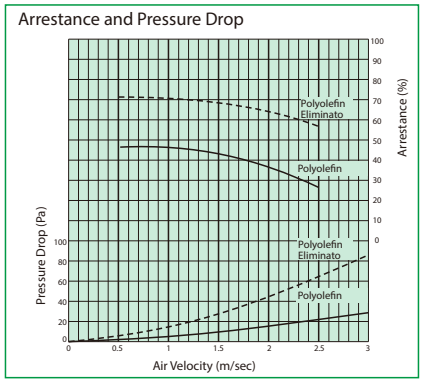




Polyolefin/Polyolefin Eliminator

- The polyolefin fibers are tack-woven and formed into a fiber net that has the thickness suitable for collecting dust.
- The softening point is 90°C. The filter media is resistant to the sun's UV rays, mold, and vermin.
- Two to six media sheets can be layered to achieve the preferred filtration efficiency and pressure drop.

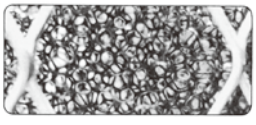


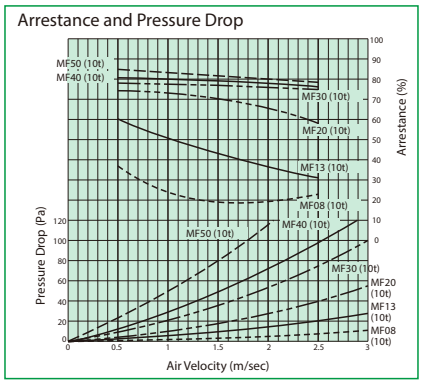


Molto Filter™

Molto Filter™ is a trademark of INOAC Corp.

- The density (from 8 to 50 cells per 25 X 25 mm) and filter thickness (5 to 30 mm) are selectable to suit your applications; ideal for commercial packaged systems or home air conditioning systems.
- Compared to other filter media, this filter media is easily reused after cleaning.
- Lightweight and easy to process

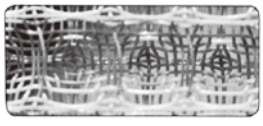


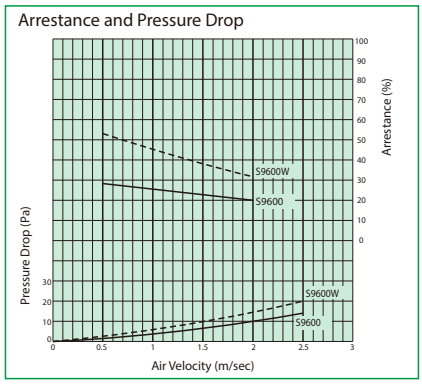


SARAN HONEYCOMB™

SARAN HONEYCOMB™ is a trademark of AsahiKASEI.

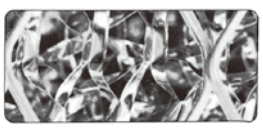
- The filter made of the saran fibers woven into a screen; ideal for louvers or fan coil units.
- Easily cleaned/washed. Absence of hygroscopic properties makes it readily reusable.
- Easily processed for aluminum framing, sewing in a desired shape, or resin treatment
- Selectable color for use in louvers or other applications

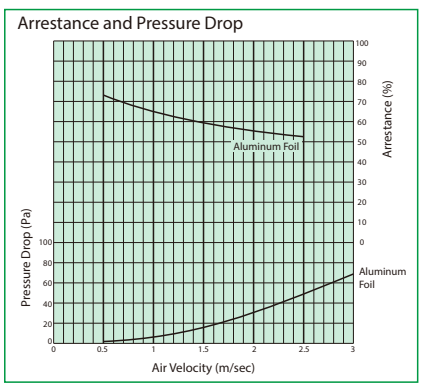




Aluminum Foil

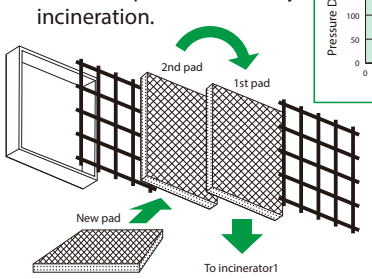
- Multiple aluminum foils, processed into an expanded metal shape (lathnet) and layered, are positioned in the aluminum frame.
- All components are made of aluminum (including frames), making this filter both lightweight and easy to clean.
- This filter is ideal for eliminators used to purify external air or humidify air.

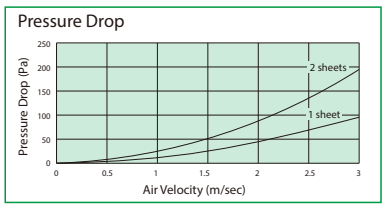




Craft Filter

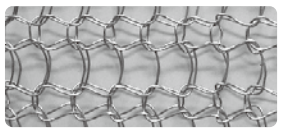
- The filter absorbs 99.5% of oversprayed paint particles, eliminating air pollution and drainage contamination by preventing dispersal of paint particles from exhaust ducts.
- Sprayed coating paint is adsorbed densely and directly into the filter's entire surface. Previously, some of the oversprayed paint was vaporized and might fill the room with paint particles, affecting workers and posing health and safety issues. This filter solves these problems and helps manage health and safety. Oversprayed paint particles are discharged through the filters in a one-way direction.
- The craft filter uses, as material, paper treated to be uniquely flame-retardant. The filter consists of filter pads. A pad is comprised of a total of 10 layers of these sheets: a coarse paper mesh of four layers all facing up but in four different orientations (0° ,90°, 180°, 270°) in a clock-wise direction, while the finer paper mesh of the remaining six layers faces the same direction in two orientations (0°,
- 90°) alternately.
  At the end of their service life, used filters are replaced and disposed of by incineration.

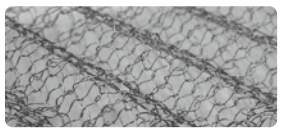


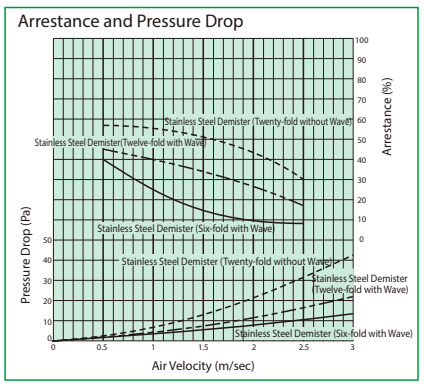


Demister

- The demister is composed of a set of two sheets made of thin metal wires stockinette-stitched, each sheet layered alternately in the opposite direction.
- With a space ratio exceeding 90%, it offers a very low pressure drop.
- The filter o ffers gr eater re sistance to hi gh te mperatures an d corrosive conditions than other filters.
  Available materials include aluminum, copper, stainless steel, zinc (plated), and polypropylene.
- Multiple layers of sheets processed into wave shapes increase lifespan. Non-waved sheets offer i mproved c ollection e fficiency. Through an optimal combination of the above, it is possible to obtain a density gradient similar to nonwoven material filters.



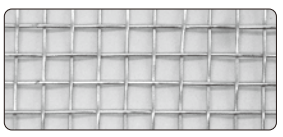


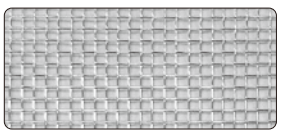


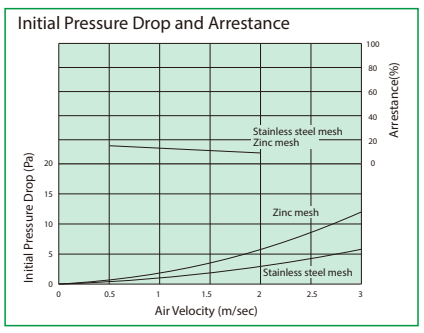
	Temperature Resistance	Sulfuric Acid	Hydrochloric Acid	Nitric Acid	Caustic Soda
Aluminum	140	△	×	△	×
Copper	150	△	△	○	○
Stainless steel	480	×	×	○	○
Zinc (plated)	180	×	×	×	△
Polypropylene	80	○	○	○	△

Mesh

- The metal wire mesh consists of evenly spaced plain-woven horizontal lines (wires) and vertical lines (wires). An extensive range of different mesh sizes are available for different applications, making this an extremely versatile filter.
- This filter media is easily reused after cleaning. The mesh offers excellent heat resistance and corrosion resistance.
- Select from two materials: stainless steel and zinc (plated).
- Ultra-thin frames allow filter installation in compact equipment.
- Easily maintained; these filters are ideal for locations like outside air intakes that collect high volumes of dust.
- Evenly arranged mesh gauges (almost consistent mesh sizes due to wires woven at even distances) allow use of the filters as rectifiers.



