Filtration

Solutions for well-being
of every breath

TEKNOWOOL® AIR
ADVANCED AIR TREATMENT SOLUTIONS

technical catalogue

Filtration

Solutions for well-being
of every breath

TEKNOWOOL® AIR
ADVANCED AIR TREATMENT SOLUTIONS

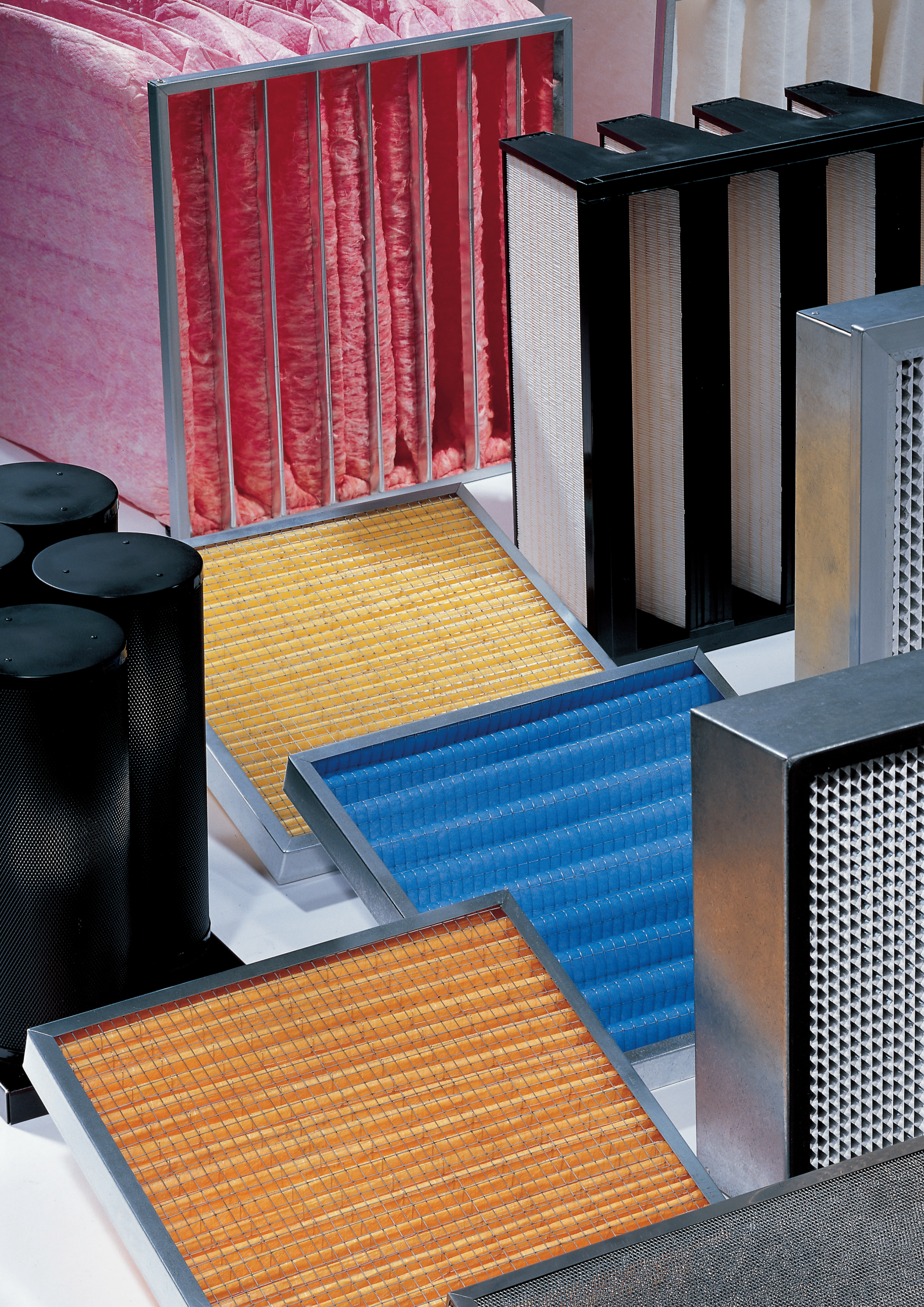
Via Marconi, 1 – 35020 Legnaro (PD)
Tel. 049.641679

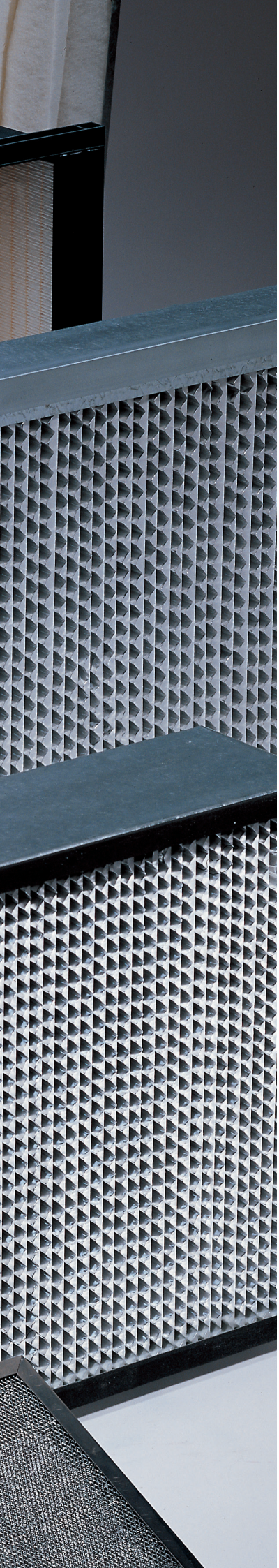
FOR COMMERCIAL INFORMATION

Quote requests:
offerte@teknowoolair.com

Orders:
commerciale@teknowoolair.com

www.teknowoolair.com





INDEX

Filtration

Solutions for well-being
of every breath

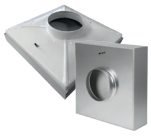
INDEX

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

Cleanroom systems

PF-PFL
Filter ceilings with and without scialytic lamp

F22
Filter terminals for monobloc absolute filters



F24
Terminal box absolute filter holder

FCAN
Safety filter housing box with system bag in-bag out

Activated carbon filters

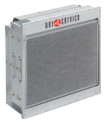
F19 PA
Activated carbon filters in panels

F19 CA
Activated carbon filters in cartridge

F18 CA
Activated carbon filters for gaseous pollutants

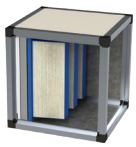
Electrostatic filters

FE-H
Electrostatic filters

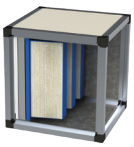


Filter units

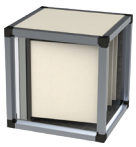
UFT
Mechanical filtration unit with rigid pockets



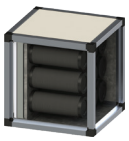
UFTH
Absolute filtration unit with rigid pockets



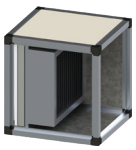
UFTF
Mechanical filtration unit with soft pockets



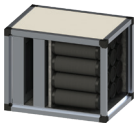
UFC
Activated carbon filter unit



UFES
Electrostatic filtration unit



UFIOC
Filter unit with ozone cells, ionizing cells and activated carbon



INDEX

Air sanitizers

Range completion products

Terms of sale

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

INTRODUCTION TO FILTRATION

Filtration
Solutions for well-being
of every breath

For better air quality

Indoor air quality in civil and industrial environments is one of the main factors to consider in the study of environmental comfort. In addition to controlling temperature and humidity, it is becoming increasingly necessary for people who live and work to have better quality air than outdoor air. This goal appears to have been achieved by designing fine particle filters that mainly provide for the elimination not only of dust, smoke, ash, but also of so-called natural allergens: pollen, spores, etc. Undoubtedly in recent years the composition of air contaminants has changed significantly and above all technical knowledge. In response to all this, Aerservice Components has developed filtration products divided into different categories according to filtration efficiency:

- Pre-filtration
- Filtration
- Absolute filtration

Quick selection table for filter media

The tables below indicate, depending on the particulate to be treated, the type of filter that can be used, bearing in mind that the filter type should also be chosen in relation to specific applications.
It is always recommended to use multiple filtration stages to achieve progressive efficiency that protects the high efficiency filter placed at the end of the filtration section.

Table 1. Pollutants for the civil sector

Particulate to be treated	Pre-filtration			Fine filtration			Absolute filtration	Electrostatic filtration	Activated carbon filtration
	Labyrinth	Metallic	Polyester	Polyester	Synthetic microfibre	Microfibre glass	Microfibre glass		
Pollen/dust		X	X	X	X	X	X	X	X
Boiler fumes									
Kitchen fumes	X	X				X		X	X
Process air pharmaceutical			X	X	X	X	X		
Food processing air		X	X	X	X	X			X
Air with solvents		X				X	X		X
Pasta factories		X		X	X	X			X

Table 2. Pollutants for the industrial sector

Particulate to be treated	Pre-filtration			Fine filtration			Absolute filtration	Electrostatic filtration	Activated carbon filtration
	Labyrinth	Metallic	Polyester	Polyester	Synthetic microfibre	Microfibre glass	Microfibre glass		
Oil mist	X	X						X	
Dry welding fumes		X	X	X	X	X			
Welding fumes with oils and vapours	X	X				X		X	
PVC moulding fumes	X	X						X	X

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

Coarse and fine dust filtration

ENERGY SAVING

The energy consumption of an air filter can be estimated by knowing the average pressure drop values shown during its operating life, using the following formula:

$$E = \frac{(QPT)}{(\eta\ 1000)}$$

Q=flow rate in m^3/s
P= average pressure drop value in Pa
T= operating life duration in hours
η= fan efficiency

In air handling systems, filters cause approximately 30% of energy consumption and in a normal ventilation system operating approximately half a calendar year, the cost of a 1 Pa pressure drop is 1 Euro. The energy used by the ventilation system to overcome this pressure drop, which increases exponentially with the progressive saturation of the filters, involves a 1 to 1 Pa/Euro ratio.

REGULATORY ASPECTS

EN 779:2012

The EN 779:2012 standard contains the requirements that must be met by dust air filters, describes the methods and test bench for measuring filter performance. The 2012 revision of the standard established a minimum filtration efficiency (ME) for classes F7, F8 and F9.

Table 3. Filter classification according to EN 779:2012 standard

Dust group classification	Filter class	Weighted average efficiency Am	Average efficiency for 0.4 µm particles Em	Minimum efficiency for 0.4 µm particles Em	Final pressure drop
	EN 779	%	%	%	Pa
Coarse	G1	50≤ Am <65	-	-	250
	G2	65≤ Am <80	-	-	250
	G3	80≤ Am <90	-	-	250
Medium	G4	90≤ Am	-	-	450
	M5*	-	40≤ Em <60	-	450
	M6*	-	60≤ Em <80	-	450
Fine	F7	-	80≤ Em <90	35	450
	F8	-	90≤ Em <95	55	450
	F9	-	95≤ Em	70	450

* The previous fine filters F5 and F6 are now classified as medium M5 and M6.

EN 13779

To achieve a healthy environment inside buildings, the European standard EN 13779 establishes the performance requirements of the filter system in a ventilation system, in order to achieve air quality in indoor spaces (indoor air quality IAQ has been classified into 4 levels: IDA1, IDA2, IDA3 and IDA4) starting from outdoor air. Outdoor air is classified into 3 levels: from ODA 1 where the air is clean (excluding temporary presence of pollen) up to ODA 3, where gases and particles are concentrated in the air.
Table 4 allows the selection of suitable filters, based on the outdoor pollution level and the desired Indoor Air Quality level indoors.

Table 4. Filters to use according to outdoor air for desired indoor quality (EN 13779)

Outdoor air quality (ODA)		Indoor Air Quality (IAQ)			
		IDA 1 high	IDA 2 medium	IDA 3 moderate	IDA 4 low
ODA 1	Pure air (possible temporary presence of natural pollutants such as pollen)	F9	F8	F7	M5
ODA 2	Air with high dust concentrations	F7/F9	M6-F8	M5-F7	M5/M6
ODA 3	Air with high concentrations of gaseous pollutants (CO_2, CO, NO_2, SO_2)	F7/GF*/F9	F7/GF/F9	M5/F7	M5/M6

* GF molecular filter (activated carbon)

The EN13779 standard also provides some guidance on filter change frequency:

- age of the system;
- Actual operating time. For filters in the first filtration stage: 2000 operating hours or maximum one year from installation or when the recommended final pressure drop is reached. For filters in the second or third filtration stage: 4000 operating hours or maximum two years from installation or when the recommended final pressure drop is reached;
- for hygiene reasons, the filter should be replaced in autumn, after the pollen and spore season.

UNI 10399

The UNI 10399 standard establishes a classification of air handling systems for indoor environmental comfort, the minimum requirements, the minimum filtration class based on the intended use of the building, the desired quality level for indoor air and the quality level of the available outdoor air (table 5).

Table 5. Recommended filtration classes according to UNI 10339

Environment classification	Outdoor air quality levels	Filtration class according to IAQ			Number of stages filtration
		High	Medium	Low	
Residential buildings	ODA 1	M6	F5	G4	2-1
	ODA 2	F7	M6	M5	2
	ODA 3	F8*	M6*	M5*	2*
Hotel facilities	ODA 1	F7	M6	M5	2
	ODA 2	F8	F7	M6	2
	ODA 3	F8*	F7*	F7	2*
Office buildings and similar	ODA 1	F7	M6	M5	2
	ODA 2	F8	F7	M6	2
	ODA 3	F8*	F7*	M6*	2*
Hospitals, clinics and similar	ODA 1	F7	M6	M5	2
	ODA 2	F8	F7	M6	2
	ODA 3	F8*	F7*	M6*	2*
Sterile and infectious rooms, maternity, anaesthesia, radiology, operating rooms and similar	ODA 1	H14	H13	H12	3
	ODA 2	H14	H13	H12	3
	ODA 3	H14*	H13*	H12*	3*
Community and worship buildings	ODA 1	F7	M6	M5	2
	ODA 2	F8	F7	M6	2
	ODA 3	F8*	F7*	M6*	2*
Recreational activity environments	ODA 1	F7	M6	M5	2
	ODA 2	F8	F7	M6	2
	ODA 3	F8*	F7*	M6*	2*
Commercial buildings and similar	ODA 1	F7	M6	M5	2
	ODA 2	F8	F7	M6	2
	ODA 3	F8*	F7*	M6*	2*
Sports buildings and similar	ODA 1	F7	M6	M5	2
	ODA 2	F8	F7	M6	2
	ODA 3	F8*	F7*	M6*	2*
Educational buildings	ODA 1	F7	M6	M5	2
	ODA 2	F8	F7	M6	2
	ODA 3	F8*	F7*	M6*	2*

* Add filter for gaseous contaminants (activated carbon)

ISO 16890 - Air filters for general ventilation

The International Organization for Standardization (ISO) has created a new global standard, ISO16890, which defines the classification and test procedures for air filters used in general ventilation systems. In particular, ISO16890 refers to air filtration elements taking into consideration particles with dimensions between 0.3 µm and 10 µm (see table 6).

Table 6. Classification

Group	Class			Reference value	ΔFinal P
	ePM_1 $0,3 \leq x \leq 1$	$ePM_{2.5}$ $0,3 \leq x \leq 2,5$	ePM_{10} $0,3 \leq x \leq 10$		Pa
ISO Coarse	-	-	< 50%	Initial gravimetric arrestance	200
ISO ePM10	-	-	≥ 50%	ePM10	300
ISO ePM2.5	-	≥ 50%	-	ePM2.5	300
ISO ePM1	≥ 50%	-	-	ePM1	300

The new standard, which will come into force definitively from 30 June 2018, replaces the current European standard EN 779 and ASHRAE 52.2, predominant in the USA, with the aim of creating a single worldwide standard divided into 4 classes linked to filter performance against three different particulate fractions with a more targeted percentage indicating filter efficiency.
The main differences between the ISO16890 standard and the current ones mainly concern the tests which will become more stringent, with a consequent increase in IAQ, and the fact that the finer particles subject to classification, PM1, are also the most dangerous for human health. Filters with high efficiencies capable of retaining them will therefore contribute to improving the quality of the air we breathe.

Table 7. EN779 – ISO16890 comparison

EN779:2012	ISO16890
Airflow between 0.24 m3/s (850 m3/h) and 1.5 m^3/s (5400 m^3/h)	Airflow between 0.25 m3/s (900 m3/h) and 1.5 m3/s (5400 m3/h)
F9, F8, F7, M6, M5, G4, G3, G2, G1	ePM_1, $ePM_{2.5}$, ePM_{10}, ISO Coarse are massive particle concentrations
$D_p = 0,4$ µm	0,3 µm ≤ Dp ≤ 10 µm
The minimum efficiency (ME) defines the filtration class between F7–F9	The average efficiency (EA) is the mean between initial (Ei) and discharged (Ed) efficiencies
Ed from media samples (F7–F9) on liquid isopropanol	Ed from complete filter with isopropanol vapours
Dust accumulation is calculated up to the final pressure of 450 Pa	PM10 < 50% - $\Delta p_{final} = 200$ Pa PM10 ≥ 50% - $\Delta p_{final} = 300$ Pa
Dust: ASHRAE	Dust: ISO A2/AC Fine

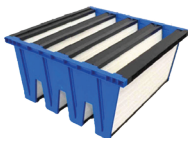
Table 8. EN779 – ISO16890 Correspondence

Filter	EN 779	ISO 16890
F16S40/F18_65	M6	ePM10 75%
F16S70/F18_85	F7	ePM1 50%
F16S90/F18_98	F9	ePM1 85%

F16 S

Corrugated filter cells

Product	F16S
Material	Galvanized sheet metal
Filter media	Synthetic microfibre



F18 4

Rigid pocket filters in microfibre

Product	F18 4
Material	Self-draining in MOPLEN, rigid PU sealing system
Filter media	Water-repellent glass microfibre, reinforced multilayer structure

HEPA - ULPA absolute filtration

The evolution of production technology and application fields (increasingly sensitive to the need for filtration, as in the hospital sector and microelectronics) has pushed air filter manufacturers to produce filters with efficiency characteristics exceeding the limits expressed by class F9 (EN 779), while still guaranteeing the design and performance conditions according to innovative control systems.
In response to this development, the European Committee for Standardization has developed a regulation capable of governing the matter.
The standard called EN 1822 (based on DIN 24183) is divided into five sections.
The European standard comprises the following parts:

- EN 1822-1:2009 Performance classification test, marking
- EN 1822-2:2009 Aerosol production, measuring apparatus, particle counting statistics
- EN 1822-3:2009 Flat Sheet filter media test
- EN 1822-4:2009 Determination of filter element leaks (scanning method)
- EN 1822-5:2009 Determination of filter efficiency.

