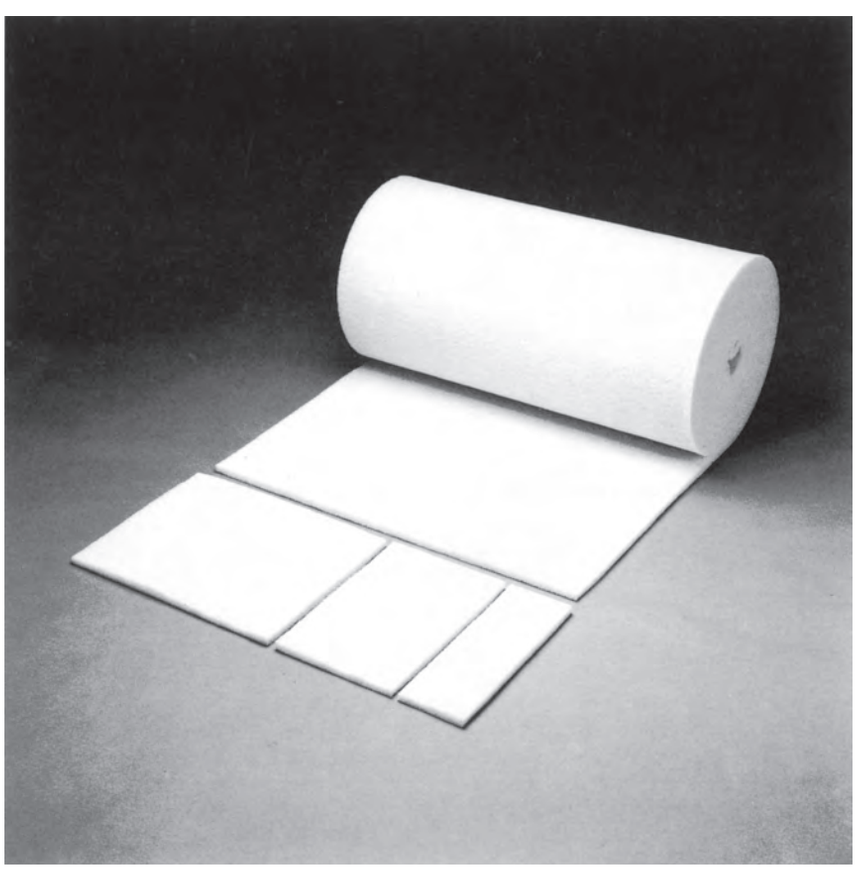
SYNTHETIC NON-WOVEN FABRICS

VILEDON® AIR FILTER



vilene

JAPAN vilene COMPANY, LTD.

VILEDON air filter is non-woven fabrics.

VILEDON air filter is the high-quality non-woven fabrics radically new material developed by modern frontier technology of organic chemistry and polymer chemistry in harmony with paper and felt manufacturing technique. This new non-woven material has a remarkable variety; its physical and chemical properties can be freely designed according to its usage in combination with various synthetic fibers and many other materials.

Types of VILEDON air filter

Application	Model	Page
For painting booth	PA/350HL, PA/305HL	5
For high temperature oven	AI-100W, AE-100 (doubled), AE-100	6
Regenerative type for general use	PS/600N, PS/400N, PS/300N, PS/150N	7
Disposal type for general use	FR-585, FS-6200, FS-6500, PE/205HL, FR-580	8
For special equipments	FS-1710, FS-1705, FS-1705W	9
For other usage	FC-620N, FC-600 SS-3300, SS-1500	10

VILEDON air filter features:

■ Completely bonded fabrics

The fabrics has a porous structure.
The pore sizes can be adjusted by the combination of fibers and binders according to its application.

Density gradient construction

■ Optimum gradient of fiber density for air filter

As the filter media density is increased away from upstream side to downstream side, the low pressure loss, the high dust collecting efficiency and the high dust holding capacity are available.
(Some of our series have no density gradient.)