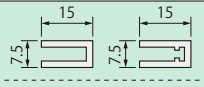
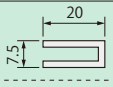
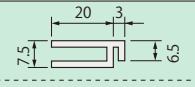
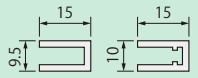
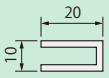
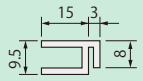
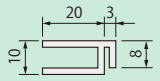
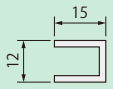
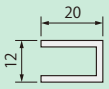
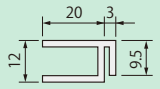
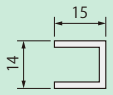
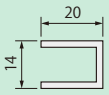
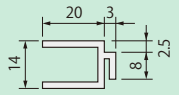
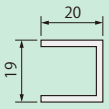
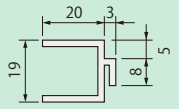
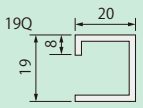
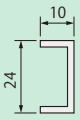
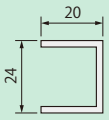
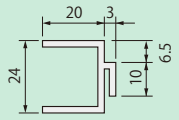
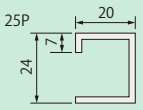
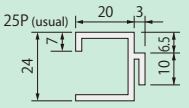
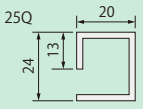
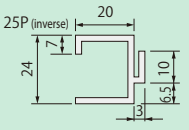
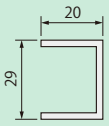
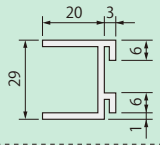
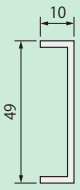
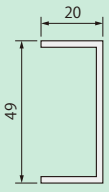
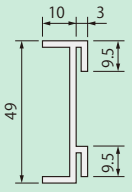
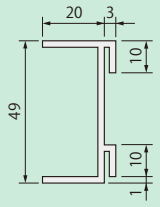
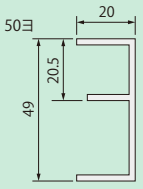
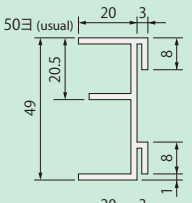
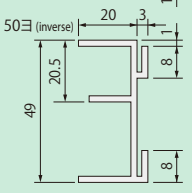


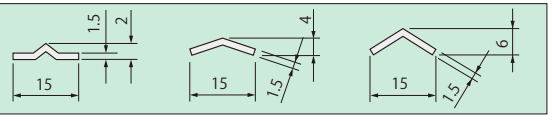


	Temperature Resistance	Sulfuric Acid	Hydrochloric Acid	Nitric Acid	Caustic Soda
Stainless steel	480	×	×	○	○
Zinc (plated)	180	×	×	×	△

Form and Name of Aluminum Alloy Extruded Shape

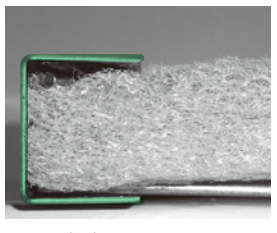
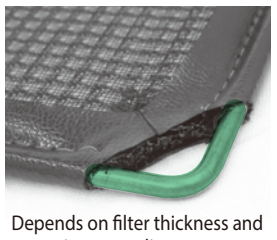
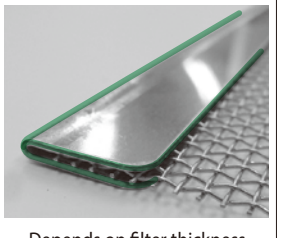
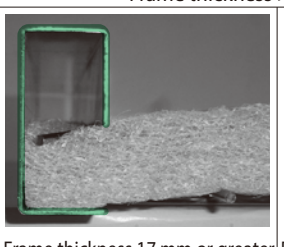
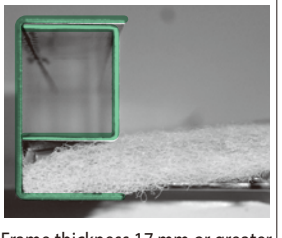
All the aluminum alloy extruded shapes shown below are available as standard products (Aluminum materials measure 1.0 mm in thickness).

Thickness (nominal) \ Folds	10	15	20	10	15	20
8						
10						
13						
15						
20						 
25						    
30						
50						   

Reinforcement 

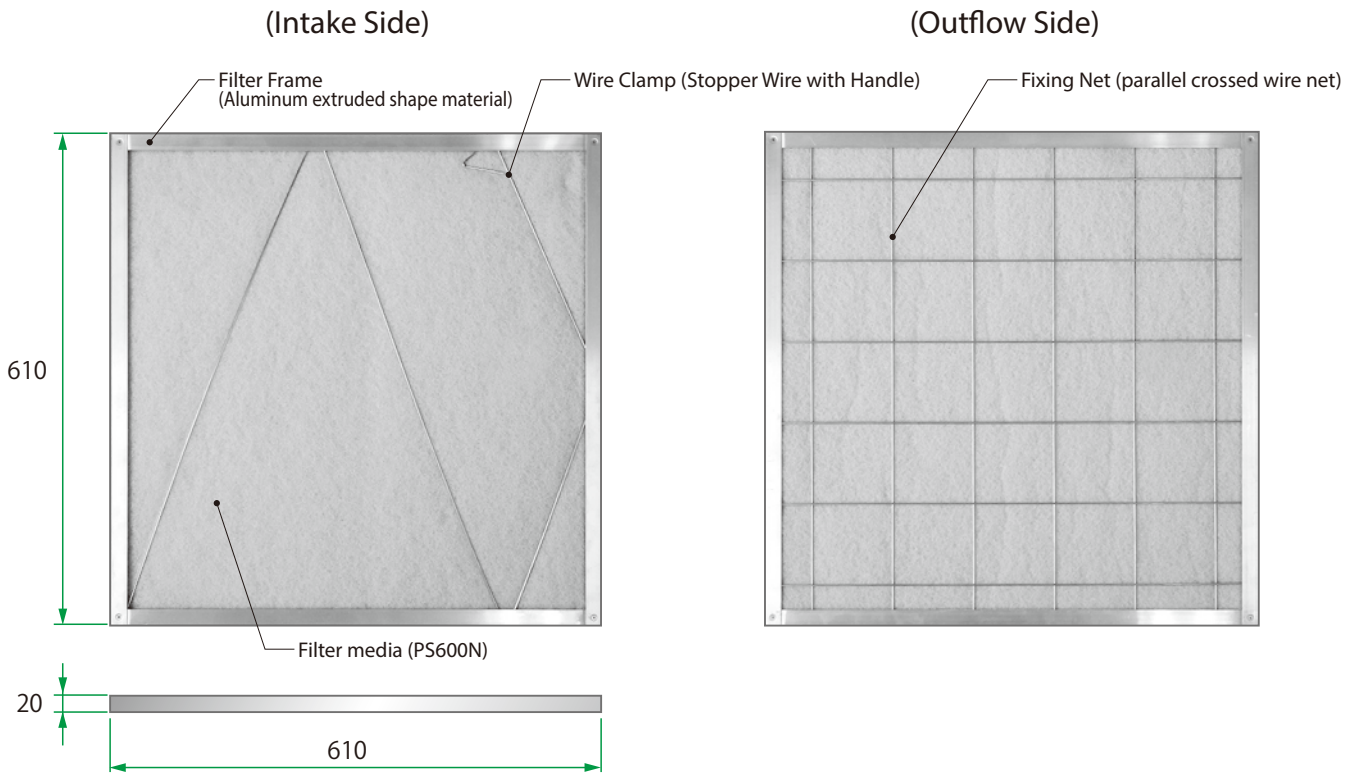
Custom formed frames (Examples)