Table 9. Classification

Classification of filters	Efficiency (%) per MPPS		Penetration (%) per MPPS	
	Overall value	Local value	Overall penetration	Local penetration
E10	≥85	-	≤15	-
E11	≥95	-	≤5	-
E12	≥99,5	-	≤0,5	-
H13	≥99,95	≥99,75	≤0,05	≤0,25
H14	≥99,995	≥99,975	≤0,005	≤0,025
U15	≥99,9995	≥99,9975	≤0,0005	≤0,0025
U16	≥99,99995	≥99,99975	≤0,00005	≤0,00025
U17	≥99,999995	≥99,9999	≤0,000005	≤0,0001

Cleanroom filtration

ISO 14644-1

The ISO 14644-1 standard establishes the classification of air cleanliness in cleanrooms and controlled atmosphere environments. The classification is based on the concentration of suspended particles and the only type of particles considered must have dimensions between 0.1 µm and 5 µm.
The table below shows the classifications according to ISO 14644.1.

Table 10. Classification

Classification of air purity	Maximum concentration in number of suspended particles per m^3 of air with dimensions in microns					
	0,1 µm	0,2 µm	0,3 µm	0,5 µm	1 µm	5 µm
ISO 1	10	2	-	-	-	-
ISO 2	100	24	10	4	-	-
ISO 3	1.000	237	102	35	8	-
ISO 4	10.000	2.365	1.018	352	83	-
ISO 5	100.000	23.651	10.176	3.517	832	29
ISO 6	1.000.000	236.514	101.763	35.168	8.318	293
ISO 7	-	-	-	351.676	83.176	2.925
ISO 8	-	-	-	3.516.757	831.764	29.251
ISO 9	-	-	-	35.167.572	8.317.638	292.511

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

The standard takes into account the "occupancy state", i.e. the objective situation of the system at the time of testing.
"AS BUILT" (as built) condition complete with all services connected and in operation but without production equipment; "AT REST" (at rest) condition complete with all services connected and in operation, complete with production equipment but without personnel present; "OPERATIONAL" (operational) condition in operation, with a defined number of people working in the defined manner; ECC GMP Annex 1 - Guidelines for the pharmaceutical industry; GMP (Good Manufacturing Practice) practical guidelines for good manufacturing, are referred in particular to the production of pharmaceuticals, as they contain a series of suggestions such as to become almost a standard.
The aim is to create production facilities with the goal of achieving a positive result regarding microbiological contamination containment. Four grades of different environment types have been identified:

Table 11. Type of environment

Degree	At rest		In operation		
	Ptc/m³>0.5 µm	Ptc/m³>0.5 µm	Ptc/m³>0.5 µm	Ptc/m³>0.5 µm	CFU/m³
A	3500	0	3500	0	<1
B	3500	0	35.000	2000	10
C	350.000	2000	3.500.000	20.000	100
D	3.500.000	20.000	N.C.	N.C.	200

UNI 11425

The UNI 11425 standard establishes the directives for the design, installation, commissioning, inspection, acceptance and management of systems and components that contribute to the environmental contamination control of operating theatres. To achieve the desired air cleanliness class in the environment, the standard indicates the minimum efficiency grade of the air filters.

Table 12. Air filter efficiency

Environments	Temperature °C		U.R. %		Overpressure compared to outside (Pa)	Air external (vol/h)	Air for recirculation (-)	Cleanliness classes UNI EN ISO 14644-1	Level final filtration	Level sound pressure (dBa)
	Winter	Summer	Winter	Summer						
Very high air quality operating rooms	≥22	≤24	≥40	≤60	15 (1)	15	YES (2)	ISO 5	H14	45 (3)
High-quality operating rooms air quality					15 (1)	15	YES (2)	ISO 7	H14	45 (3)
Standard air quality operating rooms					15 (1)	15	-(4)	ISO 8	H14	45 (3)
Sterile deposits	≥22	≤26	≥40	≤60	15	≥2 (5)	-(4)	-	H14	45
Preparation of operating area					10	≥2 (5)	-(4)	-	≥H12	-
Staff preparation					10	≥2 (5)	-(4)	-	≥H12	-
Operational restart					10	≥2 (5)	-(4)	-	≥H12	-
Clean/sterile corridor					10	≥2 (5)	-(4)	-	≥H12	-
Operating filter space					5	≥2 (5)	-(4)	-	≥F9	-
Staff filter space					5	≥2 (5)	-(4)	-	≥F9	-
Sub-sterilization					10	≥2 (5)	-(4)	-	≥H12	-
Clean deposits	≥18	≤26	≥40	≤60	10	≥2 (5)	-(4)	-	≥H12	-
Dirty deposits					5	≥2 (5)	NO	-	≥F9	-

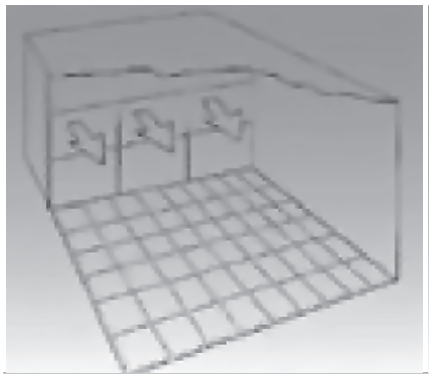
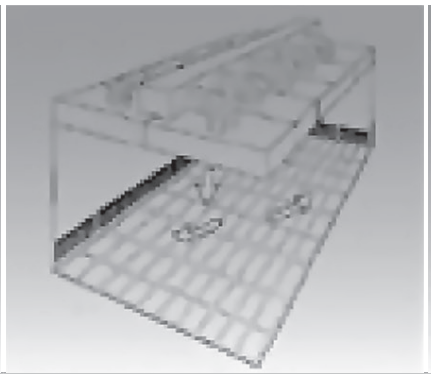
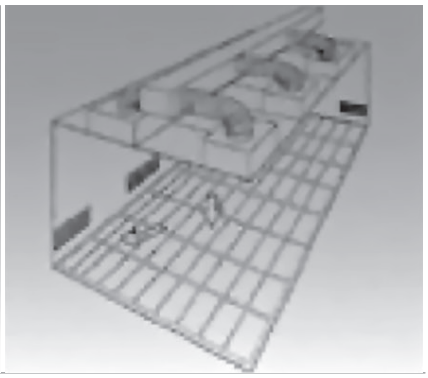
(1) Operating rooms for infected patients are at negative pressure compared to adjacent rooms
(2) Refer to examples in appendix D of the standard
(3) In the case of renovations where it is necessary to create operating rooms in class IOS5 using room recirculation systems, a maximum of 48 dB(A) can be achieved; this choice must be justified in the project documents
(4) According to the air cleanliness requirements and control
(5) Minimum value to be assumed in the absence of other values established based on specific occupancy requirements, contaminant sources and risk analysis.

CLEANROOM DESIGN PARAMETERS

Table 13. Design parameters

ISO 146644-1	3	4	5	6	7	8
Air changes/hour	500	400	300	100	40	10
Air inlet velocity (m/s)	0,3÷ 0,45	0,3÷ 0,45	0,45	0,5÷ 0,8	0,7÷ 2	0,7÷2
Flow	Laminar	Laminar	Laminar	Turbulent	Turbulent	Turbulent
Filter location	Ceiling	Ceiling	Ceiling	Ceiling	Duct	Duct
Filter area (%)	90-100	90-100	90	50	-	-
Filter efficiency (%)	99,99995	99,99995	99,999	99,99	99,99	95
Area per occupant (m^2)	60	40	30	20	10	5
Room pressure (Pa)	20	15	12	10	5÷10	3÷5
Return	Floor	Floor	Floor/Wall	Wall	Wall	Wall

STANDARD CLEANROOM APPLICATIONS

Unidirectional or laminar flow	Unidirectional or laminar flow	Non-unidirectional flow or turbulent
Horizontal flow diffusion, composed of wall-mounted absolute filters. Air return located on the opposite wall.	Full vertical flow through filter terminals placed over the entire ceiling section. Continuous floor-level return on the perimeter walls.	Vertical flow through terminals distributed on the false ceiling, alternating with lamps and blanking panels. Return along the walls at floor level.
		

MODULAR CEILING AIR DIFFUSION SYSTEM WITH FLOW CEILING VERTICAL UNIDIRECTIONAL TYPE FOR HOSPITAL OPERATING ROOMS

With this type of diffuser, air is introduced into the environment with a unidirectional flow, parallel to the walls, from top to bottom, in an area sufficiently free from obstacles that could disturb the regular flow of air. It is important that the introduced air, crossing the area occupied by the surgical team and contaminated by it, tends to move towards the shoulders of those present and not towards the centre of the operating field. This diffusion can only be achieved with laminar (unidirectional) flow systems and with correct installation of the air return grilles which must facilitate the regular outflow of air from the operating field area. Laminar air flow, as defined by the USA "Federal Standards", is a unidirectional air flow that moves at a velocity of 0.45 m/s; this velocity does not allow the deposition of micro-particles which are in any case kept in suspension by the air even if it is adequately filtered with absolute-type filters. However, these standards are typically industrial in character and are therefore difficult to apply to operating theatres. In fact, in order for the human body not to be adversely affected by direct exposure to constant air flows, it is necessary that the velocity of these does not exceed 0.15 - 0.2 m/s: exposure to higher velocities would be considerably harmful to a patient staying in an operating theatre for several hours. An important aspect of considerable consideration is the presence of the surgical team

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

because, while the patient is lying at approximately 2 metres from the air supply point, the team members are standing, with heads bowed and only 70 - 100 cm from the air supply point. The type of flow employed will therefore be a unidirectional flow, at very low velocity, improperly defined as laminar, as it does not have the specific velocity.

General characteristics

The modular unidirectional flow ceiling diffuser is made by simple assembly of modules installed in any type of standard suspended ceiling with inverted "T" supports. The modules, built in robust press-bent steel sheet and continuously welded with TIG technology, are finished by cataphoresis with lead-free non-toxic epoxy powders, oven-dried at 170°C. Completely independent, these modules are installed in a supporting frame made of aluminium and finished with acid-resistant epoxy powder coatings, oven-dried at 200°C. The modularity of the ceiling diffuser allows obtaining the maximum possible air diffusion surface, ensuring greater uniformity. The diffusers are of the perforated type and finished like the frame; being independent and in a quantity of one per module, they allow maintenance access to each individual absolute filter. They are made so that between one and another there is maximum diffusion continuity and in any case a dead zone (or non-diffusion zone) of less than 2 - 3 mm. The perforation is made to guarantee a unidirectional air diffusion, in order to avoid the onset of possible turbulences. The only area of the ceiling diffuser surface not used for air diffusion is that reserved for the passage of the scialytic lamp support arm. For this purpose, a single module is replaced when necessary with a blank panel. All modules constituting the ceiling diffuser are complete with absolute filter, fixed in 4 points, with 99.99% or 99.999% D.O.P. efficiency, individually identifiable by a serial number and equipped with a Quality and Control Certificate attesting its efficiency. The ceiling diffusers are manufactured, in addition to standard sizes, in any dimension and capacity that may be required by the Customer. On request, mechanical air flow regulators can be supplied (both for each filter module and for the entire ceiling diffuser) suitable for maintaining constant air flow as the degree of clogging of the filters themselves varies.

Useful diffusion surface

The entire ceiling surface participates in air diffusion, except for a blind module optionally used for the insertion of the surgical light support arm. This allows:

- use particularly low initial air supply velocities, benefiting the comfort of operators exposed for many consecutive hours to an airflow that could prove bothersome;
- achieve a non-turbulent vertical unidirectional airflow, as there is no need to reach areas outside that directly below the individual diffusers.

Composition with independent modules

In addition to the obvious ease of installation, it allows:

- individually differentiate the flow rate zone by zone, acting on any dampers and thus varying the air supply speed. Even after installation is complete, this measure allows the entire system to be adapted to any specific requirement;
- perform D.O.P. efficiency checks or clogging degree checks of each filter, independently of each other and leaving them housed in their respective modules, with obvious advantages in terms of precision and reliability of such checks;
- adapt the ceiling composition to any specific requirement.

Micro-perforated diffusers

They are made of sheet metal, suitably perforated and shaped. The absence of containment frames for the perforated sheet means that the dead zone, or non-diffusion area between one diffuser and the adjacent one, is at most 2-3 mm, to the full advantage of diffusion uniformity.

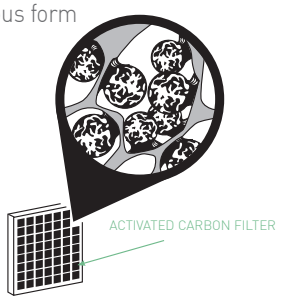
Activated carbon filtration

Activated carbons, in the form of raw material or filters, find space in a vast area covering original equipment or replacement, touching virtually all productive activities. Narrowing the field to gaseous substances, specialist needs include filters for protective masks, filters for gas purification, solvent recovery, as well as numerous applications in the air treatment field in the following sectors: petrochemical, food, electronic, pharmaceutical, hospital, military, nuclear, environmental, airport, domestic.
Our product range includes a series of models designed to meet the most diverse requirements, such as:

- F19 PA: panel adsorber filters, used in industrial catering and for odour control
- F19 CA: activated carbon cartridges, used for absorption of odours and toxic substances in gaseous form
- F18 CA: rigid pocket activated carbon filters

As well as filtration modules

- MFC: absorption modules



To obtain good results, it is essential to provide contact times sufficient for an acceptable degree of efficiency; in the case of physical adsorptiona contact time of 0.1" - 0.3" is suggested, while for chemical contact 0.4" - 0.6"; the longer the contact time on the carbon, the greater the adsorption efficiency.

Electrostatic filtration

Electrostatic filtration bases its operation on the application of electric fields and electrostatic forces directly on particles and microorganisms present in the air. The filtration operation in the device takes place in two phases:

- The imparting of an electrical charge to airborne particles and microorganisms.
- The electrostatic precipitation of charged particles/microorganisms.

The electrostatic filter is therefore composed of two distinct sections:

- An ionization section;
- A collection section.

In the ionization section, the electrical charging of particles and microorganisms (bacteria, spores, yeasts) is performed with the aid of electrodes that generate a positive corona effect.
In the collection section, a series of parallel plates create an electric field that precipitates the previously charged particles and microbes. Contact with the plates causes the destruction of any microorganism and prevents the formation of endotoxins.
For this reason the filtration is called "active": it does not allow microbes to remain viable and thrive on the filter media. It also prevents the emission into the environment of substances from the metabolism and decomposition of the captured microbial flora.
Captured particles remain trapped on the plates by electrostatic forces.
In addition to its particular efficiency in eliminating microorganisms, electrostatic filtration allows significant energy savings due to the almost total absence of pressure drop in the filtration device.

UNI 11254

The procedures described in this standard are developed for the purpose of evaluating the performance of electrostatic air filters suitable for insertion inside ventilation ducts, ventilation machines in general, terminals and diffusers, or in installation air purifiers, filter modules, etc.
The classification criterion is adopted based on average efficiency values for particles with a diameter of 0.4 µm of DiEthylHexylSebacate.
Based on the particular efficiency of electrostatic filters, a minimum initial efficiency threshold of 80% is established to access the classification.
Filters are classified based on their average efficiency and initial pressure drop, under the following test conditions: the air flow rate

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

must be the nominal one declared by the manufacturer for that specific filter; for flow rates below 800 m3/h, it is permitted to test two or more filters in parallel, at a total flow rate equal to the sum of the individual nominal flow rates. The frontal dimensions of the set of parallel filters must not exceed 900 mm x 900 mm.