■ Easy and simple regeneration

Our regenerative VILEDON air filters are reusable by water washing or spray cleaning.

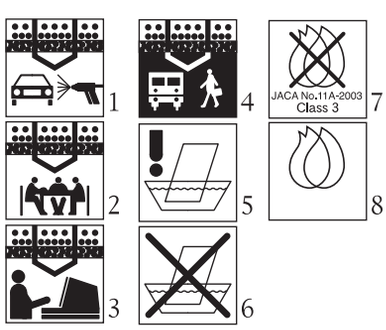
■ Fire-retardant and safety material

VILEDON air filters fall under class 3 according to Flammability Test Method 11A-2003 of Japan Air Cleaning Association (JACA) for Materials of Air Purifier Filters, except the FR-580, which is not a fire-retardant product.

■ Wide range of application

VILEDON air filter are widely used for air-conditioning system of general office buildings and halls as well as modern frontier technological facilites of semiconductor factories.

Applicalion marks for VILEDON air filter:



[1] Applicable for painting booths
[2] Applicable for package type air conditioners and other individual air conditioning systems
[3] Applicable for outdoor air cleaning, etc.
[4] For subway air
[5] Washable type
[6] Disposable type
[7] Fire-retardant type
[8] Non fire-retardant type

Washing way of VILEDON air filter

Washable type

VILEDON air filter can be regenerated by washing:

- ■ Rinsing in water bath
- ■ Water spraying
- ■ Blowing with compressed air or vacuum cleaning

・To maintain the initial filter performance and property, please replace with new one after cleaning about 5 times for unit type and about 3 times for roll type filters. However, the number of cleaning times is depending on use condition and method of cleaning.
・Neutral detergent may be used for removing oily dust and dirt.
・To maintain the initial filter performance and property, please do not crumple or wring storongly.
・Natural drying is recommendable after washing.
・Please consult us or our agent for detail about regeneration method.

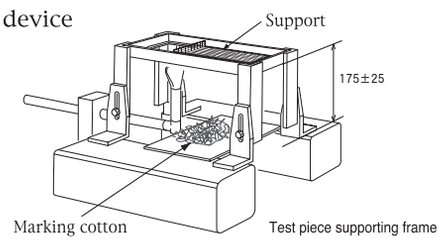
Fire retardancy of VILEDON air filter

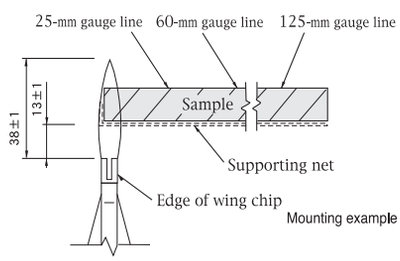
- ■ Almost all VILEDON air filters are fire-retardant products falling under class 3 of evaluation standards except for some item.
- ■ Be careful with fire, as VILEDON isn't nonflammable material.
- ■ Though being fire-retardant,VILEDON air filter may burn with flammable dust and dirt collected. Keep it away from fire.

Fire retardancy test method:

The fire retardancy test method for VILEDON air filters uses JACA's 11A-2003.
Under this test, the edge of each filter sample is exposed to a flame for 60 seconds under specified test conditions. Then the combustion speed, after-flame time, after-glow time, ignition caused by molten drops, and combustion distance are measured to evaluate the flammability of the filter material.

■Testing device





■Calculating formula of combustion speed(Class 1 evaluation)

(1) If the end of the sample damaged by after-flame or after-glowcombustion is in excess ofthe 125-mm gauge line,
the combustion speed (V) will be calculated in the following formula.

V = 6000 / tb (mm/min)
tb : Combustion time (s)

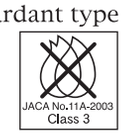
(2) If the end of the sample damaged by after-flame or after-glow combustion is in excess of 60-mm gauge line but not in excess of 125-mm gauge line,
the combustion speed (V) will be calculated in the following formula.