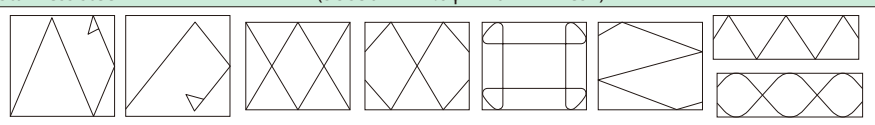
For shapes other than standard aluminum extruded frames, there are manually formed bent frames available, as shown below (processed by bending

Plate-bent frame	Iron core frame	Ultra-thin frame	Draw frame (Diaphragm frame)	Double frame
Frame thickness ≈ Filter thickness	Frame thickness ≤ 6 mm		Frame thickness > Filter thickness	
				
Frame thickness 7 mm or greater	Depends on filter thickness and iron core diameter	Depends on filter thickness	Frame thickness 17 mm or greater	Frame thickness 17 mm or greater

Structure of Filter Unit

We can fabricate filter units not specified in this catalog on request. (For example: Model PS600N 610 × 610 × 20t)

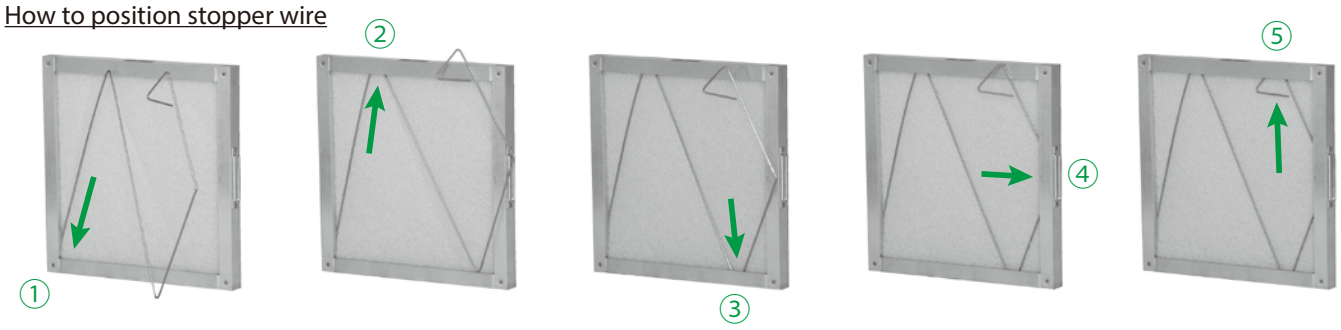


Name	Material	Material (unit = mm, t = thickness)
Filter Frame	Aluminum	Extruded shape (A6063S-T5 t = 1.0–1.5) Rivet fixation (A1050P-H24 t = 0.8–2.0) Welding process (A1050P-H24 t = 1.2–2.0)
	Stainless steel	Rivet fixation (SUS304 t = 0.8–2.0) Welding process (SUS304 t = 1.0–2.0)
	Zinc coated plate	Rivet fixation (SGCC t = 0.6,0.8) Welding process (SGCC t = 1.0–2.0,SS or SEHC-P t = 1.0–3.2)
Filter Media	Various Materials	
Fixing Net	Parallel crossed wire net	Zinc welded wire net (SWM–G1 2.6φ × 100P) Stainless steel welded wire net (SUS304 2.6φ × 100P)
	Expanded metal	Aluminum (A1050P 32 × 16) Stainless steel (SUS304 32 × 16)
	Crimped wire net	Zinc (plated) (SWRM 1.6φ × 20 mm mesh) Stainless steel (SUS304 1.6φ × 20 mm mesh)
Wire Clamp	Zinc wire or Stainless steel wire	

[Stopper Wire with Handle]

- **Secure one-touch fastening**
  The handle simplifies installation and makes it possible to position or remove the filter with one touch.
- **Stainless steel**
  Never corrodes; maintains full elasticity to keep filter media secure.
- **Filter media can be secured with a single wire.**
  Before, two wires were used to hold the filter media. The current stopper wire uses one wire and reduces installation work and time.

How to position stopper wire



Prefilters

Custom products for optimal air environments

Multiple models Small-lot production

AQC Corporation

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CM027

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ISO 14001

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Tokyo Office Kayabacho Ekimae Bldg. 7F, 2-11-8, Nihonbashi-Kayabacho, Chuo-ku, Tokyo
103-0025 Japan
Tel: 81-3-3662-8858 Fax: 81-3-3662-8860

http://www.aqcnet.com

Contact

Introduction

With countless applications, air filter units (each comprising several components pre-assembled into one product) are widely used to filter air in buildings and plants. The range of applications includes (1) filters for equipment/facilities such as packaged air conditioning systems, air handling appliances, and fan coil appliances; (2) mist eliminator filters for humidifiers; (3) medium- to high-performance odor eliminating filters; (4) prefilters for electric dust collectors; and (5) kitchen extraction filters.

This trend has intensified because filter units are the most cost efficient solutions and offer the most benefits in aspects such as installation space, equipment cost, and maintenance, compared with other types of filtration products. Various filter units are manufactured to meet different conditions and needs.

To enable effective comparisons, our company uses the same laboratory systems to measure filter efficiency and to obtain the data values shown in this catalog. To select a filter type, firstly select the optimal filter media and specifications, based on the figures for arrestance (or filtration efficiency) and pressure drop provided in the following tables.

Filter Selection Standards

Criteria for selecting air filter (media) / Air Filter Media Type	Requirements												Applications							
	Dust size	Super fine dust	Fine dust	Coarse dust	Eliminating water droplets	Eliminating oil droplets	High temperature (up to 150°C)	High temperature (up to 400°C)	Chemical rl	Minimal resistance	Washability/reusability (many times)	Washability/reusability (standard)	Ventilator	Air conditioner	Packaged air conditioner	Fan coil unit	Cooler	Louver	Eliminator	Painting factory (booth)	Kitchen extraction
	Arrestance	High	Middle	Low																	
Viledon® (PS600N)			○								○		○	○							
Viledon® (PS400N)			○								○		○	○	○						
Viledon® (Type PA)		○												○						○	
Viledon® (Type FS)				○						○		○			○	○	○	○			
Saran Lock™				○	○					○	○		○	○	○				○		
Glass Fiber			○							○			○	○						○	
Micro Glass		○					○						○	○							
Polyolefin/Polyolefin Eliminator				○	○					○		○		○	○	○	○	○	○		
Molto Filter				○						○		○			○	○	○				
SARAN HONEYCOMB™				○						○		○			○	○	○	○			
Aluminum Filter				○	○	○	○		○	○	○			○					○		○
Aluminum Demister				○	○	○	○		○	○	○		○	○	○				○		
Copper Demister				○	○	○	○		○	○	○		○	○	○				○		
Stainless Steel Demister				○	○	○	○	○	○	○	○		○	○	○				○		
Zinc Demister				○	○	○	○		○	○		○	○	○	○						
Stainless Steel Mesh				○		○	○	○	○	○	○		○	○	○			○			
Zinc Mesh				○		○	○		○	○		○	○	○	○			○			
Craft Filter									○											○	

Performance Testing for Air Filters

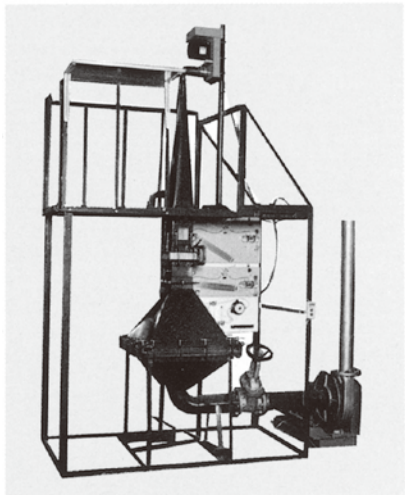
1. Summary of JIS B9908

JIS B9908, the Japanese Industrial Standard defines air filter units used for ventilation purposes. The range of applications is as follows.
* This Standard defines air filter units as those that specifically utilize filter media to remove airborne dust particles in buildings, factories, and offices for ventilation purposes (“filter unit” hereinafter).
In addition, JIS B9908 classifies types of filter units in greater detail, based on filter media, particle size of the dust captured, and particle collection efficiency. The classification of filter units based on particle size is as follows.