Table 14. Classification based on average efficiency

Ap<30 Pa	Ap Z 30 Pa	Average efficiency (Em) for particles with 0.4 µm diameter %
D-PE	D-EM	80 < Em < 90
C-PE	C-EM	90 ≤ Em < 95
B-PE	B-EM	95,5 ≤ Em < 99
A-PE	A-EM	Em ≥ 99

Table 13. Summary table for filter comparison

Description	Pre-filters				Medium and fine filters					HEPA Filters					ULPA Filters		
ISO 16890	ISO COARSE					ISO ePM_{10}	ISO $ePM_{2,5}$	ISO ePM_1									
	ePM_{10} < 50% gravimetric arrestance					ePM_{10} ≥ 50%	$ePM_{2,5}$ ≥ 50%	ePM_1 ≥ 50%									
DPf (Pa)	200					300	300	300									
EN 779:2012	G1	G2	G3	G4	M5	M6	F7	F8	F9								
	Am % with synthetic dust					Average efficiency on 0.4 µm particles											
!DPf M5<F9=450 Pa	50<65	65<80	80<90	90<Am	40<60	60<80	80<90	90<95	95<E								
Minimum efficiency on 0.4 µm particles							35%	75%	90%								
EN 1822:2011 (DEHS)										E10	E11	E12	H13	H14	U15	U16	U17
MPPS Efficiency initial/global	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	>85	>95	>99,5	>99,95	>99,995	>99,9995	>99,999955	>99,999995
EUROVENT 4/5	EU1	EU2	EU3	EU4	EU5	EU6	EU7	EU8	EU9								
EUROVENT 4/4										EU10	EU11	EU12	EU13	EU14	EU15	EU16	EU17
! DPf F5<F9=600 Pa																	
ASHRAE MERV Values	1	2-3-4	5-6	7-8	9-10	11-12	13	14	15	16	17	18	19	20			
ASHRAE 52-76	n/a	G70	G85	G95	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
% Arrestance	m>65	65<80	85<90	>90	>97	>98	>98	>99,5	>99,5								
ASHRAE 52-76	n/a	n/a	n/a	n/a	n/a	F60	F85	F95	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
% Opacity	<20	<20	<20	<20	40<60	60<80	80<90	90<95	>95								
NBN X 44 001	n/a	G70	G85	G95	F50	F70	F85	n/a	F95		U95	U99,5	U99,99				
DIN 24185 E	A	B1	B2	B2	B2	C1	C2	C3	C3	Q	R	S	S	T	T	U	V
U.S Fed. 209 (0.3 µm DOP)	n/a	n/a	n/a	0-5	5-15	10-25	45-60	65-75	75-85	>85	>95	>99,5	>99,99	>99,999	>99,9999	>99,99999	>99,999999
Initial efficiency																	
Initial efficiency by particle size																	
0,12 µm	-	-	-	-	0-10	5-15	25-35	35-45	45-60						>99,9999	>99,99999	>99,999999
0,3 µm	-	-	-	0-5	5-15	10-25	45-60	65-75	75-85	>85	>95	>99,5	>99,99	>99,999			
0,4 µm	-	-	-	0-7	10-20	20-35	50-70	70-80	80-90								
0,5 µm	-	-	0-5	5-15	15-30	20-40	60-75	80-90	90-95								
1 µm	-	0-5	5-15	15-35	30-50	50-65	85-95	95-98	>98								
3 µm	0-5	5-15	15-35	30-55	70-90	85-95	>98	>99	>99								
5 µm	5-15	15-35	35-70	60-90	90-99	95-99	>99	>99	>99								
10 µm	40-50	50-70	70-85	85-98	>98	>99	>99	>99	>99								
Decontamination	1	1	1	1	1	1	2	3	5	7	20	200	2000	20.000	200.000	2.000.000	20.000.000

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

PRE-FILTERS

Filtration

Solutions for well-being
of every breath

FP

Polyester fibre filter media

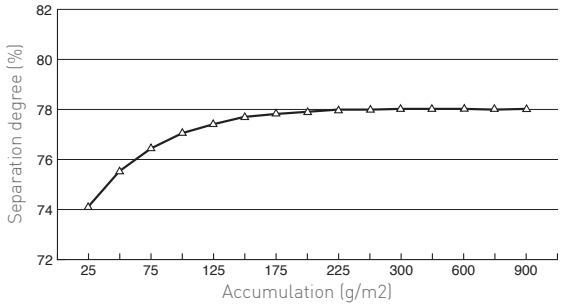
Product	FP
Material	Heat-set synthetic polyester fibres
Supply	Rolls

SPECIFICATIONS
Polyester fibre filter media, model FP, consisting of regenerable heat-set synthetic polyester fibres, with progressive labyrinthine structure.

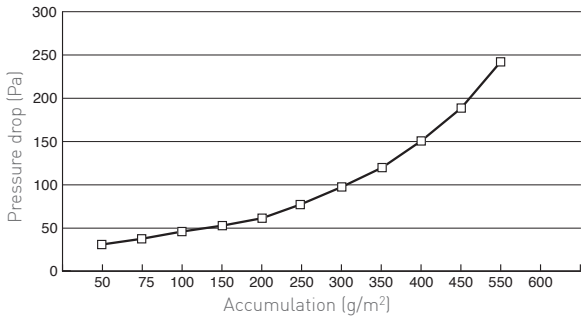
FUNCTIONS
Coarse filtration in civil and industrial systems.

APPLICATIONS
Atmospheric air filtration in air conditioning and ventilation systems, pre-filtration in painting systems, as a second stage in paint booth air exhaust for the collection of paint overspray.

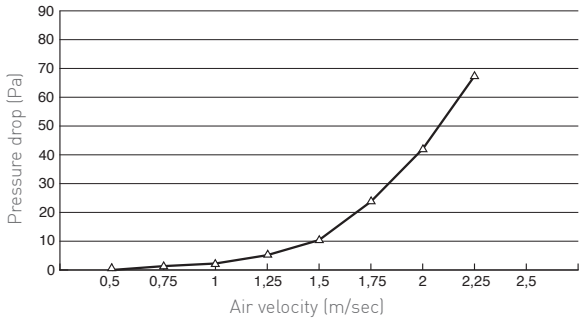
PERFORMANCE CURVES
FP100



Efficiency as a function of dust supplied to the filter
v= 1.5 m/sec.

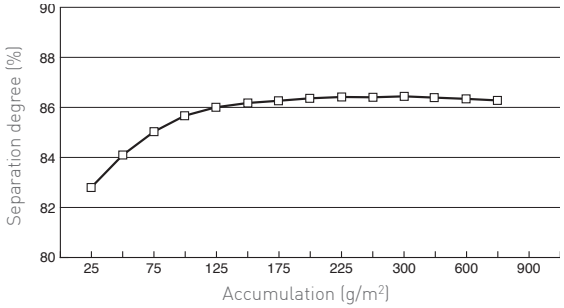


Pressure drop as a function of dust supplied to the filter

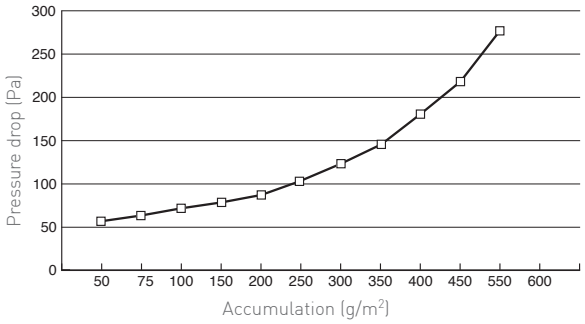


Pressure drop as a function of air velocity

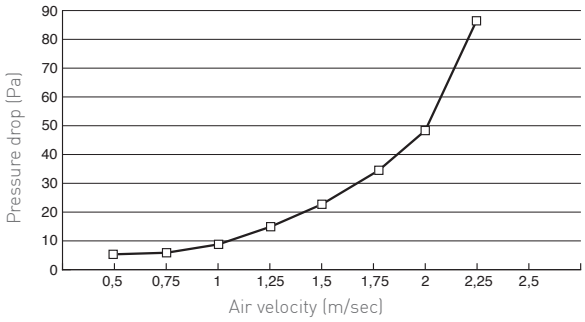
PERFORMANCE CURVES
FP150



Efficiency as a function of dust supplied to the filter
v= 1.5 m/sec.



Pressure drop as a function of dust supplied
to the filter



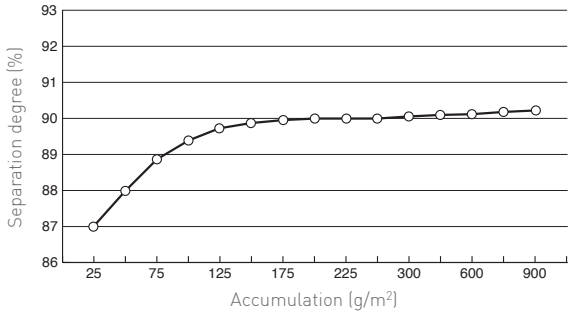
Pressure drop as a function of air velocity

SERIE FP

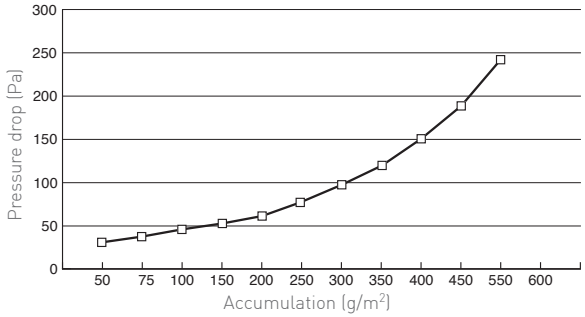
Polyester fibre filter media

PERFORMANCE CURVES

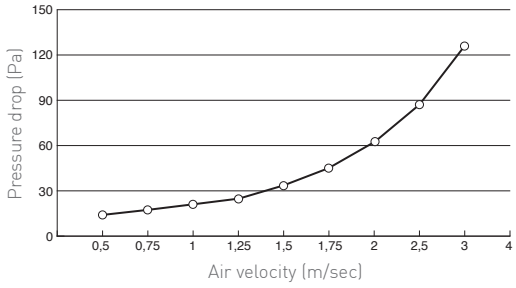
FP200



Efficiency as a function of dust supplied to the filter
v= 1.5 m/sec.



Pressure drop as a function of dust supplied to the filter



Pressure drop as a function of air velocity

INSTALLATION

FP filter media installation is carried out within suitable galvanized steel sheet frames. The media can be arranged flat or corrugated to increase the filter surface area for the same front surface.

MAINTENANCE

The filter must be regenerated or replaced when the recommended final pressure drop is reached or at the maximum indicated limit. This model has limited regenerability.

DISPOSAL

This type of filter is built with inert materials that, if not contaminated by toxic-harmful substances from use, can be disposed of as municipal solid waste.

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

DIMENSIONS

Model	Wt. per unit area	Thickness	Efficiency	Class of filtration	Class of filtration	Capacity accumulation dust	Behaviour to flame	Roll H x L
	g/m^2	mm	%	EN 779	ISO 18690	g/m^2	DIN 53428	m
FP 100	100	9	78	G2	ISO coarse 30%	320	Self-extinguishing F1	1 x 40
	100	9	78	G2	ISO coarse 30%	320	Self-extinguishing F1	1,5 x 40
	100	9	78	G2	ISO coarse 30%	320	Self-extinguishing F1	2 x 40
FP 150	150	15	86,5	G3	ISO coarse 45%	440	Self-extinguishing F1	1 x 30
	150	15	86,5	G3	ISO coarse 45%	440	Self-extinguishing F1	1,5 x 30
	150	15	86,5	G3	ISO coarse 45%	440	Self-extinguishing F1	2 x 30
FP 200	200	20	90,1	G4	ISO coarse 60%	494	Self-extinguishing F1	1 x 30
	200	20	90,1	G4	ISO coarse 60%	494	Self-extinguishing F1	1,5 x 30
	200	20	90,1	G4	ISO coarse 60%	494	Self-extinguishing F1	2 x 30

F8

Flat filter cells for fan coil units

Product	F8
Material	Galvanized sheet metal with protective mesh
Filter media	Polyester fibres

SPECIFICATIONS
Flat filter cells, model F8, consisting of a robust galvanized sheet metal frame with galvanized protection mesh enclosing a polyester fibre filter media.

FUNCTIONS
Filtration and pre-filtration of filters with higher efficiency.

APPLICATIONS
Civil and industrial ventilation and air conditioning systems, air handling units, pre-filtration and separation of coarse and fine dust, fan coil units.

TECHNICAL FEATURES

Filter material	**Polyester fibres**
Regenerability	**Yes**
Flame behaviour	**DIN 53438 F1**
Class EN 779 / ISO 16890	**G2 / ISO coarse 30%**
Thickness (mm)	**3, 5, 10, 12**
Initial pressure drop (Pa)	**10**
Recommended final pressure drop (Pa)	**50**
Limit temperature value (°C)	**100**
Recommended face velocity (m/s)	**1,5**
Relative humidity (%)	**100**
Available dimensions (mm)	**From 100x100 to 1500x1000**

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

PERFORMANCE

Front dimensions (mm)	Air flow rate (m^3/h) Air velocity (m/s) 0,5	1	1,5	2	2,5
287 x 592	310	615	920	1225	1530
400 x 400	290	580	870	1150	1440
400 x 500	360	720	1080	1440	1800
400 x 625	450	900	1350	1800	2250
490 x 592	525	1045	1570	2090	2615
500 x 500	450	900	1350	1800	2250
500 x 625	565	1125	1690	2250	2815
592 x 592	635	1265	1895	2525	3155

INSTALLATION

FP filter media installation is carried out within suitable galvanized steel sheet frames. The media can be arranged flat or corrugated to increase the filter surface area for the same front surface.

MAINTENANCE

The filter must be regenerated or replaced when the recommended final pressure drop is reached or at the maximum indicated limit. This model has limited regenerability.

DISPOSAL

F8 filters are built with inert materials that, if not contaminated by toxic-harmful substances from use, can be disposed of as municipal solid waste.

F10

Flat filter cells

Product	F10
Material	Galvanized sheet metal with protective mesh
Filter media	Polyester fibres

SPECIFICATIONS
Flat filter cells, model F10, consisting of a robust galvanized sheet metal frame with galvanized protection mesh enclosing a polyester fibre filter media.

FUNCTIONS
Filtration and pre-filtration of filters with higher efficiency.

APPLICATIONS
Civil and industrial ventilation and air conditioning systems, air handling units, air generators, paint booths (recirculated inlet or outlet air).

ON REQUEST EFFICIENCY M5

TECHNICAL FEATURES

Filter material	Polyester fibres
Regenerability	Yes
Flame behaviour	DIN 53438 F1
Class EN 779 / ISO 18690	G4 / ISO coarse 60%
Thickness (mm)	22, 48
Initial pressure drop (Pa)	25 (sp. 22) – 45 (sp. 48)
Recommended final pressure drop (Pa)	60 (sp. 22) – 90 (sp. 48)
Dust accumulation capacity (g/m²)	494
Average separation degree (%)	90,1
Limit temperature value (°C)	100
Recommended face velocity (m/s)	1,5
Relative humidity (%)	100
Available dimensions (mm)	From 100x100 to 1500x1000

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

PERFORMANCE

Front dimensions (mm)	Air flow rate (m^3/h) Air velocity (m/s) 0,5	1	1,5	2	2,5
287 x 592	310	615	920	1225	1530
400 x 400	300	575	865	1150	1440
400 x 500	360	720	1080	1440	1800
400 x 625	450	900	1350	1800	2250
500 x 500	450	900	1350	1800	2250
500 x 625	565	1125	1690	2250	2815
592 x 592	635	1265	1895	2525	3155
ΔP [Pa] Sp. 22 mm	20	27	40	52	65
ΔP [Pa] Sp. 48 mm	30	38	52	65	79

INSTALLATION

F10 filter installation can be done in 2 ways:

1) Flat arrangement, perpendicular to the airflow for low face velocity up to 1.5 m/s within suitable U-shaped guides
2) Housed in dedicated duct sub-frames (F23) for air face velocity up to 2.5 m/s.

MAINTENANCE

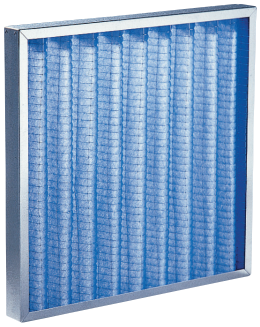
The filter must be regenerated or replaced when the recommended final pressure drop is reached or at the maximum indicated limit. This model has limited regenerability.

DISPOSAL

F10 filters are built with inert materials that, if not contaminated by toxic-harmful substances from use, can be disposed of as municipal solid waste.

F12

Corrugated filter cells



Product	F12
Material	Galvanized sheet metal with protective mesh
Filter media	Polyester fibres with special pleating

SPECIFICATIONS
Corrugated filter cells, model F12, consisting of a robust galvanized sheet metal frame with galvanized protection mesh enclosing a polyester fibre filter media.

FUNCTIONS
Filtration and pre-filtration of higher efficiency filters in stages.

APPLICATIONS
Civil and industrial ventilation and air conditioning systems, air handling units, filter walls, pre-filtration and separation of coarse and fine dust, first stage in filter modules.

ON REQUEST EFFICIENCY M5/F7

TECHNICAL FEATURES

Filter material	Polyester fibres
Regenerability	Yes
Flame behaviour	DIN 53438 F1
Class EN 779 / ISO 18690	G4 / ISO coarse 75%
Thickness (mm)	48, 98
Initial pressure drop (Pa)	50 (sp. 48) – 60 (sp. 98)
Recommended final pressure drop (Pa)	200 (sp. 48 - sp. 98)
Dust accumulation capacity (g/m²)	494
Average separation degree (%)	90,1
Limit temperature value (°C)	70
Recommended face velocity (m/s)	1,5
Relative humidity (%)	100
Available dimensions (mm)	From 100x100 to 1500x1000

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

PERFORMANCE

Front dimensions (mm)	Air flow rate (m^3/h) / Air velocity (m/s)									
	0,5		1		1,5		2		2,5	
	Th. 48 mm	Th. 98 mm	Th. 48 mm	Th. 98 mm	Th. 48 mm	Th. 98 mm	Th. 48 mm	Th. 98 mm	Th. 48 mm	Th. 98 mm
287 x 592	530	620	1060	1230	1590	1840	2120	2450	2640	3070
400 x 400	500	590	1000	1170	1490	1760	1990	2340	2480	2930
400 x 500	620	730	1240	1460	1850	2190	2470	2910	3080	3640
400 x 625	780	910	1560	1810	2330	2710	3110	3610	3880	4510
500 x 500	770	910	1540	1820	2310	2730	3080	3640	3850	4550
500 x 625	970	1130	1940	2260	2910	3380	3880	4510	4850	5640
592 x 592	1090	1270	2180	2530	3270	3790	4360	5060	5450	6320
ΔP (Pa)	21		50		64		95		124	

INSTALLATION

F12 filter installation can be done in 2 ways:

1) Flat arrangement, perpendicular to the airflow for low face velocity up to 1.5 m/s within suitable U-shaped guides
2) Housed in dedicated duct sub-frames (F23) for air face velocity up to 2.5 m/s.

MAINTENANCE

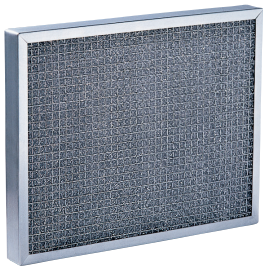
The filter must be regenerated or replaced when the recommended final pressure drop is reached or at the maximum indicated limit. This model has limited regenerability.

DISPOSAL

F12 filters are built with inert materials that, if not contaminated by toxic-harmful substances from use, can be disposed of as municipal solid waste.

F13 ZMA

Aluminium mesh metal filter cells



Product	F13 ZMA
Material	Galvanized steel sheet with electro-welded protection mesh
Filter media	Flat section aluminium wire

SPECIFICATIONS

Metal filter cells, model F13ZMA, consisting of a robust metal frame in galvanized steel sheet with 12x12 mesh electro-welded protection grid and flat-section aluminium wire filter media.