V = 60 Ld / tb (mm/min)
Ld : Combustion distance (mm)
tb : Combustion time (s)

(3) The average value of five samples is calculated.

Classification

Fire-retardant type



	Class 1	Class 2	Class 3
Combustion speed V(mm/min)	40 mm/min max. (≦40)	N.A.	N.A.
After-flame time (s)	N.A.	below2 s for 4/5 (≦2 s) below10 s for 1/5 (≦10 s)	below2 s for 4/5 (≦2 s) below10 s for 1/5 (≦10 s)
After-glow time of each sample	N.A.	30 s max. (≦30 s)	30 s max. (≦30 s)
Ignition of marking cotton caused by molten drops.	N.A.	Yes	No
Combustion distance Ld of each sample (mm)	35 mm or over (≧35)	35 mm or below (≦35)	35 mm or below (≦35)

Note) 4/5 : Four out of five samples. 1/5 : One out of five samples.

■VILEDON® air filter is testing based on ASHRAE

Dust collection efficiency is a vital property of air filters. To keep the efficiency reliable, air filters should be tested by the same method. They are tested by gravimetric, colorimetric and counting methods.

Gravimetric method is applied to test the filters for general-use air conditioners and pre-filters, colorimetric method is used for middle-and high-efficientry filters, and counting method is adopted for determination of performance of HEPA filters.

Gravimetric and colorimetric methods of ASHRAE (American Society of Heating, refrigerating and Air conditioning Engineers) are applied for testing our products. ASHRAE standard is adopted in EUROVENT(European standaed) and is recognized as a world wide standard. Counting method involves counting the dust particles by means of light scattering principle particle counter according to JIS standard.

Air filter test methods

Standard	Test method	Test dust	Applied for
ASHRAE 1992	Gravimetric Colorimetric	ASHRAE test dust: 72% Arizona street dust 23% Carbon black 5% Cotton linter Atmospheric dust	Filters for general-use air conditioners; Middle- and high-efficiency filters
JIS 2001	Counting Form 1	Polydisperse DOP aerosol	HEPA filters
	Colorimetric Form 2	JIS No.11(kanto loam) JIS No.15 : 72% JISNo.8 (kanto loam) 23% JISNo.12 (Carbon black) 5% Cotton linter	Middle-and high-effieiency filters
	Gravimetric Form 3	JIS No.15(above)	Prefilters; Filters for general-use air conditioners
	Counting Form 4	Polydisperse DOP aerosol	Electric dust-collecting machine

ASHRAE= AMERICAN SOCIETY OF HEATING REFRIGERATING AND AIR CONDITIONING ENGINEERS
JIS=JAPANESE INDUSTRIAL STANDARD

Standard	Test method	Test dust	Applied for
AFI Section-1 1953 Section-2 1960	Gravimetric	AFI test dust: 72% Arizona street dust 25% Carbon black 3% Cotton linter	Prefilters; Filters for general-use air conditioners
	Colorimetric	Atmospheric dust	Middle-and high-effieiency filters
NBS 1944	Colorimetric	EfficientyA : 96% Cottrell dust 4% Cotton linter EfficientyB : Atmospheric dust	Filters for general-use air conditioners Middle-and high-effieiency filters

AFI=AIR FILTER INSTITUTE
NBS=NATIONAL BUREAU OF STANDARD
AFI and NBS were integrated to ASHERE

■ASHRAE
Gravimetric method:

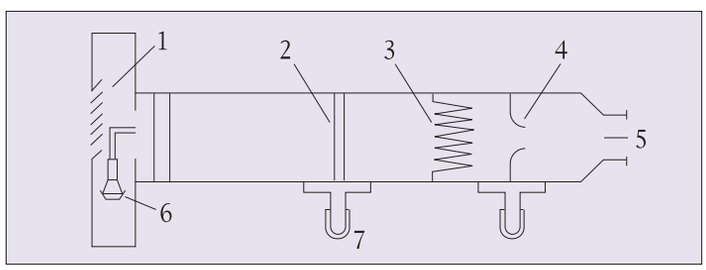
ASHRAE test dust is supplied toward the test filter tested. Weight of dust collected on the absolute filter is calculated to determine the dust collection arrestance by the following formula:

$$Ew=\left(1-\frac{W2}{W1}\right)\times 100(\%)$$

Ew – Dust collection arrestance (%)
W1 – Dust quantity(supplied dust weight)
W2 – Weight of collected dust on absolute filter

Schematic drawing of testing device for determination of the filter arrestance

1 - Outdoor air
2 - Test filter
3 - Absolute filter
4 - Flow nozzle
5 - Exhausting air
6 - Dust feeder
7 - Manometer



■ASHRAE
Colorimetric method

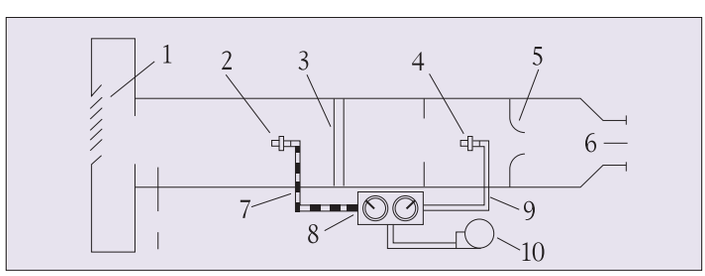
Atmospheric dust is sampled by the glass fiber filter arranged before and after the filter being tested. Based on contamination degree of each filter paper, dust collection efficiency is determined by the following formula:

$$E=\left(1-\frac{Q_1}{Q_2}\times\frac{O_2}{O_1}\right)\times 100(\%)$$

E – Dust collection efficiency (%)
Q1 – Sampling flow rate at upstream side
Q2 – Sampling flow rate at downstream side
O1 – Contamination degree of filter paper at upstream side
O2 – Contamination degree of filter paper at downstream side

Testing device for determination of the filter efficiency

1 - Outdoor air
2 - Filter paper holder
3 - Test filter
4 - Filter paper holder
5 - Flow nozzle
6 - Exhaust air
7 - Intermittent sampling
8 - Timer
9 - Continuous sampling
10 - Vacuum pump



■Measurement of filter thickness

Filter thickness is measured under the specified load on the filter medium.
Filter thickness can be thinner according to storage condition.
Because inner part of roll type filters especially has a tendency to become thinner, thickness information on this catalogue is not guaranteed value.

■Initial pressure loss

Initial pressure loss is the center value.

VILEDON® AIR FILTER FOR PAINTING BOOTH

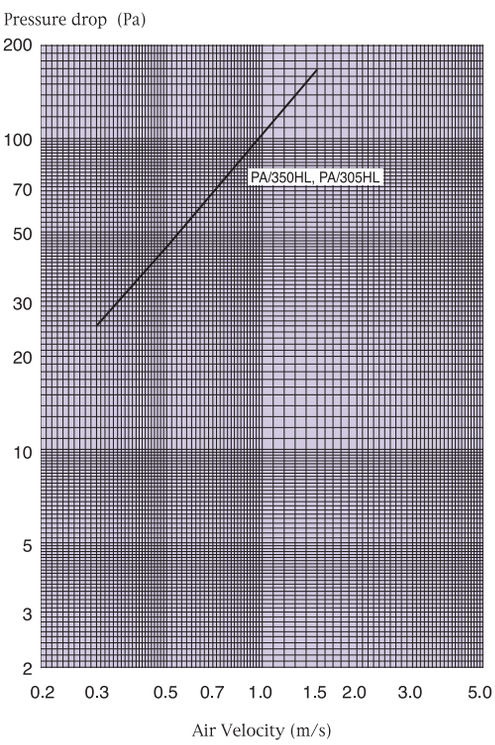
Characteristics of filter for painting booth :

This filter allows for removing almost all dust suspended in air,especially visible coarse particles (more than 10μm) ,to eliminate the painting troubles. PA/350HL and PA/305HL are the most suitable filtering media for painting booth.PA/350HL has a sticking property to prevent of dust break-through.