Filter unit classification with corresponding performance measurement methods

Type 1 Extremely fine dust (counting method)
Type 2 Fairly fine dust (colorimetric method or lightscattering accumulation method)
Type 3 Fairly coarse dust (gravimetric method)

Under the guidance of Professor Kouichi Iinoya, Professor Emeritus at Kyoto University, we have created testing equipment to test the performance of Type 3 air filters. To enable apples to apples comparisons of filter media efficiency, all data presented in this catalog were obtained using this test equipment.



● JIS B9908 Type 3 Test Equipment

2. Performance Test

2-1 Arrestance

For measurements of dust particle arrestance, JIS B9908 specifies the use of Test Dust No. 15 and dust concentration of 70 ±30 mg/m^3 under stable conditions.
The equation below gives arrestance as follows:

$$\eta = \left(1 - \frac{Wp}{Wf}\right) \times 100\%$$

where
η : Arrestance (%)
Wf : Total mass of dust supplied (g)
Wp : Total mass of dust collected by back-up filter (g)

This catalog gives the value for average arrestance (%) at each air velocity for each type of air filter media.

2-2 Pressure drop (Initial pressure drop)

Initial pressure drop, is measured at each air flow rate.
In addition, the transition in the pressure drop is measured until the final pressure drop is reached for the total mass of airborne dust particles accumulated at the rated air flow rate. (For measured transition data, refer to our company’s technical data.)

2-3 Dust Holding Capacity

JIS B9908 defines dust holding capacity as follows:
Dust holding capacity is the lower of the following two values: 1) the total mass of dust collected by a filter unit until the pressure drop at the rated flow rate of the filter unit reaches the ultimate pressure drop; 2) the total mass of dust collected by the filter unit until the particle collection efficiency reaches 85 % of its maximum value.
Dust holding capacity is expressed as the mass of dust (g) retained for 1 m^2 of the filter media of the air filter unit.

■ Composition of Test Dust No.15

Dust in Use	Test Dust No.8	Test Dust No.12	Cotton linter
Percentage of Mass	72%	23%	5%
Composition	0–5 μm 39%	0.03～0.20 μm	Diameter 1.5 μm Length Less than 1 mm
	5–10 μm 18%		
	10–20 μm 16%		
	20–30 μm 12%		
	30–40 μm 6%		
	40–75 μm 9%		
	Total 100%		
Remarks	Comparable to Arizona Road Dust	Same as the carbon black	

Types of Air Filter Media and Filtration Performance

*Based on Japan Vilene catalog

Type of Filter	Filter Media	Media Number	Standard Dimensions (width × length)	Thickness (mm)	Reusability	Fire Retardancy	Standard Air Velocity (m/sec)	Initial Pressure Drop (Pa)	Average Arrestance (%)	Maximum Working Temperature (℃)
For general reuse	Viledon®	PS600N	160 cm × 20 m	20	○	○	2.5	90	82	80
		PS400N	160 cm × 20 m	14	○	○	2.5	64	76	80
		PS300N	160 cm × 30 m	10	○	○	2.5	54	73	80
		PS150N	160 cm × 30 m	8	○	○	2.5	30	63	80
For special equipment		FS1710	100 cm × 50 m	11	○	○	2.5	35	74	60
		FS1705	100 cm × 50 m	5.5	○	○	2.5	20	68	60
		FS1705W	100 cm × 50 m	6.5	○	○	2.5	20	68	60
For capillaries/ draining		SS3300	500 mm × 500 mm	50	○	○	2.5	30	66	60
		SS1500	500 mm × 500 mm	25	○	○	2.5	15	52	60
For coating booths		PA350HL	160 cm × 20 m	18	×	○	0.5	45	> 98	80
		PA305HL	160 cm × 20 m	19	×	○	0.5	45	≥ 98	80
Heat-resistant for drying ovens		AI100W	500 mm × 500 mm	20	×	○	1.0	45	90	240
		AE100 with 2 sheets	500 mm × 500 mm	20	×	○	1.0	45	90	180
		AE100	160 cm × 20 m	10	×	○	1.0	25	88	180
General purpose disposable type		FR585	173 cm × 20 m	18	×	○	2.5	59	85	60
		FR580	160 cm × 20 m	20	×	×	2.5	54	80	60
		FS6200	160 cm × 15 m	14	×	○	2.5	54	78	60
		PE205HL	160 cm × 20 m	18	×	○	1.0	40	90	60

* Based on Yamashin Filter data

Type of Filter	Filter Media	Media Number	Thickness (mm)	Reusable	Temperature Resistance	Air velocity (m/sec)	Pressure Drop (Pa)		Average Arrestance (%)	Dust Holding Capacity (g/m²)	Supplied dust (g/m²)
							Initial	Final			
For low arrestance	Saran Lock™	OM150	15t	○	60°C	1.5	7.5	9.0	21.5	176	820
		OM150	25t	○	60°C	1.5	9.3	13.2	27	540	2000
		OM150	50t	○	60°C	1.5	12.7	21.3	38	1255	3300
For medium arrestance		UM150	10t	○	60°C	1.5	23	100	70	590	840
For low arrestance	Glass Fiber	CM25	25t	×	60°C	1.5	14.2	123	61	1160	1900
		CM50	50t	×	60°C	1.5	14.7	120	65	2400	3700
For medium arrestance	Micro Glass	CKR080	50t	×	250°C	1.0	78	300	93	482	520
For high arrestance		CKR040	50t	×	250°C	1.0	157	300	98	196	200
For low arrestance	Polyolefin	Polyolefin	2t	○	80°C	1.5	9.8	50	43	256	595
	Polyolefin Eliminator	Polyolefin Eliminator	6t	○	80°C	1.5	29	150	68	387	570
For medium arrestance	Molto Filter	MF08	10t	○	80°C	1.5	3.5	4.5	19	112	590
		MF13	10t	○	80°C	1.5	9.0	40	44	963	2190
		MF20	10t	○	80°C	1.5	18	70	71	670	945
		MF30	10t	○	80°C	1.5	36	200	77	292	380
		MF40	10t	○	80°C	1.5	50	200	80	252	315
		MF50	10t	○	80°C	1.5	80	200	83	141	170
For low arrestance	SARAN HONEYCOMB™	S9600	1t	○	80°C	1.5	6.5	17.6	22	54	245
		S9600W	2t	○	80°C	1.5	12.2	50	38	150	400
	Polypropylene Honeycomb	PH3800-1	1t	○	60°C	1.5	5.6	30	18	112	625
	Aluminum Foil	Aluminum Foil	25t	○	140°C	1.5	17.6	19.6	60	960	1600
	Demister	Stainless Steel Demister (Six-fold with Wave)	25t	○	140°C – 480°C	1.5	5.4	6.4	15	175	1150
		Stainless Steel Demister (Twelve-fold with Wave)	50t	○	140°C – 480°C	1.5	7.8	12.3	34	850	2500
		Stainless Steel Demister (Twenty-fold without Wave)	25t	○	140°C – 480°C	1.5	14.7	30	52	555	1070
	Mesh	Stainless (ø 0.29 × 20MS)	10t	○	480°C	1.5	2	3	11	59	533
		Zinc Mesh (ø 0.5 × 12MS)	10t	○	140°C	1.5	3	4	11	61	549
	Craft Filter	Craft Filter (2 sheets)	50t	×	60°C	1.5	40	47	52	1605	3065

Filter Media Information

Viledon®

Viledon® is a trademark of Freudenberg Group.