FUNCTIONS

F13ZMA metal filters are special products suitable for heavy-duty applications, such as filtration in environments with high oil percentages.

APPLICATIONS

Air filtration in environments with particularly aggressive atmospheres, anti-grease and anti-spark filtration, particularly suitable for the filtration of grease vapours and oil mists.

TECHNICAL FEATURES

Filter material	Flat section aluminium wire
Regenerability	Optimal
Flame behaviour	Non-flammable
Class EN 779	G2
Thickness (mm)	12, 22, 48
Initial pressure drop (Pa)	10 (th. 12)
	15 (th. 22)
	25 (th. 48)
Recommended final pressure drop (Pa)	150
Limit temperature value (°C)	200
Recommended face velocity (m/s)	2
Relative humidity (%)	100

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

PERFORMANCE

Front dimensions (mm)	Air flow rate (m^3/h) Air velocity (m/s) 0,5	1	1,5	2	2,5
287 x 592	310	615	920	1225	1530
400 x 400	300	575	865	1150	1440
400 x 500	360	720	1080	1440	1800
400 x 625	450	900	1350	1800	2250
500 x 500	450	900	1350	1800	2250
500 x 625	565	1125	1690	2250	2815
592 x 592	635	1265	1895	2525	3155
ΔP [(Pa) Sp. 22 mm	5	11	18	26	40
ΔP (Pa) Sp. 48 mm	8	15	23	32	47

INSTALLATION

F13 ZMA filter installation can be done in 2 ways:

1) Flat arrangement, perpendicular to the airflow for low face velocity up to 1.5 m/s within suitable U-shaped guides
2) Housed in dedicated duct sub-frames for air face velocity up to 2.5 m/s.

MAINTENANCE

F13 ZMA metal filters are filters of considerable strength and durability. The time for their replacement should be determined visually, while they require regeneration as they generally treat impure air dense with particles. Regeneration is carried out by washing with the addition of appropriate solvents. The filter media can be dried with hot air or compressed air.

DISPOSAL

F13 ZMA filters are built with inert materials that, if not contaminated by toxic-harmful substances from use, can be disposed of as municipal solid waste.

F14L

Labyrinth filters

Product	F14L
Material	Stainless Steel
Filter media	Stainless Steel

SPECIFICATIONS

Labyrinth filters, model F14L, consisting of a robust stainless steel metal frame supporting a stainless steel filter media made of various curved blades.

FUNCTIONS

The labyrinth filter construction forces the air through continuous changes of direction, so liquid particles separate from solid ones, characterized by greater mass, which due to their inertia collide with a second blade where they are captured.

APPLICATIONS

Anti-grease and anti-spark filtration, oil and paint mist separation, fume and vapour extraction in kitchens and cooking surfaces, grease vapour and oil mist filtration in the food industry (cooking areas).

TECHNICAL FEATURES

Filter material	Stainless Steel
Regenerability	Optimal
Flame behaviour	Non-flammable
Class EN 779	G2
Thickness (mm)	25
Initial pressure drop (Pa)	25
Recommended final pressure drop (Pa)	200
Average gravimetric arrestance (%)	75
Colorimetric efficiency (%)	<20
Limit temperature value (°C)	200
Recommended face velocity (m/s)	1,5
Relative humidity (%)	100

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

PERFORMANCE

Front dimensions (mm)	Air velocity (m^3/h) Speed (m/s) 0,5	1	1,5	2	2,5
400 x 400	290	575	875	1150	1440
400 x 500	360	720	1060	1800	1800
Δp (Pa) sp. 20 mm	12	45	105	180	245

INSTALLATION

F14L grease filters are installed inside the exhaust hoods of professional kitchens, directly above the cooking areas for immediate filtration and to keep the ducts clean. Installed in an inclined position, they serve to collect oil and grease and prevent dripping.

MAINTENANCE

F14L metal filters are filters of considerable strength and durability. The time for their replacement should be determined visually, while they require regeneration as they generally treat impure air dense with particles. Regeneration is carried out by washing with the addition of appropriate solvents. The filter media can be dried with hot air or compressed air.

DISPOSAL

F14L filters are built with inert materials that, if not contaminated by toxic-harmful substances from use, can be disposed of as municipal solid waste.

F15 ARA

Metal filter cells

Product	F15ARA
Material	Aluminium
Filter media	Various layers of variable density aluminium fibre with stretched aluminium sheet protection mesh

SPECIFICATIONS

F15ARA metal filter cells, consisting of a robust aluminium metal frame with aluminium expanded sheet protection grid and filter media in layers of variable-density aluminium fibre.

FUNCTIONS

F15ARA metal filters are special products suitable for heavy-duty applications. They constitute grease filter cells to be installed in the extraction hoods of professional kitchens.

APPLICATIONS

Air filtration in environments with particularly aggressive atmospheres, anti-grease and anti-spark filtration, oil mist separation, fume and vapour extraction in kitchens and cooking surfaces.

TECHNICAL FEATURES

Filter material	Aluminium wire with section flat
Regenerability	Optimal
Flame behaviour	Non-flammable
Class EN 779	G2
Thickness (mm)	12
Initial pressure drop (Pa)	10
Recommended final pressure drop (Pa)	150
Limit temperature value (°C)	200
Recommended face velocity (m/s)	2
Relative humidity (%)	100

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

PERFORMANCE

Front dimensions (mm)	Nominal air flow rate (m^3/h) Air velocity (m/s) 0,5	1	1,5	2	2,5
287 x 592	310	615	920	1225	1530
400 x 400	300	575	865	1150	1440
400 x 500	360	720	1080	1440	1800
400 x 625	450	900	1350	1800	2250
500 x 500	450	900	1350	1800	2250
500 x 625	565	1125	1690	2250	2815
592 x 592	635	1265	1895	2525	3155
Δp (Pa) th. 12 mm	5	11	18	26	40

* Other dimensions on request.

INSTALLATION

F15 ARA filter installation can be done in 2 ways:

1) Flat arrangement, perpendicular to the airflow for low face velocity up to 1.5 m/s within suitable U-shaped guides.
2) Housed in dedicated duct sub-frames for air face velocity up to 2.5 m/s.

MAINTENANCE

F15 metal filters are filters of considerable strength and durability. The time for their replacement should be determined visually, while they require regeneration as they generally treat impure air dense with particles. Regeneration is carried out by washing with the addition of appropriate solvents. The filter media can be dried with hot air or compressed air.

DISPOSAL

F15 filters are built with inert materials that, if not contaminated by toxic-harmful substances from use, can be disposed of as municipal solid waste.

F15 IRI

Metal filter cells

Product F15IRI

Material Stainless Steel

Filter media Various layers of micro-stretched sheet fibre with mesh stainless steel protection

SPECIFICATIONS

F15IRI metal filter cells, consisting of a robust stainless steel metal frame with stainless steel protection grid and filter media in layers of micro-expanded stainless steel sheet fibre.

FUNCTIONS

F15IRI metal filters are special products suitable for heavy-duty applications. They constitute grease filter cells to be installed in the extraction hoods of professional kitchens.

APPLICATIONS

Air filtration in environments with particularly aggressive atmospheres, anti-grease and anti-spark filtration, oil mist separation, fume and vapour extraction in kitchens and cooking surfaces.

TECHNICAL FEATURES

Filter material	Micro-stretched stainless steel sheet
Regenerability	Optimal
Flame behaviour	Non-flammable
Class EN 779	G2
Thickness (mm)	12, 22
Initial pressure drop (Pa)	10 (th. 12)
	15 (th. 22)
Recommended final pressure drop (Pa)	150
Limit temperature value (°C)	200
Recommended face velocity (m/s)	2
Relative humidity (%)	100

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

PERFORMANCE

Front dimensions (mm)	Nominal air flow rate (m^3/h) Air velocity (m/s)				
	0,5	1	1,5	2	2,5
287 x 592	225	340	450	675	900
400 x 400	290	435	580	865	1200
400 x 500	360	540	720	1080	1450
400 x 625	450	675	900	1350	1800
500 x 500	450	675	900	1350	1800
500 x 625	565	845	1125	1690	2250
592 x 592	630	945	1260	1890	2520
Δp (Pa) th. 12 mm	12	17	23	30	40
Δp (Pa) sp. 22 mm	15	20	27	35	46

INSTALLATION

F15 IRI filter installation can be done in 2 ways:

1) Flat arrangement, perpendicular to the airflow for low face velocity up to 1.5 m/s within suitable U-shaped guides.
2) Housed in dedicated duct sub-frames for air face velocity up to 2.5 m/s.

MAINTENANCE

F15 IRI metal filters are filters of considerable strength and durability. The time for their replacement should be determined visually, while they require regeneration as they generally treat impure air dense with particles. Regeneration is carried out by washing with the addition of appropriate solvents. The filter media can be dried with hot air or compressed air.

DISPOSAL

F15 IRI filters are built with inert materials that, if not contaminated by toxic-harmful substances from use, can be disposed of as municipal solid waste.

F15 IMI

Metal filter cells

Product	F15IMI
Material	Stainless Steel
Filter media	Steel wire with stainless steel protection mesh

SPECIFICATIONS

F15IMI metal filter cells, consisting of a robust stainless steel metal frame with stainless steel protection grid and filter media in layers of micro-expanded stainless steel sheet fibre.

FUNCTIONS

F15IMI metal filters are special products suitable for heavy-duty applications. They constitute grease filter cells to be installed in the extraction hoods of professional kitchens.

APPLICATIONS

Air filtration in environments with particularly aggressive atmospheres, anti-grease and anti-spark filtration, oil mist separation, fume and vapour extraction in kitchens and cooking surfaces.

TECHNICAL FEATURES

Filter material	**Stainless steel wire**
Regenerability	**Optimal**
Flame behaviour	**Non-flammable**
Class EN 779	**G2**
Thickness (mm)	**12, 22, 48**
Initial pressure drop (Pa)	**10 (th. 12)**
	15 (th. 22)
	25 (th. 48)
Recommended final pressure drop (Pa)	**150**
Limit temperature value (°C)	**200**
Recommended face velocity (m/s)	**2**
Relative humidity (%)	**100**

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

PERFORMANCE

Front dimensions (mm)	Nominal air flow rate (m^3/h) Air velocity (m/s) 0,5	1	1,5	2	2,5
287 x 592	225	340	450	675	900
400 x 400	290	435	580	865	1200
400 x 500	360	540	720	1080	1450
400 x 625	450	675	900	1350	1800
500 x 500	450	675	900	1350	1800
500 x 625	565	845	1125	1690	2250
592 x 592	630	945	1260	1890	2520
ΔP (Pa) Sp. 12 mm	12	17	23	30	40
ΔP (Pa) Sp. 22 mm	15	20	27	35	46

INSTALLATION

F15 IMI filter installation can be done in 2 ways:

1) Flat arrangement, perpendicular to the airflow for low face velocity up to 1.5 m/s within suitable U-shaped guides.
2) Housed in dedicated duct sub-frames for air face velocity up to 2.5 m/s.

MAINTENANCE

F15 IMI metal filters are filters of considerable strength and durability. The time for their replacement should be determined visually, while they require regeneration as they generally treat impure air dense with particles. Regeneration is carried out by washing with the addition of appropriate solvents. The filter media can be dried with hot air or compressed air.

DISPOSAL

F15 IMI filters are built with inert materials that, if not contaminated by toxic-harmful substances from use, can be disposed of as municipal solid waste.

MEDIUM AND FINE FILTERS

Filtration

Solutions for well-being of every breath

F17

Polyester bag filters

Product	F17
Material	Galvanized sheet metal
Filter media	Progressive density polyester fibre

SPECIFICATIONS

Polyester bag filters model F17, consisting of a robust galvanized sheet metal frame, wedge-shaped heat-sealed pockets and progressive density polyester fibre filter media.

FUNCTIONS

The F17 bag filter range covers a very wide performance field and is applicable for civil and industrial uses, thanks to the arrestance and efficiency values with very low pressure drops.

APPLICATIONS

Pre-filtration and main filtration in high airflow systems, coarse and fine dust filtration in civil or industrial applications, pre-filtration for semi-absolute filters, oil mists, used downstream of metal pre-filters, welding fumes.

SPECIAL VERSIONS

Models with fully incineratable plastic frame F17_E

TECHNICAL FEATURES

Filter material	**Polyester**
Regenerability	**No**
Flame behaviour	**Class F DIN 53438**
Class EN 779/ ISO 16890	**G4 (F17 40) / ISO coarse 65%**
	M5 (F17 50) / ISO ePM10 55%
Depth (mm)	**360, 500, 620**
Initial pressure drop (Pa)	**70 (F17 40) – 80 (F17 50)**
Recommended final pressure drop (Pa)	**250 (F17 40) – 450 (F17 50)**
Average gravimetric arrestance (%)	**90 (F17 40)**
Colorimetric efficiency (%)	**<20 (F17 40) – >50 (F17 50)**
Limit temperature value (°C)	**90**
Recommended face velocity (m/s)	**2**
Relative humidity (%)	**90**

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

PERFORMANCE

Front Dimensions (mm)	Nominal airflow (m^3/h)					
	F17 40			F17 50		
	Th. 360 mm	Th. 500 mm	Th. 620 mm	Th. 360 mm	Th. 500 mm	Th. 620 mm
287 x 592 3 Pockets	2080	2880	3570	2080	2880	3570
490 x 592 4 Pockets	2770	3840	4760	2770	3840	4760
592 x 592 6 Pockets	4150	5760	7140	4150	5760	7140

INSTALLATION

For correct operation the filter can be traversed by air in 2 ways.

1) Horizontal air flow: the filter is perpendicular to the flow and the pockets are arranged vertically.
2) Vertical air flow from top to bottom: the filter is perpendicular to the flow and the pockets face downwards.

Installation is carried out using dedicated sub-frames that allow simple maintenance and disassembly operations.

MAINTENANCE

This type of filter is not regenerable, therefore complete filter replacement is recommended when the recommended final pressure drop is reached.

DISPOSAL

In order to properly dispose of the filter, the recyclable steel frame must be separated from the filter media, allowing for the separate disposal of the different components.

F16 S

Synthetic microfibre bag filters

Product	F16 S
Material	Galvanized sheet metal
Filter media	Synthetic microfibre

SPECIFICATIONS

Synthetic microfibre bag filters, model F16S, consisting of a robust galvanized sheet metal frame, pockets supported and assembled together through special metal inserts that ensure perfect sealing and synthetic microfibre filter media.

FUNCTIONS

The F16S bag filter range covers a very wide performance field and is applicable for civil and industrial uses, thanks to its arrestance and efficiency values with very low pressure drops.

APPLICATIONS

Ventilation and air conditioning systems for fine dust and aerosol separation, pre-filtration for absolute filters, final filtration including suspended substances.

TECHNICAL FEATURES

	F16 S 60	F16 S 70	F16 S 90
Regenerability	No	No	No
Flame behaviour	Class UL2	Class UL2	Class UL2
Class EN 779	M6	F7	F9
ISO 16890	ePM10 75%	ePM1 50%	ePM1 85%
Thickness (mm)	380, 535, 636, 737, 915	380, 535, 636, 737, 915	380, 535, 636, 737, 915
Initial pressure drop (Pa)	105	120	170
Recommended final pressure drop (Pa)	450	450	450
Colorimetric efficiency (%)	65	85	95
Limit temperature value (°C)	90	90	90
Relative humidity (%)	100	100	100

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

TECHNICAL FEATURES

Dimensions (mm)	Pockets N.	Media development (m^2)	Air flow rate (m^3/h)	Speed (m/s)	Wt. (Kg)
287 x 592 x 380	6	2,70	1350	0,130	1,25
287 x 592 x 535	4	2,53	1300	0,142	1,27
287 x 592 x 636	4	3,01	1500	0,138	1,33
287 x 592 x 737	4	3,49	1700	0,135	1,39
287 x 592 x 915	4	4,33	2100	0,134	1,47
490 x 592 x 535	6	3,80	1900	0,138	1,81
490 x 592 x 636	6	4,52	2200	0,135	1,91
490 x 592 x 737	6	5,24	2500	0,132	1,99
490 x 592 x 915	6	6,50	3100	0,132	2,12
592 x 592 x 380	12	5,40	2650	0,130	2,18
592 x 592 x 535	8	5,07	2500	0,136	2,22
592 x 592 x 636	8	6,02	2900	0,133	2,35
592 x 592 x 737	8	6,98	3400	0,135	2,46
592 x 592 x 915	8	8,67	4200	0,134	2,63

INSTALLATION

For correct operation the filter can be traversed by air in 2 ways.

1) Horizontal air flow: the filter is perpendicular to the flow and the pockets are arranged vertically.
2) Vertical air flow from top to bottom: the filter is perpendicular to the flow and the pockets face downwards.

Installation is carried out using dedicated sub-frames that allow simple maintenance and disassembly operations.

MAINTENANCE

This type of filter is not regenerable, therefore complete filter replacement is recommended when the recommended final pressure drop is reached.

DISPOSAL

In order to properly dispose of the filter, the recyclable steel frame must be separated from the filter media, allowing for the separate disposal of the different components.

F18 4

Rigid pocket filters in microfibre

Filtration
Solutions for well-being of every breath

Product	F18 4
Material	Self-draining in MOPLEN, rigid PU sealing system
Filter media	Water-repellent glass microfibre, reinforced multilayer structure

SPECIFICATIONS

4-rigid pocket glass microfibre filters, model F18 4, consisting of a robust self-draining MOPLEN (PPE) frame, fire-retardant water-repellent glass microfibre filter media and reinforced multilayer structure. Class from M6 to F9. Rigid PU sealing system. Blue colour.

FUNCTIONS

Thanks to their reduced depth and higher mechanical resistance compared to limp pockets, used in civil and industrial systems they ensure longer life and greater installation economy combined with high reliability.

APPLICATIONS

Rigid pocket filters are used in civil and industrial systems where very high performance is required. They are suitable for use in electronics and food industries, laboratories, and as a second stage in hospital and pharmaceutical environments.