■Standard specifications

Items \ Type	PA/350 HL	PA/305HL
Fibers	Polyolefin	
Standard size (W×L)	1.6×20 m	
Thickness (mm)	18±3	19±3
Standard air velocity (m/s)	0.5	
Initial pressure drop (Pa)	45	
Average arrestance (%)	＞98	≧98
Working Temperature,Less than resistance	≦80℃	

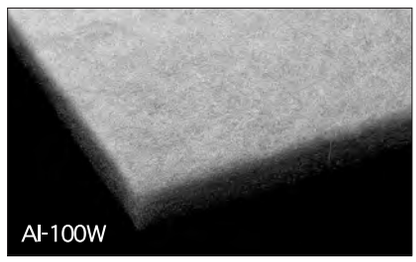
■Air Velocity & Pressure drop

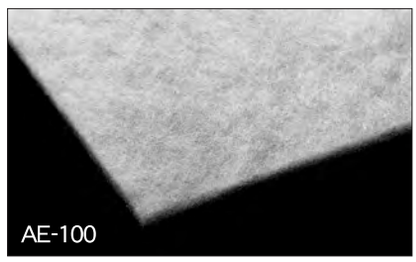


VILEDON® AIR FILTER FOR HIGH TEMPERATURE OVEN

Characteristics of high temperature oven filter

This filter allows for effective filtering of tars, soots,rusts,etc.produced in high temperatre oven to prevent fouling of product surface. This filter made of special synthetic fibers has enough durability at high temperatures and is very easy in handling, as distinguished from glass fibers which may be broken and airborned when replacing the filtering media.
AI-100W is applicable for 180℃～240℃, and AE-100 or AE-100 doubled is applied for temperature less than 180℃.

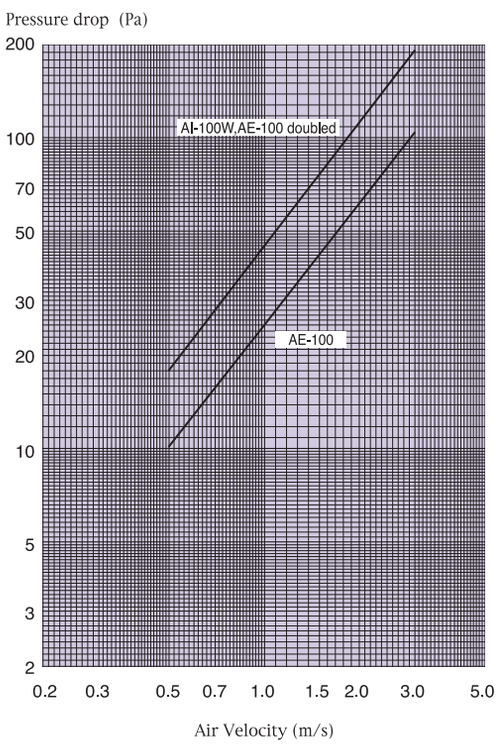




■Standard specifications

Items \ Type	AI-100W	AE-100 doubled	AE-100
Fibers	Aromatic polyamide		
Standard size (W×L)	500×500mm		1.6×20m
Thickness (mm)	20±3	20±4	10±2
Standard air velocity (m/s)	1.0		
Initial pressure drop (Pa)	45		25
Average arrestance (%)	90		88
Working Temperature,Less than resistance	≦240℃	≦180℃	≦180℃

■Air Velocity & Pressure drop



- Service life of the filter depends on its working temperature.
- As its durability is depends on an air velocity, running hour, atmosphere and other conditions, please consult us when operating it at the conditions other than given in the standard specifications.