Non-directional fabric with complete adhesion between fibers

The basic fiber structure of the filter media remains unchanged, with no loosening of fibers on the outlet side when cut, during use, or during cleaning. This helps maintain constant air filtration efficiency and high dust holding capacity.

Optimal density gradient for air filters

Low pressure drop; efficient dust collection and good dust holding capacity

Allows rational cost-effective product selection

Select 1) reusable or washable products, or 2) low-cost disposable products based on your needs.

Easily reused

The filter media can be reused repeatedly after water cleaning, vacuum cleaning, or air cleaning.

Rolls can be cut to any dimensions

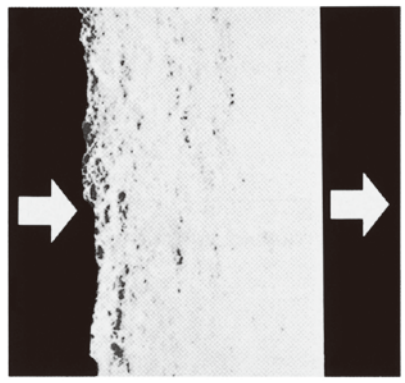
The filter media poses few sizing constraints, and can be supplied either as a roll or pre-cut sheets.

Excellent flame retardance for worry-free use.

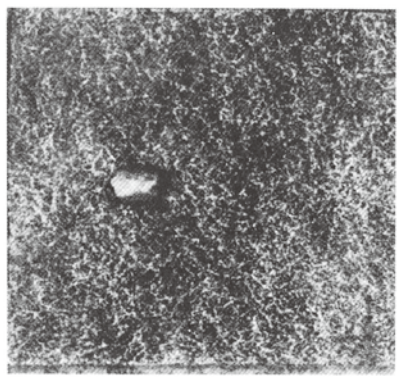
This media passed the 3rd section of the non-inflammable test of JIS L-1091.

Wide range of applications

Used for ventilation, air conditioning, or paint spray booth filtration in the automotive industry; for chemical air treatment in various industrial facilities; for air conditioning in typical factories; in household window air conditioners and other air conditioning units.

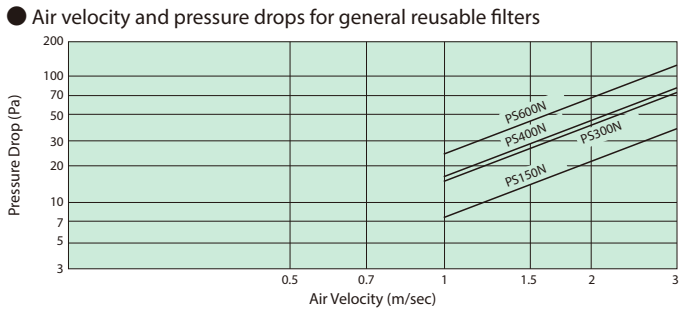


■ Magnified sectional photography of PS600N

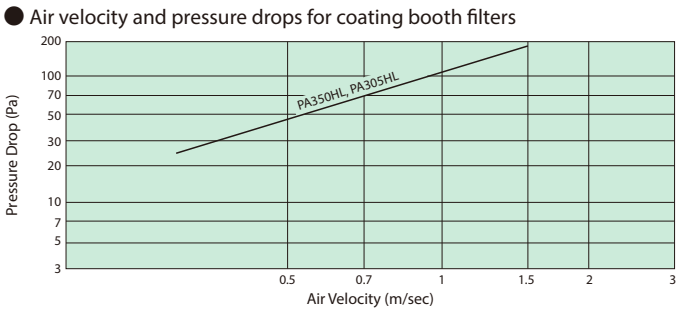


■ Flame retardancy test of Model PS400N

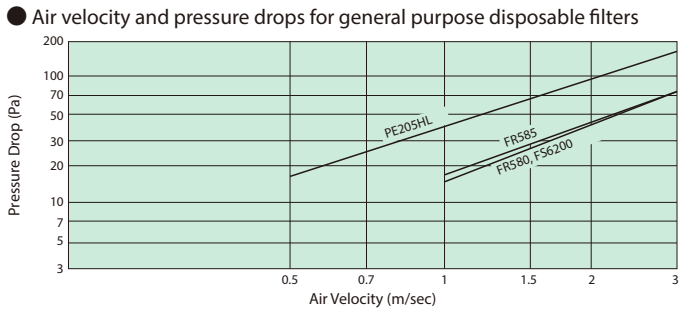
● Air velocity and pressure drops for general reusable filters



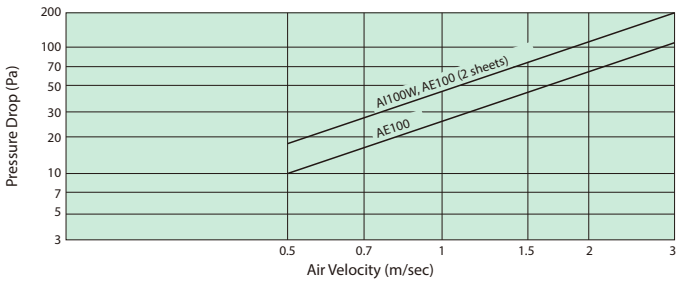
● Air velocity and pressure drops for coating booth filters



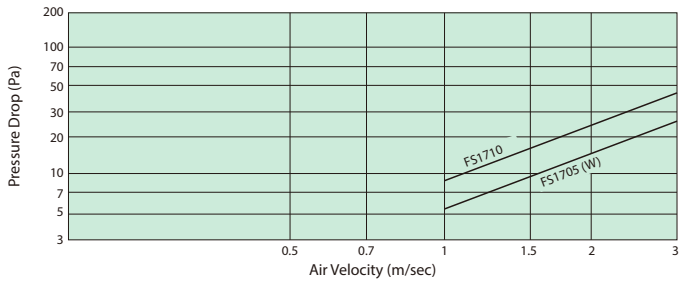
● Air velocity and pressure drops for general purpose disposable filters



● Air velocity and pressure drops for heat-resistant filters for drying ovens



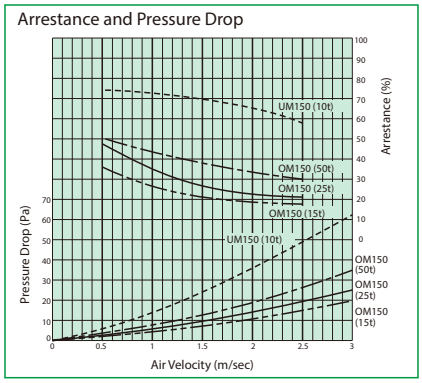
● Air velocity and pressure drops for special equipment filters



Saran Lock™

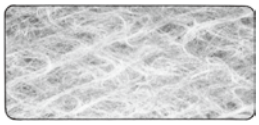
Saran Lock™ is a trademark of AsahiKASEI.

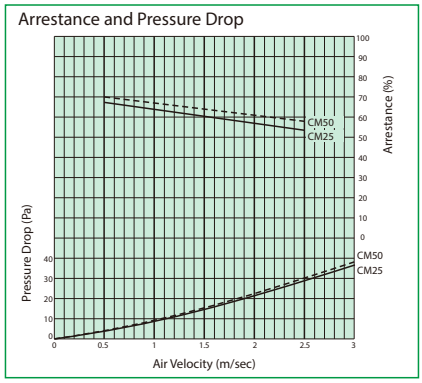
- Vinylidene chloride fibers spot-bonded and formed into shapes suitable for dust-eliminating air filters
- Select the media most suitable for your application based on fiber thickness, density, and sheet thickness.
- Resistant to acids, alkalis, and oils; easily reusable after cleaning.



Glass Fiber

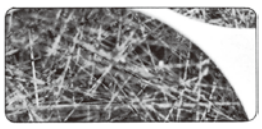
- Glass fibers are criss-crossed and curled to be formed into special filtration structures to provide high dust holding capacity.
- To enhance filtration efficiency, an optimal combination of fiber diameter and filter media density achieves the desired fiber density gradient.
- 30 µm filaments are mixed into the media at a lower density on the air inflow side; thinner filaments of 20 µ are mixed into filter media to achieve a greater density toward the air outflow side.