TECHNICAL FEATURES

	F18 4 65	F18 4 85	F18 4 95	F18 4 98
Regenerability	No	No	No	No
Colorimetric efficiency (%)	65	85	95	98
Class EN 779	M6	F7	F8	F9
ISO 16890	ePM10 75%	ePM1 50%	ePM1 60%	ePM1 85%
EUROVENT 4/5 Classification	EU6	EU7	EU8	EU9
Recommended final pressure drop (Pa)	600	600	600	600
Average efficiency, Em % 0.4 µm%	60≤Em<80	80≤Em<90	90≤Em<95	95≤Em
Limit temperature value (°C)	70	70	70	70
Relative humidity (%)	100	100	100	100

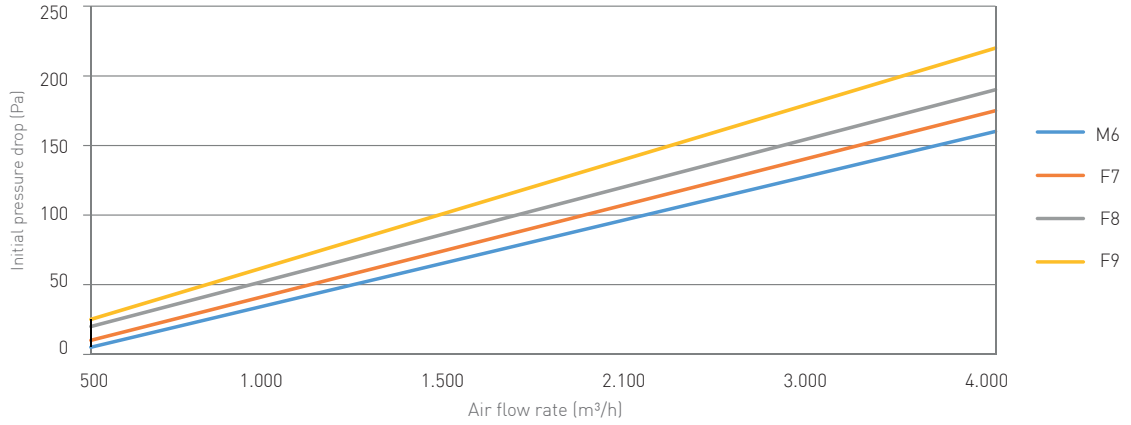
SERIE F18 4

Rigid pocket filters in microfibre

PERFORMANCE CURVES

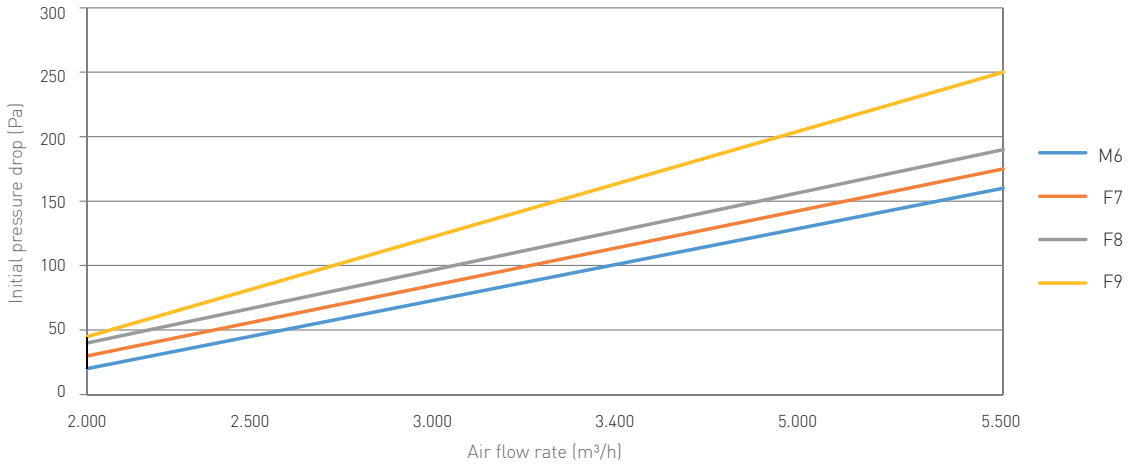
F 18 4

Dimensions 287 x 592 x 292 mm



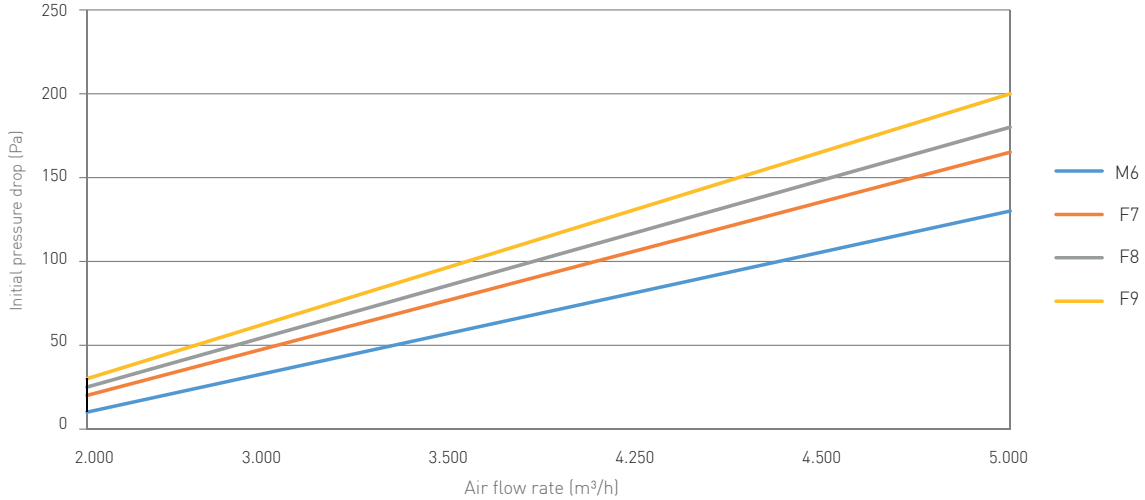
F 18 4

Dimensions 490 x 592 x 592 mm



F 18 4

Dimensions 592 x 592 x 292 mm



INSTALLATION

The installation of rigid pocket filters offers numerous alternatives compared to soft pocket filters. The rigid structure offers the air flow the entire available filtering surface; for this reason they can be installed in horizontal, vertical and in-duct positions using appropriate modules.

MAINTENANCE

This type of filter is not regenerable, therefore complete filter replacement is recommended when the recommended final pressure drop is reached.

DISPOSAL

Rigid pocket filters use materials that can be completely incinerated/disposed of without the emission of any toxic gas.

DIMENSIONS

Model	Dimensions W x H x D	Air flow rate	Surface filter	Pressure drop initial	Volume	Wt.
	mm	m^3/h	m^2	Pa	m^3	kg
F18 4 65	287 x 592 x 292	2100	9	100	0,05	2,5
	490 x 592 x 292	3400	14	110	0,08	3,5
	592 x 592 x 292	4250	18	80	0,10	5,0
F18 4 85	287 x 592 x 292	2100	9	105	0,05	2,5
	490 x 592 x 292	3400	14	135	0,08	3,5
	592 x 592 x 292	4250	18	100	0,10	5,0
F18 4 95	287 x 592 x 292	2100	9	130	0,05	2,5
	490 x 592 x 292	3400	14	150	0,08	3,5
	592 x 592 x 292	4250	18	110	0,10	5,0
F18 4 98	287 x 592 x 292	2100	9	145	0,05	2,5
	490 x 592 x 292	3400	14	165	0,08	3,5
	592 x 592 x 292	4250	18	120	0,10	5,0

F18 3

Rigid pocket filters in microfibre

Product F18 3

Material Self-draining in MOPLEN, rigid PU sealing system

Filter media Water-repellent glass microfibre, reinforced multilayer structure

SPECIFICATIONS

3-rigid pocket glass microfibre bag filters, model F18 3, consisting of a robust self-draining MOPLEN (PPE) frame, flame-retardant water-repellent glass microfibre filter media and reinforced multilayer structure. Class from M6 to F9. Rigid PU sealing system. Blue colour.

FUNCTIONS

Thanks to their reduced depth and higher mechanical resistance compared to limp pockets, used in civil and industrial systems they ensure longer life and greater installation economy combined with high reliability.

APPLICATIONS

Rigid pocket filters are used in civil and industrial systems where very high performance is required. They are suitable for use in electronics and food industries, laboratories, and as a second stage in hospital and pharmaceutical environments.

TECHNICAL FEATURES

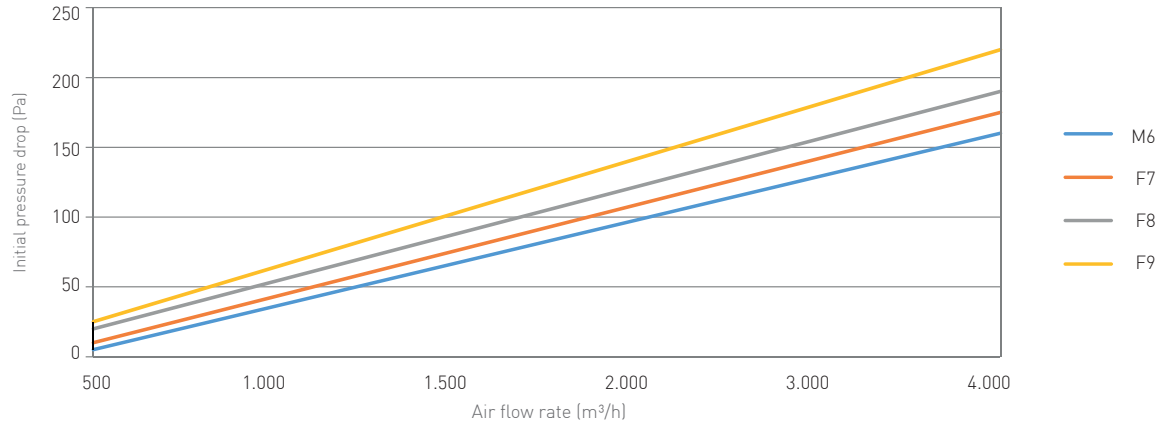
	F18 3 65	F18 3 85	F18 3 95	F18 3 98
Regenerability	No	No	No	No
Colorimetric efficiency (%)	65	85	95	98
Class EN 779	M6	F7	F8	F9
ISO 16890	ePM10 75%	ePM1 50%	ePM1 60%	ePM1 85%
EUROVENT 4/5 Classification	EU6	EU7	EU8	EU9
Recommended final pressure drop (Pa)	600	600	600	600
Average efficiency, Em % 0.4 µm%	60≤Em<80	80≤Em<90	90≤Em<95	95≤Em
Limit temperature value (°C)	70	70	70	70
Relative humidity (%)	100	100	100	100

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

PERFORMANCE CURVES

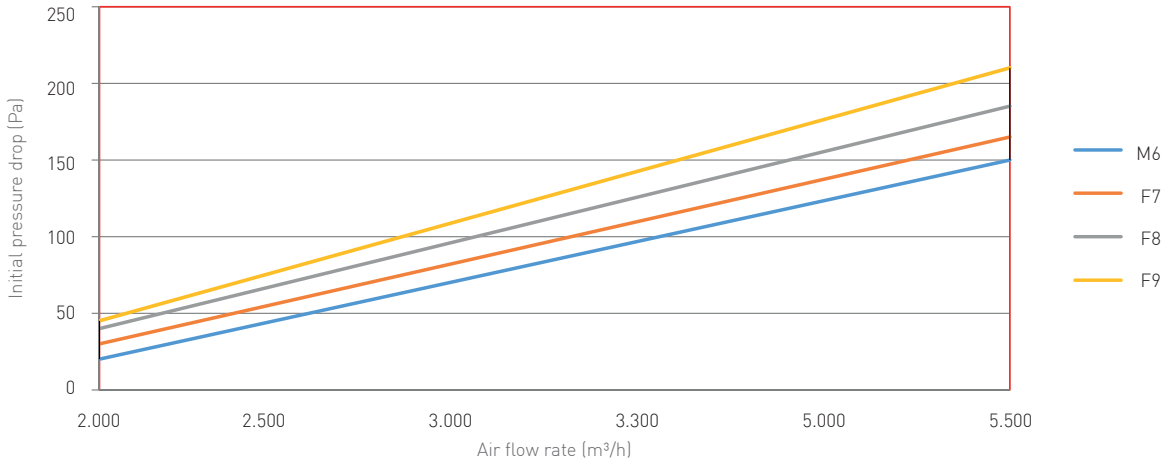
F 18 3

Dimensions 287 x 592 x 292 mm



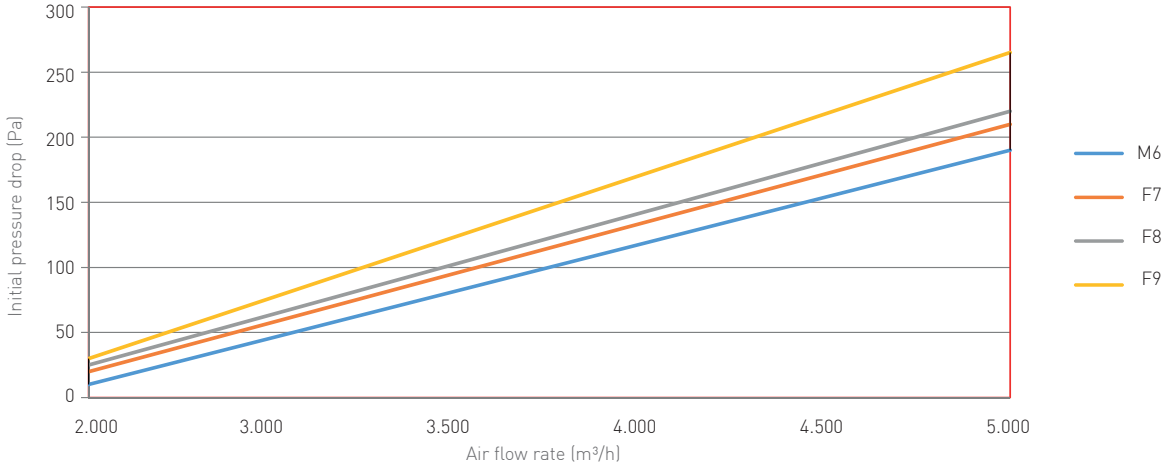
F 18 3

Dimensions 490 x 592 x 592 mm



F 18 3

Dimensions 592 x 592 x 292 mm



SERIE F18 3

Rigid pocket filters in microfibre

INSTALLATION

The installation of rigid pocket filters offers numerous alternatives compared to soft pocket filters. The rigid structure offers the air flow the entire available filtering surface; for this reason they can be installed in horizontal, vertical and in-duct positions using appropriate modules.

MAINTENANCE

This type of filter is not regenerable, therefore complete filter replacement is recommended when the recommended final pressure drop is reached.

DISPOSAL

Rigid pocket filters use materials that can be completely incinerated/disposed of without the emission of any toxic gas.

DIMENSIONS

Model	Dimensions W x H x D	Air flow rate	Surface filter	Pressure drop initial	Volume	Wt.
	mm	m^3/h	m^2	Pa	m^3	kg
F18 3 65	287 x 592 x 292	2000	7	100	0,05	2,6
	490 x 592 x 292	3300	11	100	0,08	3,7
	592 x 592 x 292	4000	14	100	0,10	4,0
F18 3 85	287 x 592 x 292	2000	7	115	0,05	2,6
	490 x 592 x 292	3300	11	120	0,08	3,7
	592 x 592 x 292	4000	14	120	0,10	4,0
F18 3 95	287 x 592 x 292	2000	7	125	0,05	2,6
	490 x 592 x 292	3300	11	130	0,08	3,7
	592 x 592 x 292	4000	14	130	0,10	4,0
F18 3 98	287 x 592 x 292	2000	7	145	0,05	2,6
	490 x 592 x 292	3300	11	155	0,08	3,7
	592 x 592 x 292	4000	14	150	0,10	4,0

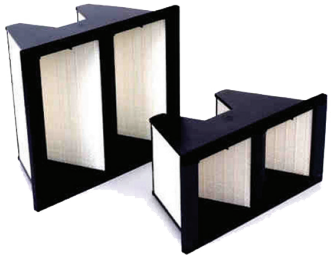
- Material ready for delivery, s.v.

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

F18 2

Rigid pocket filters in microfibre

Filtration
Solutions for well-being of every breath



Product	F18 2
Material	Self-draining in MOPLEN, rigid PU sealing system
Filter media	Water-repellent glass microfibre, reinforced multilayer structure

SPECIFICATIONS

2-rigid pocket glass microfibre bag filters, model F18 2, consisting of a robust self-draining MOPLEN (PPE) frame, flame-retardant water-repellent glass microfibre filter media and reinforced multilayer structure. Class from M6 to F9. Rigid PU sealing system. Black colour.

FUNCTIONS

Thanks to their reduced depth and higher mechanical resistance compared to limp pockets, used in civil and industrial systems they ensure longer life and greater installation economy combined with high reliability.

APPLICATIONS

Rigid pocket filters are used in civil and industrial systems where very high performance is required. They are suitable for use in electronics and food industries, laboratories, and as a second stage in hospital and pharmaceutical environments.