VILEDON®AIR FILTER REGENERATIVE TYPE FOR GENERAL USE

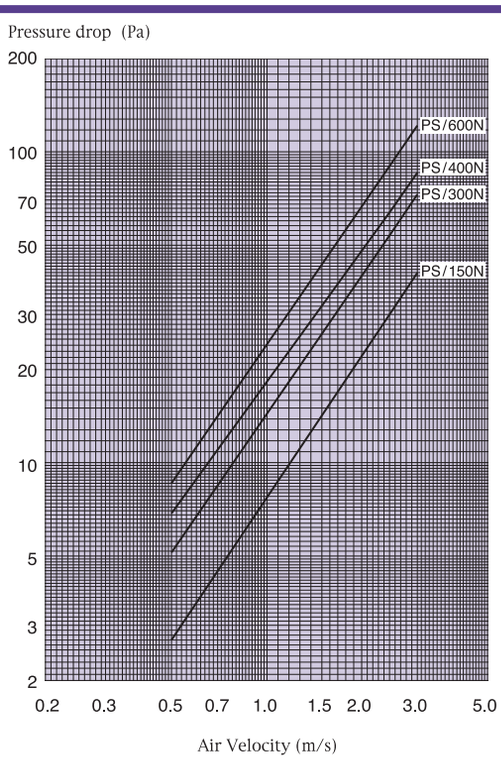
Characteristics of washable type filter for general use :

This filter is an optimal filter for outdoor air filtration. The filter is washable several times simply.
It is used mainly for panel type unit. PS/600N and PS/400N are applicable for automatic roll filter(VMR).

■Standard specifications

Items \ Type	PS/600N	PS/400N	PS/300N	PS/150N
Fibers	Polyester/Modacrylic			
Standard size (W×L)	1.6×20m		1.6×30m	
Thickness (mm)	20±3	14±2	10±2	8±2
Standard air velocity (m/s)	2.5			
Initial pressure drop (Pa)	90	64	54	30
Average arrestance (%)	82	76	73	63
Working Temperature,Less than resistance	≦80℃			

■Air Velocity & Pressure drop



VILEDON® AIR FILTER DISPOSAL TYPE FOR GENERAL USE

Characteristics of disposable type filter for general use :

This disposable type filter is best suited for outdoor air filtration. It is recommended to use FR-585 for automatic roll air filter (VMR) in respect of running cost. This filter is very effective to collect sandy dust,as sticking oil is applied to increase dust collection arrestance. Cut-to-size sheets (500×500 mm,610×610 mm, etc.)of FR-585 are available for panel type.

FR-585 is non-halogen filters. Dioxins will not be brought by incinerating the FR-585.