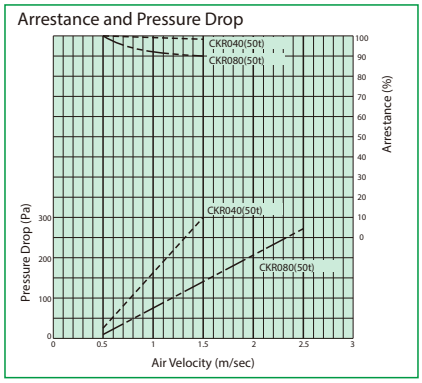




Microglass

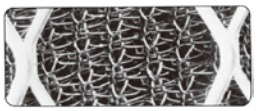
- The glass fibers arranged and stacked non-directionally and formed into sheets are (1) sprayed with achromatic, odorless, and non-inflammable cohesive oil; or (2) resined (resin-treated).
- Glass fiber filters: Filter media resistant to temperatures up to 450°C; resin-treated media can be used up to 120°C. (The frame material may affect temperature resistance.)
- Stable and resistant to most chemicals except strong alkalis and hydrogen fluoride; ideal for filtering corrosive gases

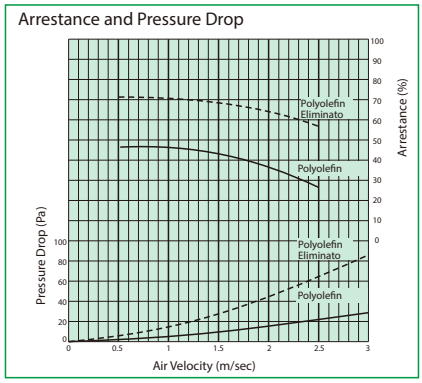




Polyolefin/Polyolefin Eliminator

- The polyolefin fibers are tack-woven and formed into a fiber net that has the thickness suitable for collecting dust.
- The softening point is 90°C. The filter media is resistant to the sun's UV rays, mold, and vermin.
- Two to six media sheets can be layered to achieve the preferred filtration efficiency and pressure drop.

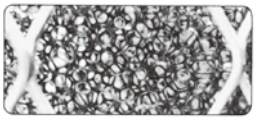


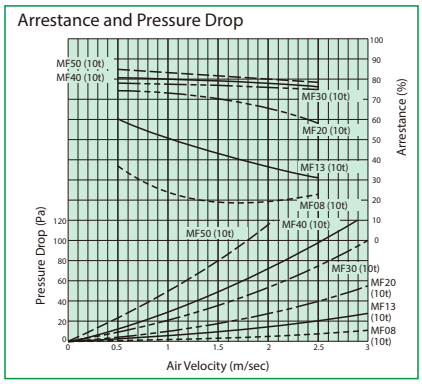


Molto Filter™

Molto Filter™ is a trademark of INOAC Corp.

- The density (from 8 to 50 cells per 25 X 25 mm) and filter thickness (5 to 30 mm) are selectable to suit your applications; ideal for commercial packaged systems or home air conditioning systems.
- Compared to other filter media, this filter media is easily reused after cleaning.
- Lightweight and easy to process

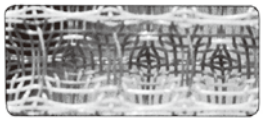


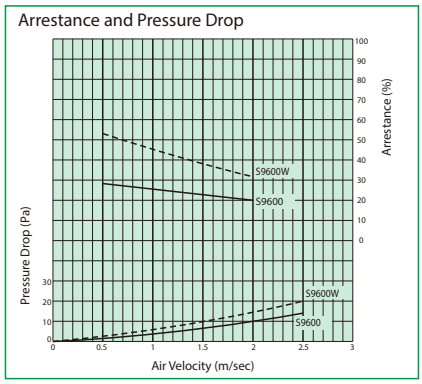


SARAN HONEYCOMB™

SARAN HONEYCOMB™ is a trademark of AsahiKASEI.

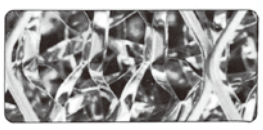
- The filter made of the saran fibers woven into a screen; ideal for louvers or fan coil units.
- Easily cleaned/washed. Absence of hygroscopic properties makes it readily reusable.
- Easily processed for aluminum framing, sewing in a desired shape, or resin treatment
- Selectable color for use in louvers or other applications

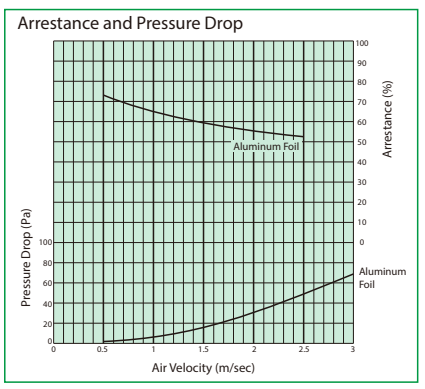




Aluminum Foil

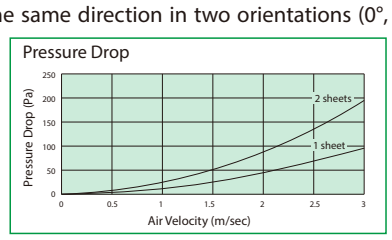
- Multiple aluminum foils, processed into an expanded metal shape (lathnet) and layered, are positioned in the aluminum frame.
- All components are made of aluminum (including frames), making this filter both lightweight and easy to clean.
- This filter is ideal for eliminators used to purify external air or humidify air.

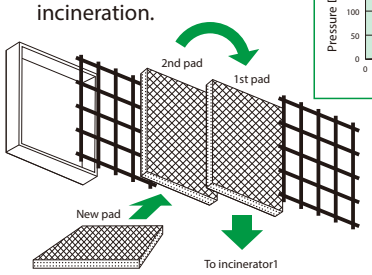




Craft Filter

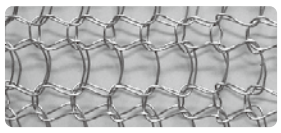
- The filter absorbs 99.5% of oversprayed paint particles, eliminating air pollution and drainage contamination by preventing dispersal of paint particles from exhaust ducts.
- Sprayed coating paint is adsorbed densely and directly into the filter's entire surface. Previously, some of the oversprayed paint was vaporized and might fill the room with paint particles, affecting workers and posing health and safety issues. This filter solves these problems and helps manage health and safety. Oversprayed paint particles are discharged through the filters in a one-way direction.
- The craft filter uses, as material, paper treated to be uniquely flame-retardant. The filter consists of filter pads. A pad is comprised of a total of 10 layers of these sheets: a coarse paper mesh of four layers all facing up but in four different orientations (0° ,90°, 180°, 270°) in a clock-wise direction, while the finer paper mesh of the remaining six layers faces the same direction in two orientations (0°,
- 90°) alternately.
  At the end of their service life, used filters are replaced and disposed of by incineration.

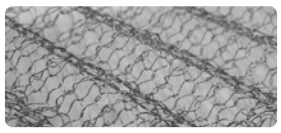


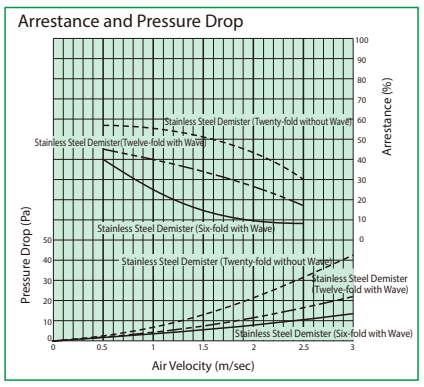


Demister

- The demister is composed of a set of two sheets made of thin metal wires stockinette-stitched, each sheet layered alternately in the opposite direction.
- With a space ratio exceeding 90%, it offers a very low pressure drop.
- The filter offers greater resistance to high temperatures and corrosive conditions than other filters.
  Available materials include aluminum, copper, stainless steel, zinc (plated), and polypropylene.
- Multiple layers of sheets processed into wave shapes increase lifespan. Non-waved sheets offer improved collection efficiency. Through an optimal combination of the above, it is possible to obtain a density gradient similar to nonwoven material filters.