TECHNICAL FEATURES

	F18 2 65	F18 2 85	F18 2 95	F18 2 98
Regenerability	No	No	No	No
Colorimetric efficiency (%)	65	85	95	98
Class EN 779	M6	F7	F8	F9
ISO 16890	ePM10 75%	ePM1 50%	ePM1 60%	ePM1 85%
EUROVENT 4/5 Classification	EU6	EU7	EU8	EU9
Recommended final pressure drop (Pa)	600	600	600	600
Average efficiency, Em % 0.4 µm%	60≤Em<80	80≤Em<90	90≤Em<95	Em≥95
Limit temperature value (°C)	70	70	70	70
Relative humidity (%)	100	100	100	100

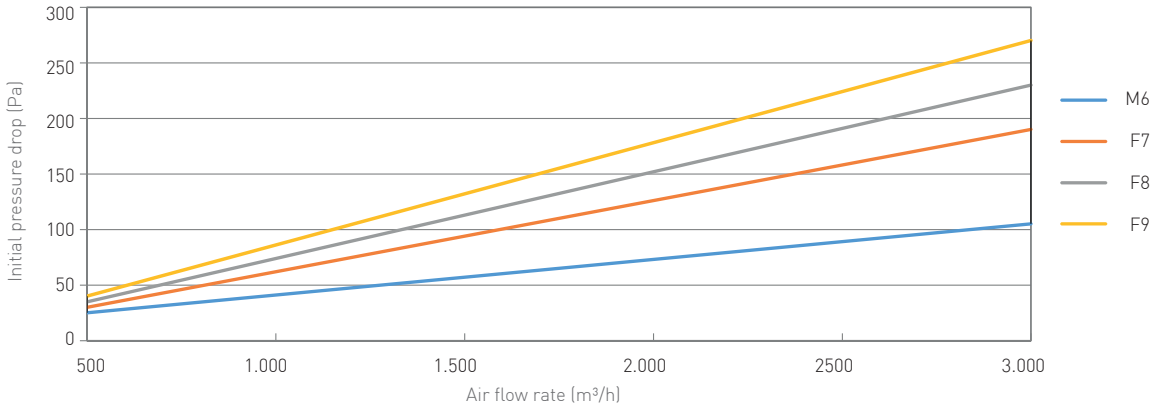
F18 2

Rigid pocket filters in microfibre

PERFORMANCE CURVES

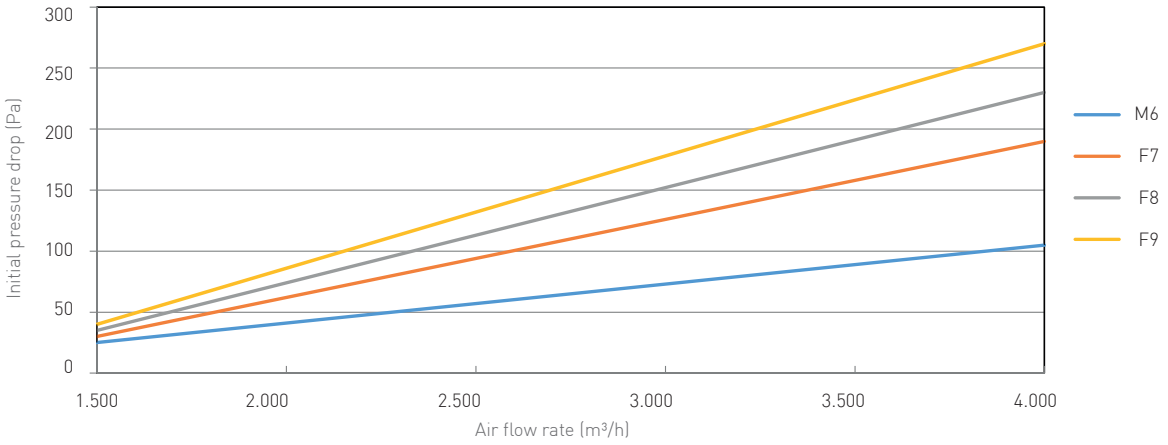
F 18 2

Dimensions 287 x 592 x 292 mm



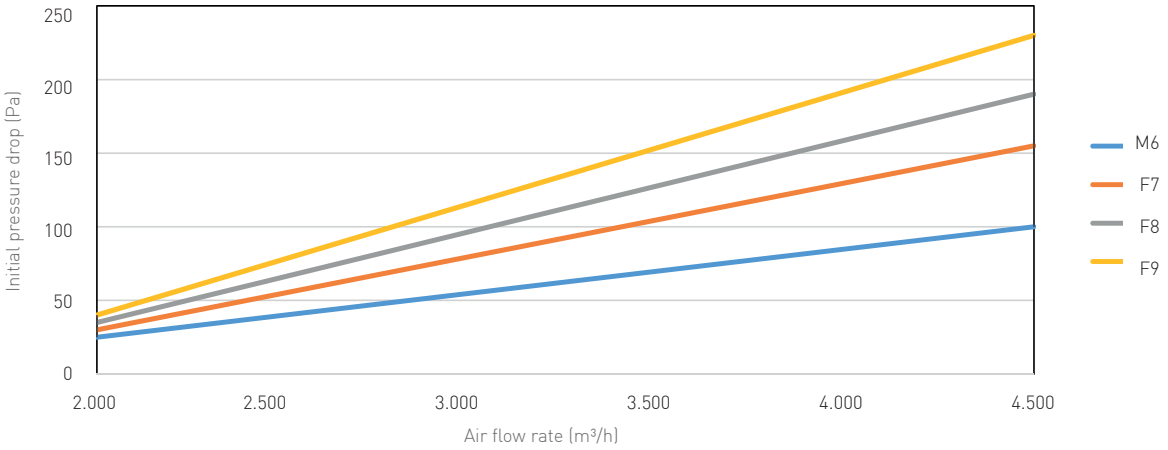
F 18 2

Dimensions 490 x 592 x 592 mm



F 18 2

Dimensions 592 x 592 x 292 mm



INSTALLATION

The installation of rigid pocket filters offers numerous alternatives compared to soft pocket filters. The rigid structure offers the air flow the entire available filtering surface; for this reason they can be installed in horizontal, vertical and in-duct positions using appropriate modules.

MAINTENANCE

This type of filter is not regenerable, therefore complete filter replacement is recommended when the recommended final pressure drop is reached.

DISPOSAL

Rigid pocket filters use materials that can be completely incinerated/disposed of without the emission of any toxic gas.

DIMENSIONS

Model	Dimensions W x H x D	Air flow rate	Surface filter	Pressure drop initial	Volume	Wt.
	mm	m^3/h	m^2	Pa	m^3	kg
F18 2 65	287 x 592 x 292	1700	4	62	0,05	2,2
	490 x 592 x 292	2830	8	62	0,08	2,7
	592 x 592 x 292	3400	10	62	0,10	4,5
F18 2 85	287 x 592 x 292	1700	4	110	0,05	2,2
	490 x 592 x 292	2830	8	110	0,08	2,7
	592 x 592 x 292	3400	10	110	0,10	4,5
F18 2 95	287 x 592 x 292	1700	4	136	0,05	2,2
	490 x 592 x 292	2830	8	136	0,08	2,7
	592 x 592 x 292	3400	10	136	0,10	4,5
F18 2 98	287 x 592 x 292	1700	4	160	0,05	2,2
	490 x 592 x 292	2830	8	160	0,08	2,7
	592 x 592 x 292	3400	10	160	0,10	4,5

F20

High efficiency filters

Product F20

Material Galvanized steel (TA)

Filter media Flame-retardant water-repellent glass microfibre, reinforced multilayer structure

SPECIFICATIONS

High efficiency filters, model F20, built with a robust galvanized steel frame (F20 TA), incineratable, and flame-retardant water-repellent glass microfibre filter media.

FUNCTIONS

Thanks to their reduced depth and high mechanical resistance, the F20 series high efficiency filters are used in civil and industrial systems, ensuring longer life and greater installation economy combined with high reliability.

APPLICATIONS

I high efficiency filters are used in civil and industrial systems where very high performance is required. They are suitable for use in electronics and food industries, laboratories, and as a second stage in hospital and pharmaceutical environments.

TECHNICAL FEATURES

	F20 65	F20 85	F20 95
Regenerability	No	No	No
Colorimetric efficiency (%)	65	85	95
Class EN 779	M6	F7	F8
ISO 16890	ePM10 75%	ePM1 50%	ePM1 85%
Initial pressure drop (Pa)	120	135	150
Recommended final pressure drop (Pa)	600	600	600
Maximum pressure drop (Pa)	1000	1000	1000
Limit temperature value (°C)	80	80	80
Relative humidity (%)	100	100	100

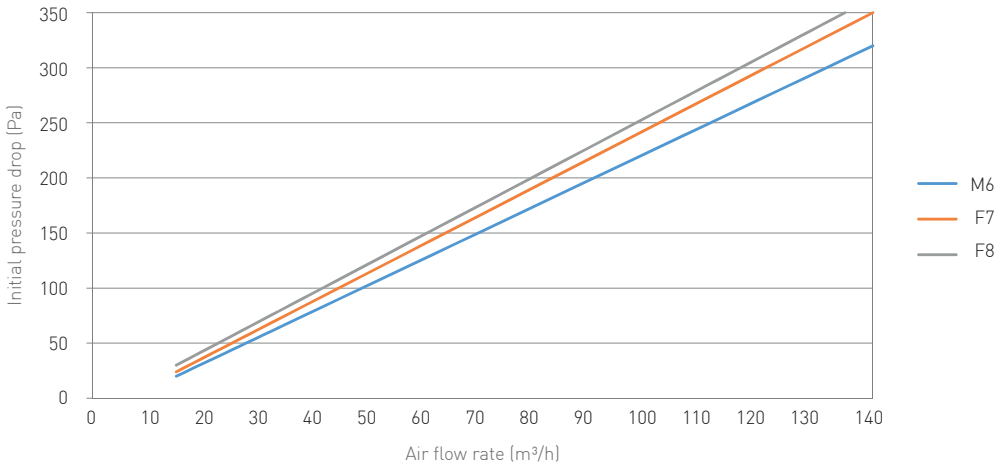
DIMENSIONS

Model	Dimensions W x H x D mm	Flow rate nominal m^3/h	Surface filter m^2
F20 TA Galvanized steel	287 x 592 x 292	1700	8,1
	305 x 305 x 292	870	4,0
	305 x 610 x 292	1750	9,0
	592 x 592 x 292	3400	18,0
	610 x 610 x 292	3500	19,5
	610 x 762 x 292	4350	24,0

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

PERFORMANCE CURVE

F20



INSTALLATION

The installation of high-efficiency filters is usually carried out in-duct, inside appropriate housings or within the units, and offers numerous alternatives compared to pocket filters. The rigid structure offers the air flow the entire available filtering surface; for this reason they can be installed in horizontal, vertical and in-duct positions using appropriate modules.

MAINTENANCE

This type of filter is not regenerable, therefore complete filter replacement is recommended when the recommended final pressure drop is reached.

DISPOSAL

High efficiency filters use materials that can be completely incinerated/disposed of without the emission of any toxic gas.

ABSOLUTE FILTERS

Filtration

Solutions for well-being of every breath

F21

High efficiency filters (E10, E12)
Absolute filters (H13, H14)

Product F21

Filter media simple glass fibre,
water-repellent and with reinforced structure
multilayer. Separators: thermoplastic wire
Gasket: black expanded PU without joints

Frame Galvanized Steel

CONSTRUCTION FEATURES
Filter material: plain glass fibre, water-repellent and reinforced multilayer structure.
Separators: thermoplastic wire.
Frame: galvanized steel. Gasket: black expanded PU without joints.

APPLICATIONS
Ventilation and air conditioning systems and ultra-high efficiency final filtration in the electronic, pharmaceutical, photographic industries and painting systems; environments with controlled atmosphere and high degree of sterilization, such as operating rooms and analysis laboratories.

TECHNICAL FEATURES

	F21
Maximum operating temperature	80°
Maximum operating relative humidity	100%
Recommended final pressure drop	2xPa initial
Maximum final pressure drop	800 Pa
Maximum air velocity	1,8 m/s

INSTALLATION

Regardless of the installation position, F21 absolute filters always allow the use of the entire filter surface. Installation of suitable high efficiency pre-filters is recommended to increase their operating life. Frames and housings are available for correct and easy installation.

MAINTENANCE

This type of filter is not regenerable, therefore complete filter replacement is recommended when the recommended final pressure drop is reached.

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

DIMENSIONS

Efficiency E10 Depth 292 EN1822 E ≤ 85% MPPS - ΔP = 115 Pa		
Dimensions	Nominal Flow Rate m^3/h	Filter Surface m^2
610x305x292	1015	9,2
610x610x292	2170	19,8

Efficiency E12 Depth 292 EN1822 E ≤ 99.5% MPPS - ΔP = 140 Pa		
Dimensions	Nominal Flow Rate m^3/h	Filter Surface m^2
610x305x292	1015	9,2
610x610x292	2170	19,8

Efficiency H13 Depth 150 EN1822 E ≤ 99.95% MPPS - ΔP = 250 Pa		
Dimensions	Nominal Flow Rate m^3/h	Filter Surface m^2
305x305x150	310	2,7
457x457x150	750	6,1
592x592x150	1230	10,5
610x305x150	664	5,5
610x610x150	1190	10,2

Efficiency H13 Depth 292 EN1822 E ≤ 99.95% MPPS - ΔP = 250 Pa		
Dimensions	Nominal Flow Rate m^3/h	Filter Surface m^2
287x592x292	1040	9,0
305x305x292	520	4,9
592x592x292	1975	18,7
610x305x292	1060	9,2
610x457x292	1670	1,0
610x610x292	2250	19,8
610x762x292	2755	24,8

Efficiency H14 Depth 150 EN1822 E ≤99.995% MPPS - ΔP = 280 Pa		
Dimensions	Nominal Flow Rate m^3/h	Filter Surface m^2
305x305x150	310	2,7
305x610x150	664	5,5
457x457x150	750	6,1
592x592x150	1230	10,5

F21

High efficiency filters (E10, E12)
Absolute filters (H13, H14)

Efficiency H14 Depth 292 EN1822 E ≤ 99.995% MPPS - ΔP = 280 Pa		
Dimensions	Nominal Flow Rate m^3/h	Filter Surface m^2
287x592x292	1040	9,0
305x305x292	520	4,9
305x610x292	1060	9,2
457x457x292	1160	11,1
457x610x292	1670	15,0
592x592x292	1975	18,7
610x610x292	2250	19,8
610x762x292	2755	24,8

FPD

Polyhedral absolute filters for turbulent flows

Filtration
Solutions for well-being of every breath

Product	FPD
Material	Galvanized steel (TA)
Filter media	Flame-retardant water-repellent glass microfibre, reinforced multilayer structure

SPECIFICATIONS
Multi-dihedral absolute filters for turbulent flows, model FPD, built with a robust galvanized steel (or stainless steel) frame, fully incineratable, and flame-retardant water-repellent glass microfibre filter media with special sealing gasket.

FUNCTIONS
They are used, after suitable pre-filters, to obtain high efficiency filtration; thanks to their build quality they have low pressure drops, high dust holding capacity, strong mechanical resistance and long life.

APPLICATIONS
This type of filters has various applications such as final stage in air handling units, protection stage for ultra-high efficiency filters, in canisters to ensure emission levels in exhaust air and inside housings in controlled contamination rooms (pharmaceutical, nuclear, electronic, food industries, operating theatres and analysis laboratories).

TECHNICAL FEATURES

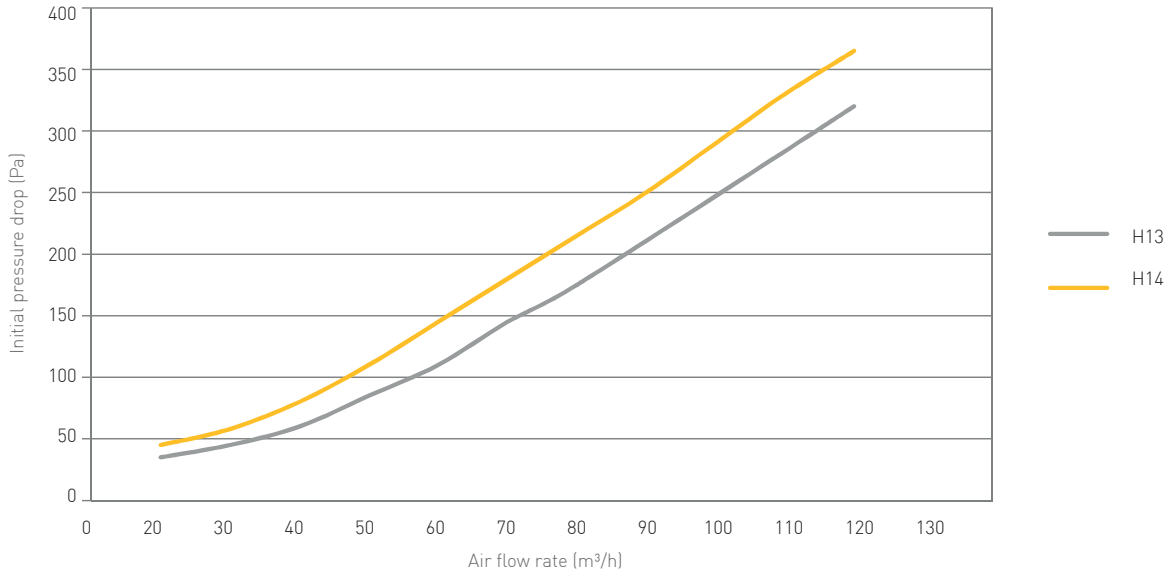
	FPD 13	FPD 14
Regenerability	No	No
Efficiency on 0.3 m DOP (%)	≥99,95	≥99,995
Class EN 1822	H13	H14
Initial pressure drop (Pa)	250	300
Recommended final pressure drop (Pa)	600	600
Maximum pressure drop (Pa)	1000	1000
Limit temperature value (°C)	80	80
Relative humidity (%)	100	100

FPD

Polyhedral absolute filters for turbulent flows

PERFORMANCE CURVE

FPD



INSTALLATION

Regardless of the installation position, FPD absolute filters always allow the use of the entire filter surface. Installation of suitable high efficiency pre-filters is recommended to increase their operating life. Frames and housings are available for correct and easy installation.

MAINTENANCE

This type of filter is not regenerable, therefore complete filter replacement is recommended when the recommended final pressure drop is reached.

DISPOSAL

High efficiency filters use materials that can be completely incinerated/disposed of without the emission of any toxic gas.

DIMENSIONS

Dimensions W x H x D mm	Nominal flow rate m^3/h	Surface m^2
305 x 305 x 292	1000	10
305 x 610 x 292	2000	19
287 x 592 x 292	1800	18
457 x 610 x 292	3000	25
490 x 592 x 292	2450	25
592 x 592 x 292	3000	30
610 x 610 x 292	4000	40
610 x 762 x 292	4000	40

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

F18H

Rigid pocket microfibre absolute filters

Filtration
Solutions for well-being of every breath

Product	F18H
Material	Self-draining in MOPLEN, rigid PU sealing system
Filter media	Water-repellent glass microfibre, reinforced multilayer structure

SPECIFICATIONS
High efficiency turbulent flow bag filters, model F18H, consisting of a robust self-draining MOPLEN (PPE) frame, flame-retardant water-repellent glass microfibre filter media and reinforced multilayer structure. Blue colour.