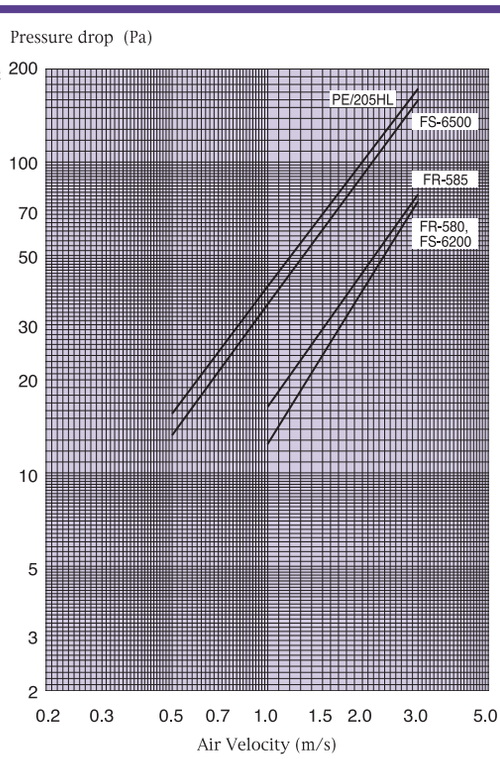

FR-585

■Standard specifications

Items \ Type	FR-585	FS-6200	FS-6500	PE/205HL	*FR-580
Fibers	Polyolefin	Modacryl/ Polyester	Polyester/ Modacrylic	Polyolefin	Polyolefin
Standard size (W×L)	1.73×20m	1.6×15m	1.6×20m	1.6×20m	1.6×20m
Thickness (mm)	18±3	14±2	13±2	18±3	20±3
Standard air velocity (m/s)	2.5		1.0		2.5
Initial pressure drop (Pa)	59	54	35	40	54
Average arrestance (%)	85	78	90	90	80
Working Temperature,Less than resistance	≦60℃				

*FR-580 isn't fire-retardant.

■Air Velocity & Pressure drop



VILEDON® AIR FILTER FOR SPECIAL EQUIPMENTS

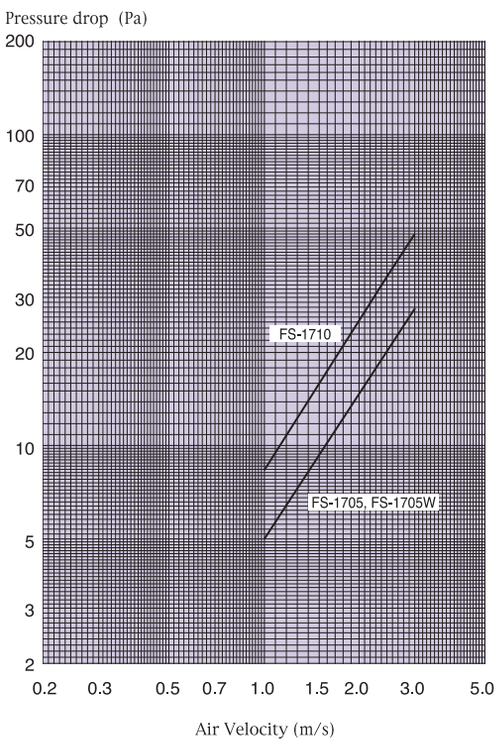
Characteristics of filter for special equipments:

This filter is distinguished for its low pressure drop,high dust collecting arrestance and large dust holding capacity.It can be subjected to resin molding and zigzag pleats processing.

■Standard specifications

Items \ Type	FS-1710	FS-1705	FS-1705W
Fibers	Polyamide/ Modacrylic	Polyester/Modacrylic	
Standard size (W×L)	1.0×50m	1.0×50m	1.0×50m
Thickness (mm)	11±2	5.5±1.5	6.5±1.5
Standard air velocity (m/s)	2.5		
Initial pressure drop (Pa)	35	20	
Average arrestance (%)	74	68	
Working Temperature,Less than resistance	≦60℃		

■Air Velocity & Pressure drop



VILEDON® AIR FILTER FOR OTHER USAGE

■**Mist and lint filter**

Items \ Type	FC-620N	FC-600
Fibers	Modacylic/ Polyamide	Polyamide/ Polyester
Standard size (W×L)	1.6×50 m	
Thickness (mm)	1.2±0.5	2.3±0.5
Standard air velocity (m/s)	2.0	0.5
Initial pressure drop (Pa)	35	
Average arrestance (%)	74	97
Working Temperature,Less than resistance	≦60℃	

■**Capillary filter,de-watering filter:**

Items \ Type	SS-3300	SS-1500
Fibers	Vinylidene chloride	
Standard size (W×L)	500×500 mm	
Thickness (mm)	50±5	25±3
Standard air velocity (m/s)	2.5	
Initial pressure drop (Pa)	30	15
Average arrestance (%)	66	52
Working Temperature,Less than resistance	≦60℃	

⚠INSTRUCTION FOR USE

■ These filtration products are designed for air cleaning applications only.

■ For new or nonstandard applications, please consult our company or our agent to ensure that the correct product is specified.

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