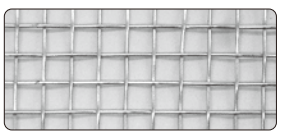


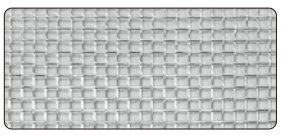


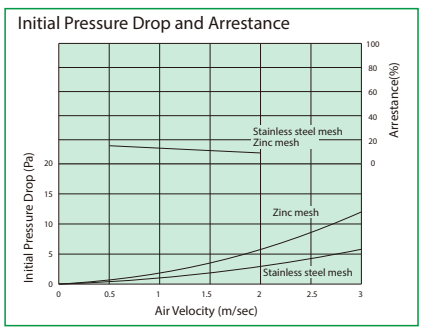
	Temperature Resistance	Sulfuric Acid	Hydrochloric Acid	Nitric Acid	Caustic Soda
Aluminum	140	△	×	△	×
Copper	150	△	△	○	○
Stainless steel	480	×	×	○	○
Zinc (plated)	180	×	×	×	△
Polypropylene	80	○	○	○	△

Mesh

- The metal wire mesh consists of evenly spaced plain-woven horizontal lines (wires) and vertical lines (wires). An extensive range of different mesh sizes are available for different applications, making this an extremely versatile filter.
- This filter media is easily reused after cleaning. The mesh offers excellent heat resistance and corrosion resistance.
- Select from two materials: stainless steel and zinc (plated).
- Ultra-thin frames allow filter installation in compact equipment.
- Easily maintained; these filters are ideal for locations like outside air intakes that collect high volumes of dust.
- Evenly arranged mesh gauges (almost consistent mesh sizes due to wires woven at even distances) allow use of the filters as rectifiers.



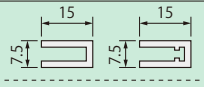
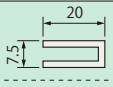
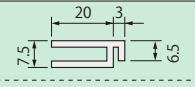
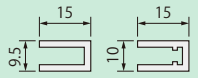
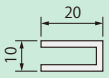
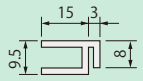
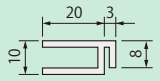
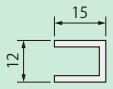
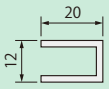
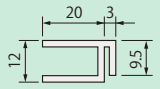
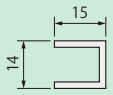
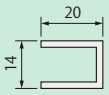
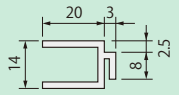
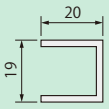
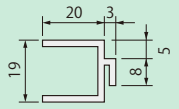
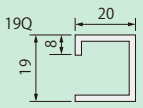
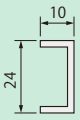
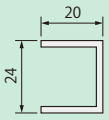
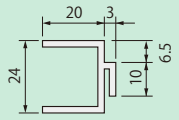
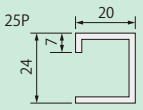
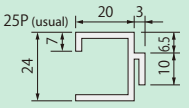
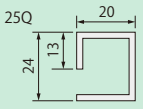
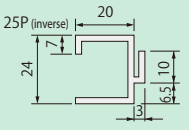
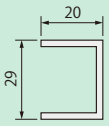
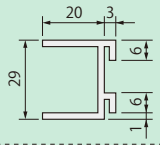
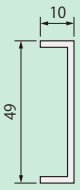
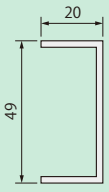
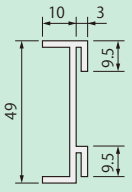
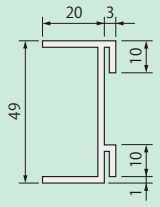
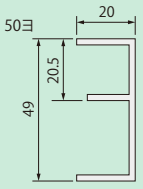
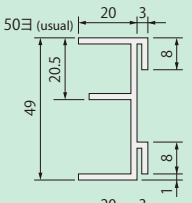
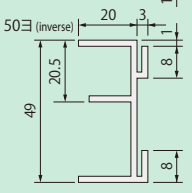


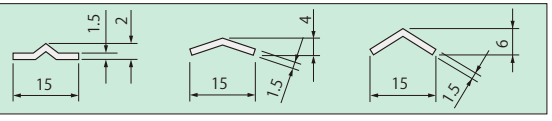


	Temperature Resistance	Sulfuric Acid	Hydrochloric Acid	Nitric Acid	Caustic Soda
Stainless steel	480	×	×	○	○
Zinc (plated)	180	×	×	×	△

Form and Name of Aluminum Alloy Extruded Shape

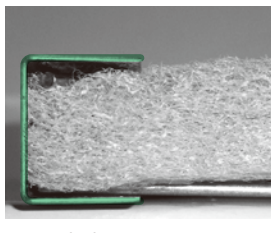
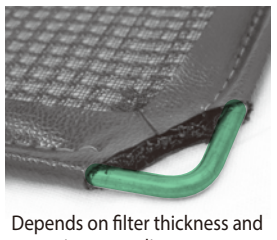
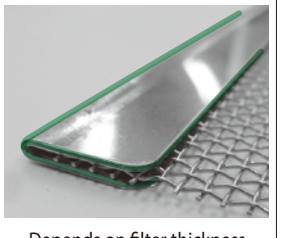
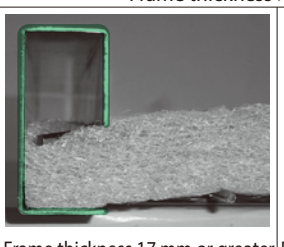
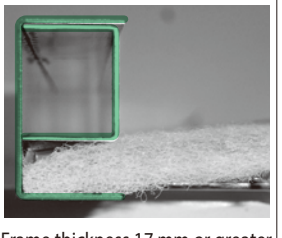
All the aluminum alloy extruded shapes shown below are available as standard products (Aluminum materials measure 1.0 mm in thickness).

Thickness (nominal) \ Folds	10	15	20	10	15	20
8						
10						
13						
15						
20						 
25						    
30						
50						   