FUNCTIONS
They are used, after suitable pre-filters, to obtain high efficiency filtration; thanks to their build quality they have low pressure drops, high dust holding capacity, strong mechanical resistance and long life.

APPLICATIONS
This type of filter has various applications such as final stage in air handling units, protection stage for ultra-high efficiency filters, in canisters to ensure emission levels in exhaust air and in housings in controlled contamination rooms.

TECHNICAL FEATURES

	F18H 13	F8H 14
Regenerability	No	No
Class EN 1822	H13	H14
EUROVENT 4/4 classification	EU 13	EU 14
Recommended final pressure drop (Pa)	600	600
Maximum pressure drop (Pa)	1000	1000
Overall efficiency % for MPPS particles (Pa)	≥99,95	≥99,995
Limit temperature value (°C)	70	70
Relative humidity (%)	100	100

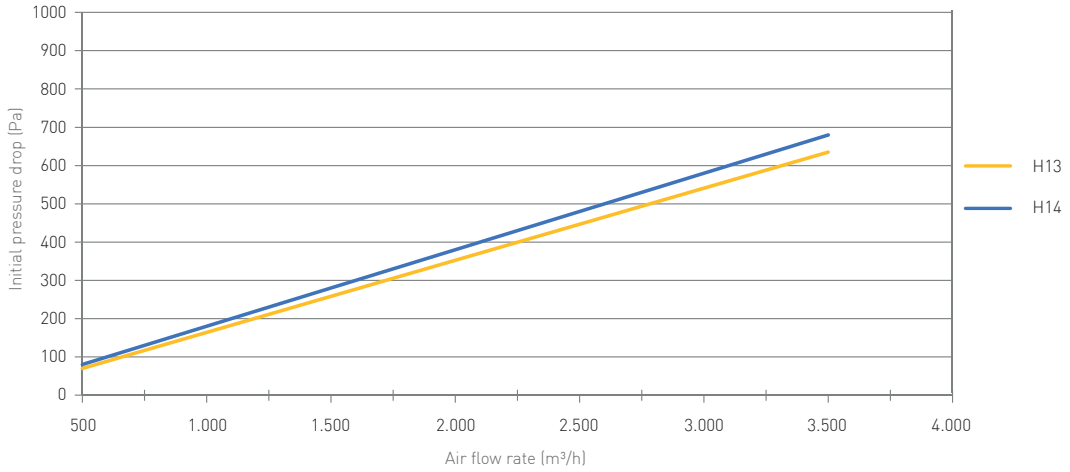
F18H

Rigid pocket filters in microfibre

PERFORMANCE CURVES

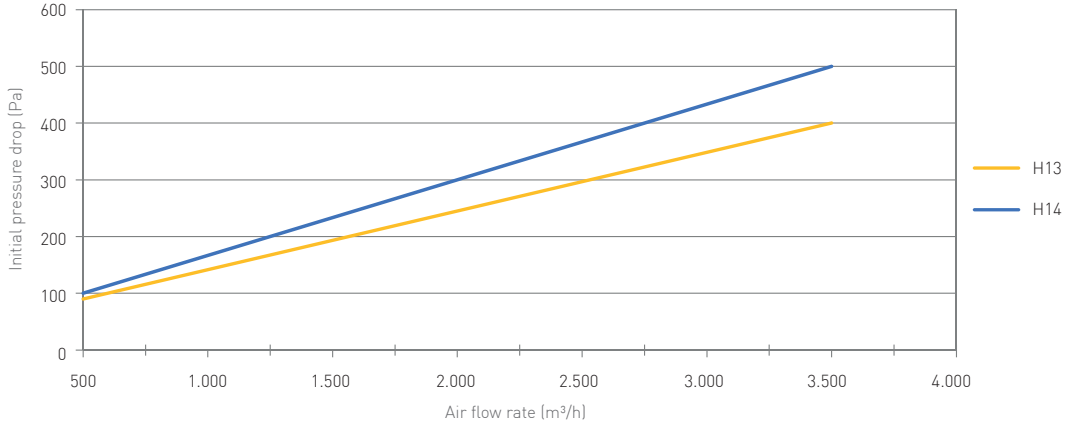
F 18H

Dimensions 287 x 592 x 292 mm



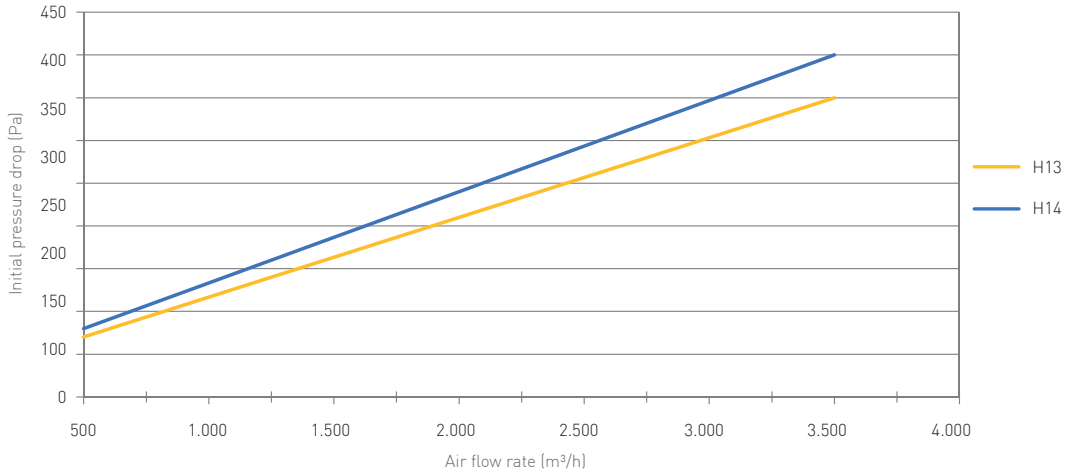
F 18H

Dimensions 402 x 592 x 292 mm



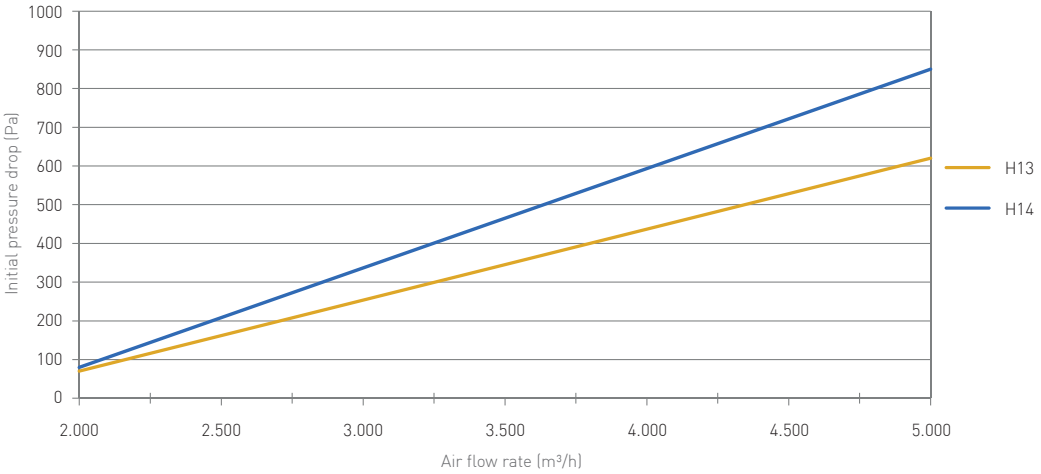
F 18H

Dimensions 490 x 592 x 292 mm



F 18H

Dimensions 592 x 592 x 292 mm



INSTALLATION

Regardless of the installation position, F18H absolute filters always allow the use of the entire filter surface. Installation of suitable high efficiency pre-filters is recommended to increase their operating life. Frames and housings are available for correct and easy installation.

MAINTENANCE

This type of filter is not regenerable, therefore complete filter replacement is recommended when the recommended final pressure drop is reached.

DISPOSAL

High efficiency filters use materials that can be completely incinerated/disposed of without the emission of any toxic gas.

DIMENSIONS

Dimensions W x H x D	Flow rate nominal		Surface filter	Pressure drop initial		Volume	Wt.
	H13	H14		H13	H14		
mm	m^3/h	m^3/h	m^2	Pa	Pa	m^3	kg
287 x 592 x 292	1500	1500	9	260	270	0,05	3,0
402 x 592 x 292	1750	1250	12	220	200	0,07	4,0
490 x 592 x 292	2000	1500	14	210	180	0,08	5,5
592 x 592 x 292	3000	2500	18	260	200	0,1	3,8

FA7 - FA8

Absolute filters for laminar flows

Product	FA7 e FA8
Material	Anodized extruded aluminium
Filter media	Flame-retardant water-repellent glass microfibre, reinforced multilayer structure

SPECIFICATIONS

Absolute filters for laminar flows, model FA7 (D. 68 mm) and FA8 (D. 78 mm), built with anodized extruded aluminium frame and flame-retardant water-repellent glass microfibre filter media with multilayer structure.

FUNCTIONS

Terminal stage of lower efficiency filter banks.

APPLICATIONS

FA7 and FA8 series absolute filters are used in controlled contamination environments with unidirectional flows. They allow the creation of filter ceilings or walls.

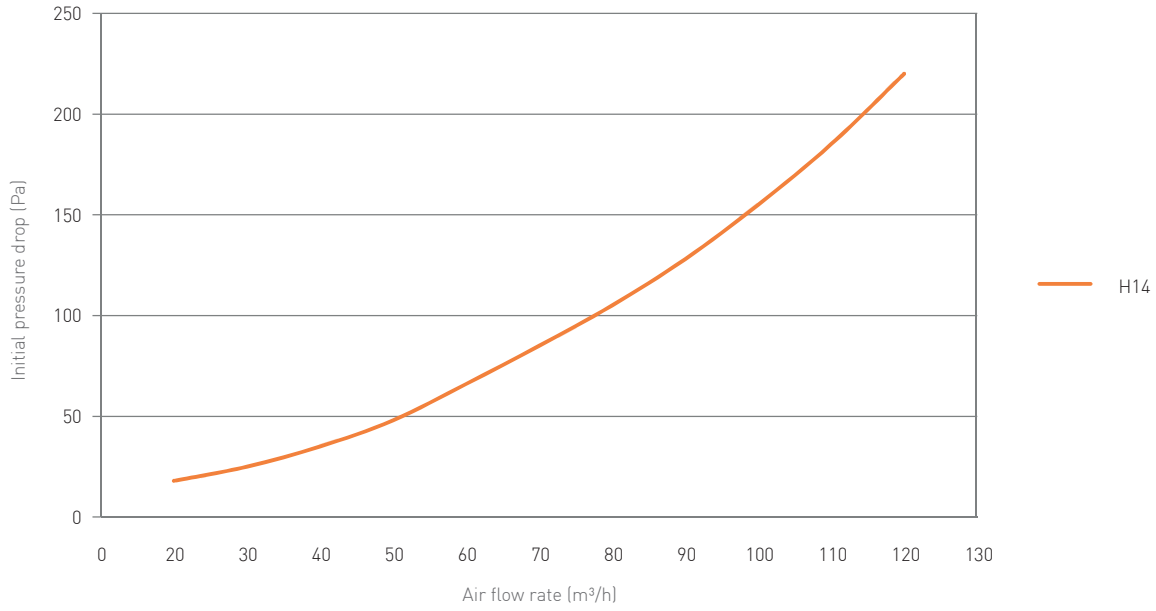
TECHNICAL CHARACTERISTICS FA7 – FA8

Regenerability	**No**
Efficiency on 0.3 m DOP according to EUROVENT 4/4	**≥99,995**
Class EN 1822	**H14**
Initial pressure drop	**110**
Recommended final pressure drop (Pa)	**600**
Maximum pressure drop (Pa)	**1000**
Limit temperature value (°C)	**80**
Relative humidity (%)	**100**

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

PERFORMANCE CURVE

FPA7- FA8



INSTALLATION

FA7 and FA8 model filter installation takes place within dedicated terminals or in dedicated housings in case of exhaust air contaminated by toxic substances.

MAINTENANCE

This type of filter is not regenerable, therefore complete filter replacement is recommended when the recommended final pressure drop is reached.

DISPOSAL

FA7 and FA8 filters use materials that can be completely incinerated/disposed of without the emission of any toxic gas.

FA7 - FA8

Absolute filters for laminar flows

FA7 DIMENSIONS

Model	Dimensions W x H x D mm	Flow rate nominal m^3/h	Surface filter m^2
FA7	305 x 305 x 68	150	2,8
	305 x 610 x 68	300	5,5
	457 x 305 x 68	225	4,2
	457 x 457 x 68	335	6,3
	457 x 610 x 68	450	8,4
	545 x 545 x 68	430	8,0
	545 x 1155 x 68	900	17,0
	610 x 610 x 68	600	11,3
	610 x 915 x 68	900	16,9
	610 x 1219 x 68	1200	22,5

FA8 DIMENSIONS

Model	Dimensions W x H x D mm	Flow rate nominal m^3/h	Surface filter m^2
FA8	305 x 305 x 78	150	3,3
	305 x 610 x 78	300	6,7
	457 x 305 x 78	225	5,0
	457 x 457 x 78	335	7,5
	457 x 610 x 78	450	10,0
	545 x 545 x 78	430	10,0
	545 x 1155 x 78	910	21,0
	610 x 610 x 78	600	13,5
	610 x 915 x 78	900	17,0
	610 x 1219 x 78	1200	22,0

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

CLEANROOM SYSTEMS

Filtration

Solutions for well-being of every breath

PF-PFL

Filter ceilings with and without scialytic lamp

Product

PF – PFL
PF: not prepared for surgical light
PFL: prepared for surgical light

Description

Filter ceiling in painted steel RAL 9010, consisting of a frame for false ceilings for hospital operating rooms, set of high efficiency filters and diffusion grilles.

Range

9 standard sizes, airflow from 2,350 m³/h to 12,400 m³/h. Standard height 450mm, high efficiency filters H14 or U15 depth 68mm

SPECIFICATIONS
Filter ceilings, PF/PFL series,
which have a simple and reliable filter fastening system. Thanks to the diffusion grids, which generate a unidirectional and uniform flow over the entire surface, an anti-inductive screen is created in compliance with the NFS 90-351 standard. The filtering ceiling diffuser consists of a suspended ceiling frame for hospital operating theatres. The frame can be either in stainless steel or in the painted version and is accompanied by a set of high-efficiency filters (H14) and diffusion grids that guarantee a unidirectional flow above the work area.

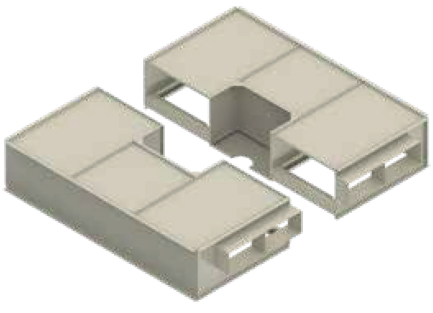
FUNCTIONS
Filter ceilings for the creation of laminar flow systems for operating rooms and cleanrooms.

CONSTRUCTION
Frame
- Painted steel RAL 9010
- Pressure tap (Ø 7 mm) on surgical light (PFL version)
- 25 mm flange on the lower part for false ceiling installation
- Steel angle bracket with holes (Ø 10 mm every 50 cm) on the upper part for ceiling mounting
- Rigid connection for air inlet on the side (height 200 mm - depth 150 mm)

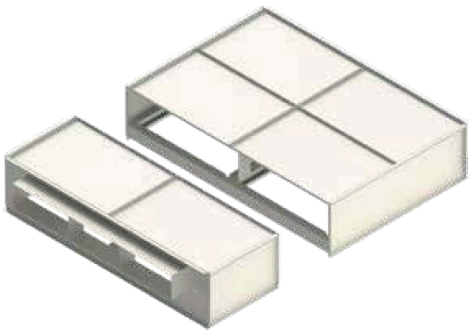
Filter holding frame
- Painted steel RAL 9010
- Self-supporting frame in the lower part where the filters are positioned
- Perfectly sealed contact interface, with no possibility of leakage
- 4 or 6 stainless steel fastening elements per filter
- 4 inserts for fixing meshes or covers

High efficiency filters
- Filter sizes: 3.6 - 6.6 - 9.6 and 12.6
- Efficiency: H14 or U15

PFL



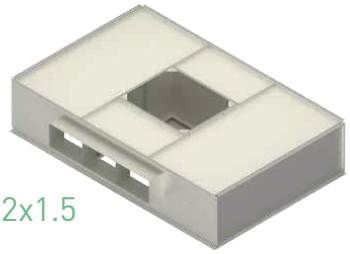
PF



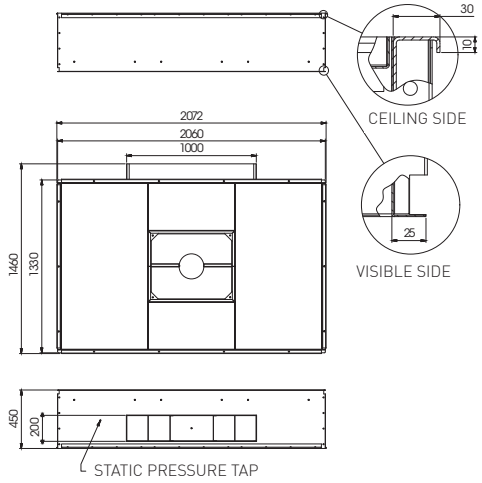
Diffusion grilles
- Steel sheet (open/closed: 40%) painted white RAL 9010
- Unidirectional air diffusion, without flow interruptions according to NFS 90-351