Reinforcement 

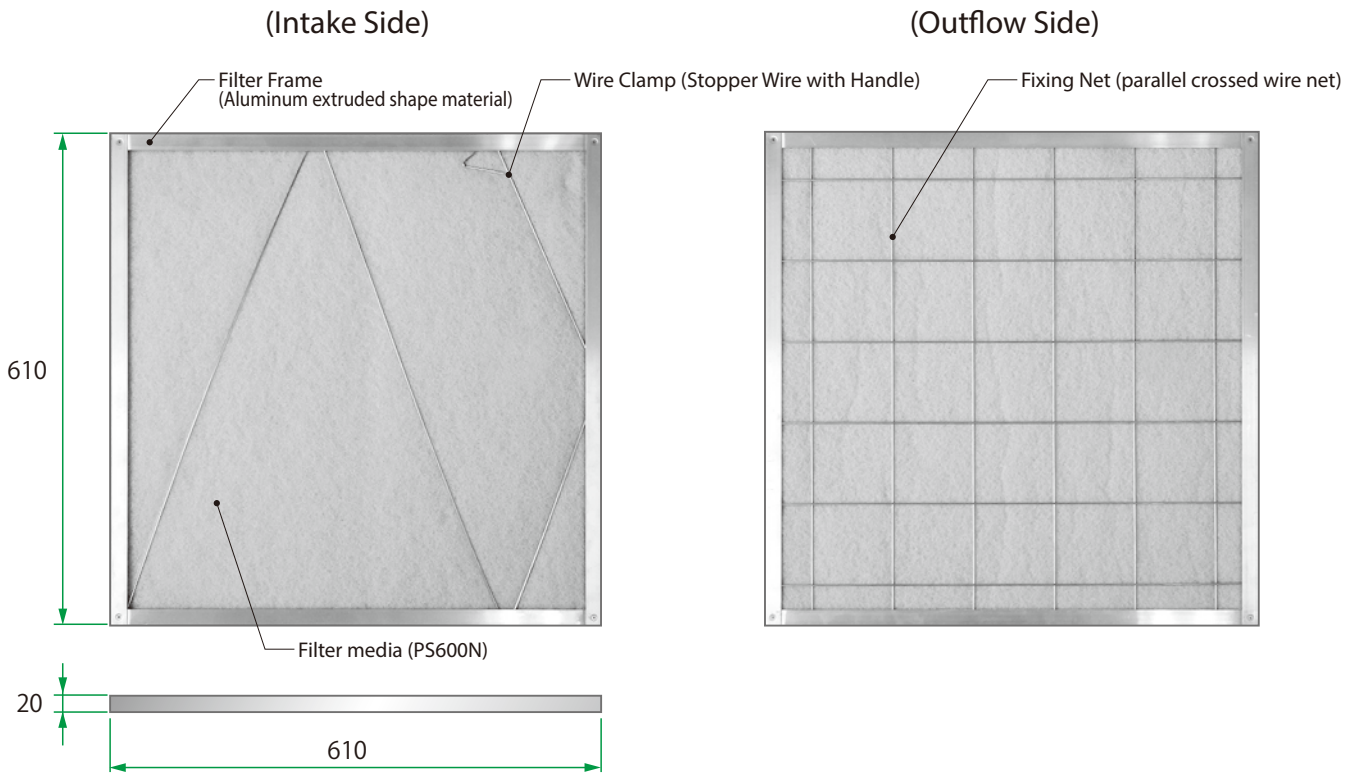
Custom formed frames (Examples)

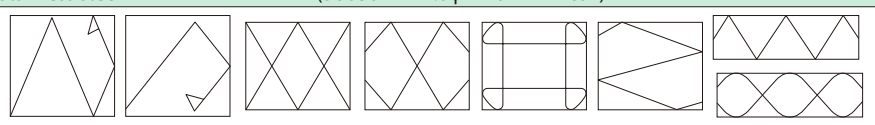
For shapes other than standard aluminum extruded frames, there are manually formed bent frames available, as shown below (processed by bending

Plate-bent frame	Iron core frame	Ultra-thin frame	Draw frame (Diaphragm frame)	Double frame
Frame thickness ≈ Filter thickness	Frame thickness ≤ 6 mm		Frame thickness > Filter thickness	
				
Frame thickness 7 mm or greater	Depends on filter thickness and iron core diameter	Depends on filter thickness	Frame thickness 17 mm or greater	Frame thickness 17 mm or greater

Structure of Filter Unit

We can fabricate filter units not specified in this catalog on request. (For example: Model PS600N 610 × 610 × 20t)

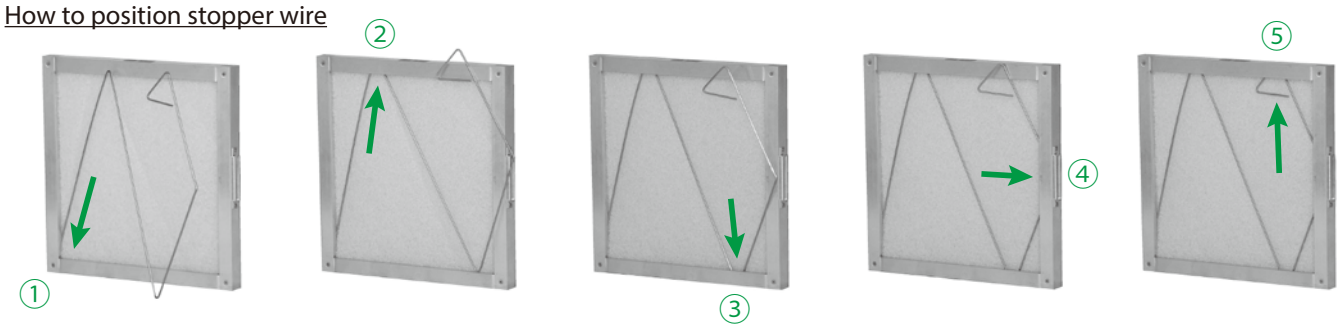


Name	Material	Material (unit = mm, t = thickness)
Filter Frame	Aluminum	Extruded shape (A6063S-T5 t = 1.0–1.5) Rivet fixation (A1050P-H24 t = 0.8–2.0) Welding process (A1050P-H24 t = 1.2–2.0)
	Stainless steel	Rivet fixation (SUS304 t = 0.8–2.0) Welding process (SUS304 t = 1.0–2.0)
	Zinc coated plate	Rivet fixation (SGCC t = 0.6,0.8) Welding process (SGCC t = 1.0–2.0,SS or SEHC-P t = 1.0–3.2)
Filter Media	Various Materials	
Fixing Net	Parallel crossed wire net	Zinc welded wire net (SWM–G1 2.6φ × 100P) Stainless steel welded wire net (SUS304 2.6φ × 100P)
	Expanded metal	Aluminum (A1050P 32 × 16) Stainless steel (SUS304 32 × 16)
	Crimped wire net	Zinc (plated) (SWRM 1.6φ × 20 mm mesh) Stainless steel (SUS304 1.6φ × 20 mm mesh)
Wire Clamp	Zinc wire or Stainless steel wire	

[Stopper Wire with Handle]

- **Secure one-touch fastening**
  The handle simplifies installation and makes it possible to position or remove the filter with one touch.
- **Stainless steel**
  Never corrodes; maintains full elasticity to keep filter media secure.
- **Filter media can be secured with a single wire.**
  Before, two wires were used to hold the filter media. The current stopper wire uses one wire and reduces installation work and time.

How to position stopper wire



Optional Parts

[Handles]

These handles can be used to hold filters during maintenance, improving work efficiency.

Fixing Handle

Movable Handle (small)

Movable Handle (large)

Round Movable Handle

Wire Handle

Retractable Handle

Leather Handle (Inner)

Leather Handle (Outer)

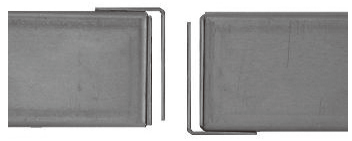
Leather Handle
(Rivet Fixed Type)

PVC Handle
(Rivet Fixed Type)

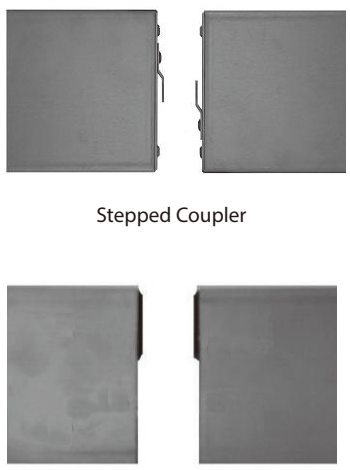
[Couplers]

These couplers can be used to connect two or more filters.

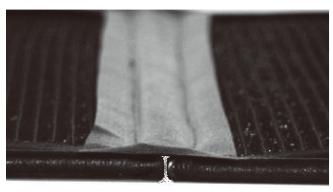
Aluminum Coupler



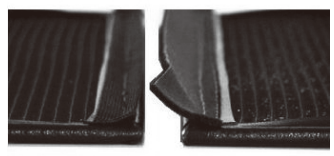
L-Shaped Coupler



Stepped Coupler



Leather Coupler



Velcro Tape Coupler
(iron core bound, leather bound)

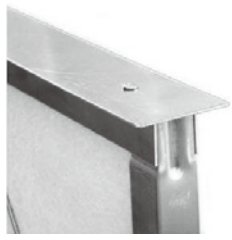
Velcro Tape Coupler

* Velcro® is a trademark of Kuraray Co., Ltd.

[Other]

The following optional parts will improve filter performance and functions:

Flange



Shade Plate

Gasket

Reinforcement