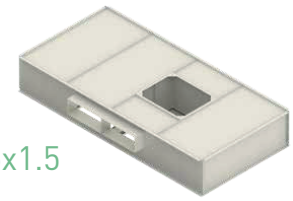
SURGICAL LIGHT HOUSING - PFL VERSION
Steel painted RAL 9010
At the centre of the frame.
Dedicated, airtight section
Pressure tap via plastic tube; allows the integrity test or the evaluation of filter clogging from inside the room
Easy access to the surgical light via 2 removable airtight plates

DIMENSIONAL DRAWINGS

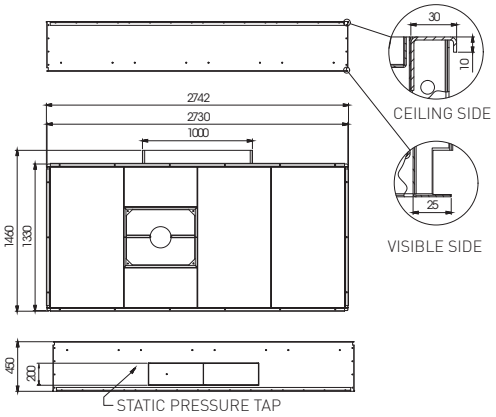


PFL 2x1.5





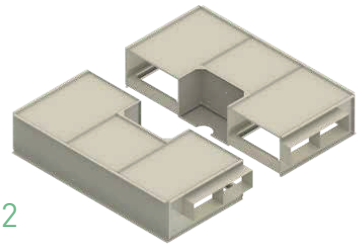
PFL 2.5x1.5

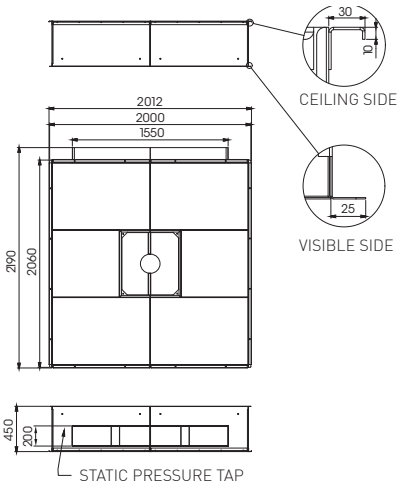


PF-PFL

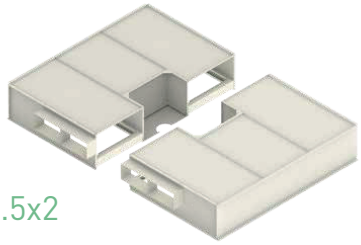
Filter ceilings with and without scialytic lamp

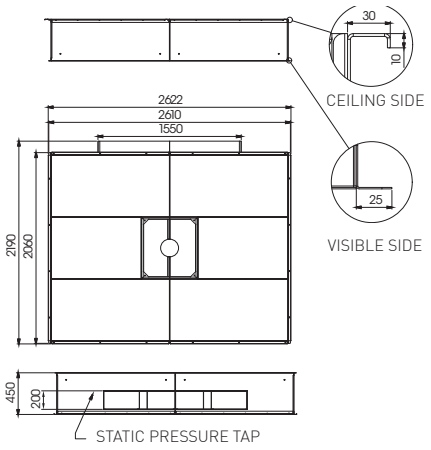
PFL 2x2



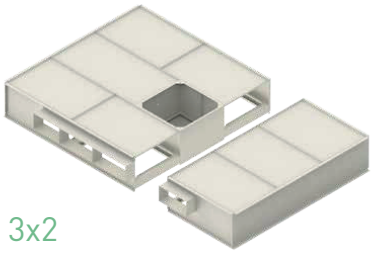


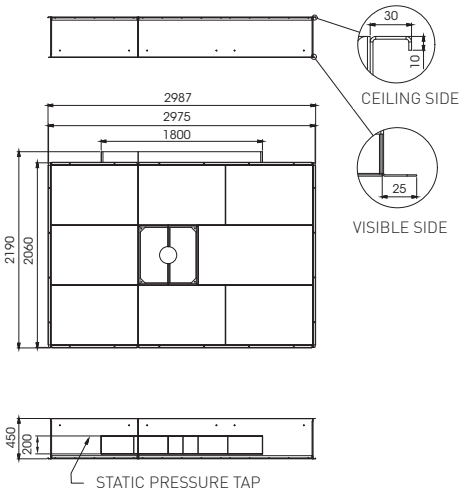
PFL 2.5x2



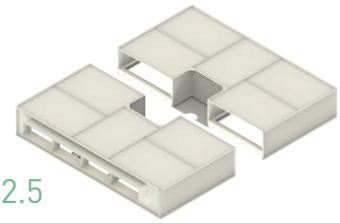


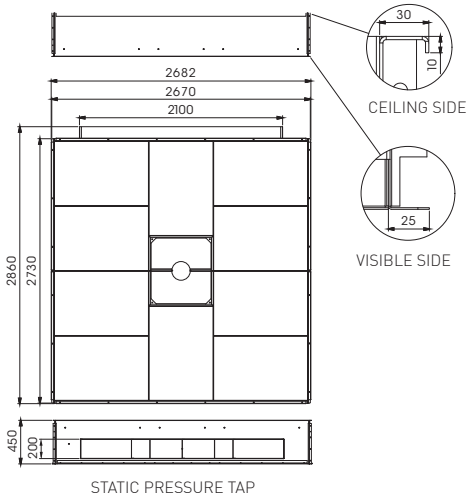
PFL 3x2



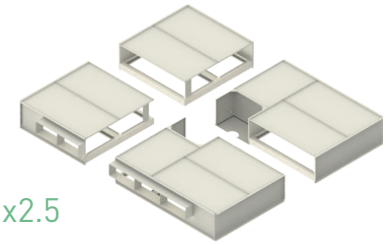


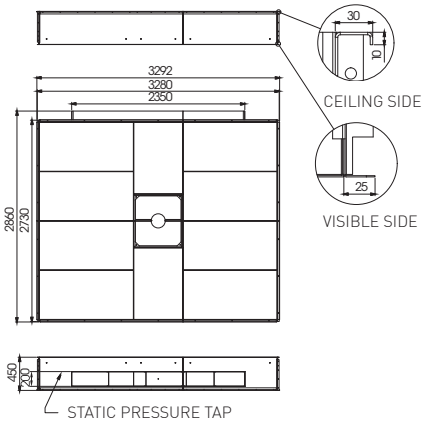
PFL 2.5x2.5



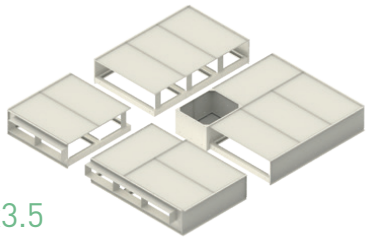


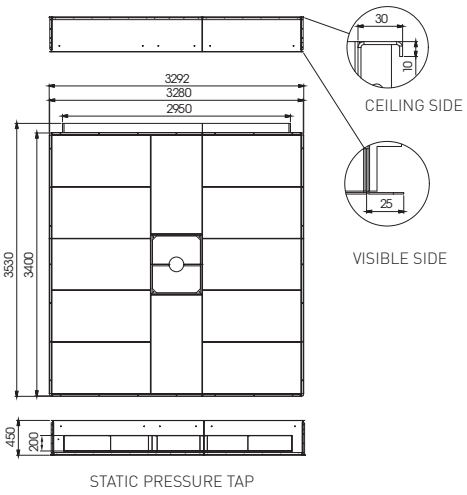
PFL 3x2.5



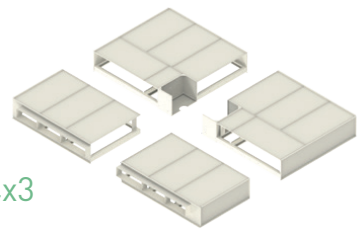


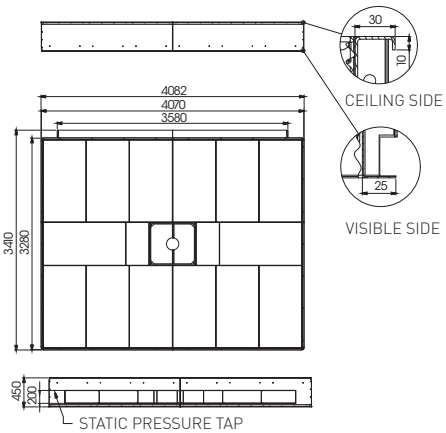
PFL 3x3.5



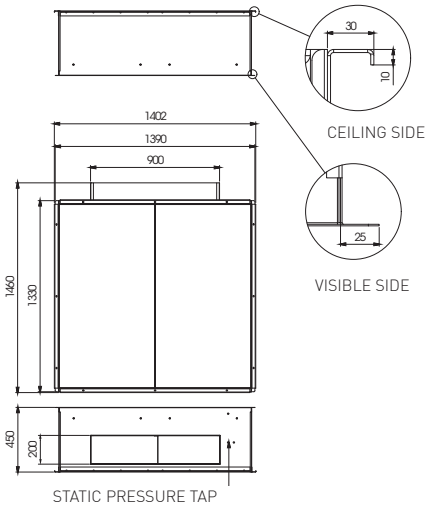


PFL 4x3





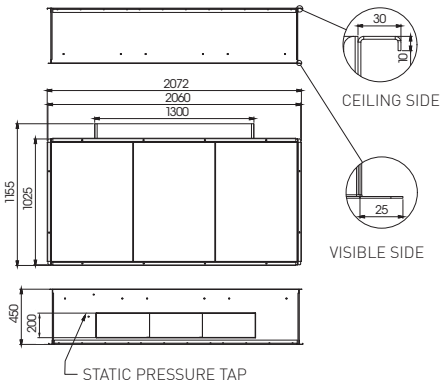
PF 1.5x1.5



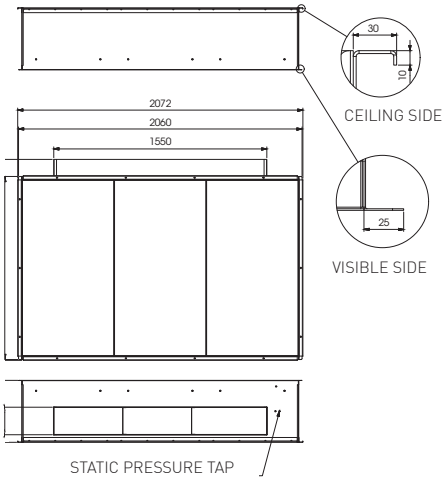
PF-PFL

Filter ceilings with and without scialytic lamp

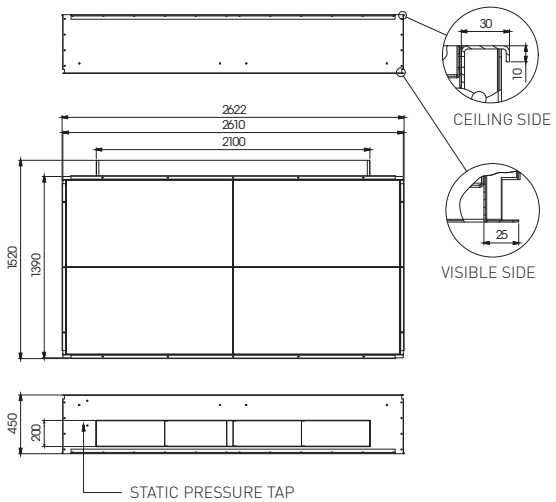
PFL 2x1



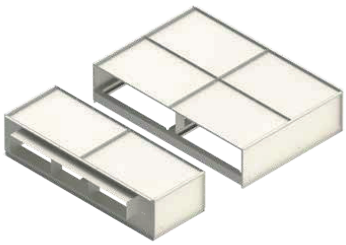
PF 2x1.5

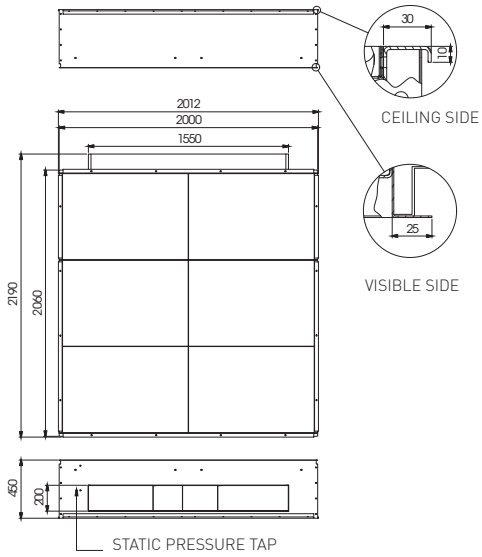


PFL 2.5x1,5

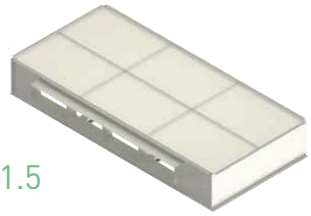


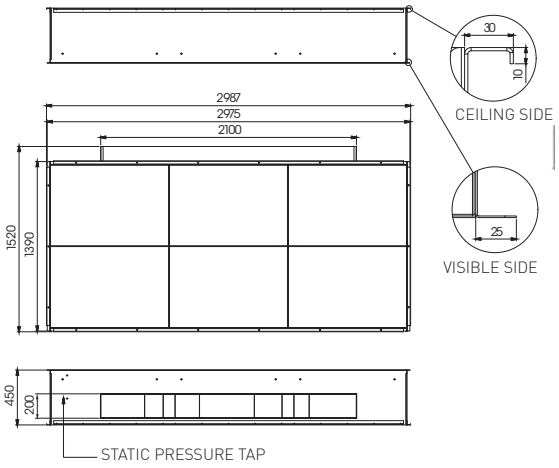
PFL 2x2



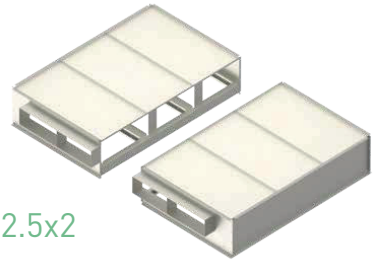


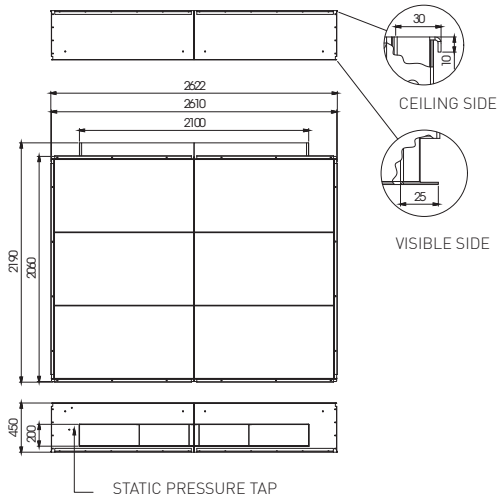
PF 3x1.5



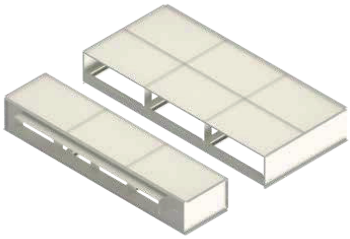


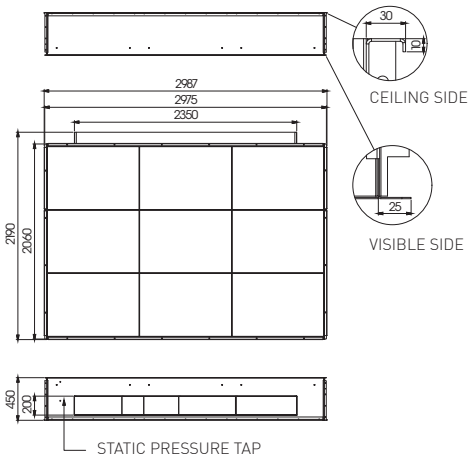
PF 2.5x2



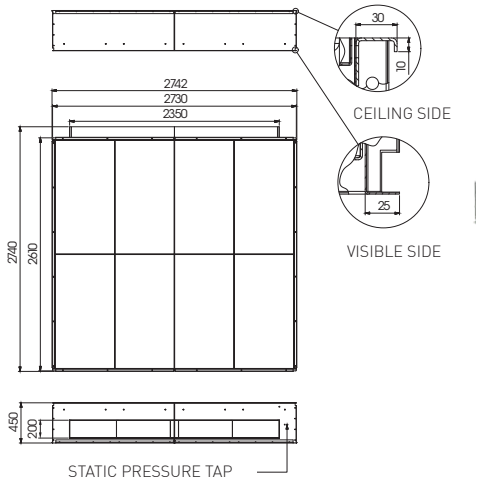


PF 3x2





PF 2.5x2.5



PF-PFL

Filter ceilings with and without scialytic lamp

DIMENSIONAL

PFL

Size	Dimensions (mm)	Connection dimensions (mm)	Ø lamp scialytic (mm)	Ø maximum for lamp (mm)	Wt. (kg)	N° filters
2 x 1.5	2060x1330x450	1000x200x150	190	490	98	(2x) 1219x610 + (2x) 610x305
2.5 x 1.5	2730x1330x450	1000x200x150	190	490	120	(3x) 1219x610 + (2x) 610x305
2 x 2	2060x2000x450	1550x200x150	190	560	134	(4x) 915x610 + (2x) 610x610
2.5 x 2	2610x2060x450	1550x200x150	190	560	160	(4x) 1219x610 + (2x) 919x610
3 x 2	2975x2060x450	1800x200x150	190	620	184	(7x) 915x610 + (1x) 1219x610
2.5 x 2.5	2730X2670X450	2100x200x150	190	620	210	(10x) 915x610
3 x 2.5	3280x2730x450	2350x200x150	190	620	244	(8x) 1219x610 + (2x) 915x610
3.5 x 3	3400x3280x450	2950x200x150	190	620	296	(12x) 1219x610
4 x 3	4070x3280x450	3580x200x150	190	620	352	(14x) 1219x610 + (2x) 610x305

Size	Approximate dimensions and weights per section (mm-kg)
2 x 1.5	2060x1330x450 [98 kg]
2.5 x 1.5	2730x1330x450 [120 kg]
2 x 2	(2x) 2190x1006x450 [67 kg]
2.5 x 2	(2x) 2190x1311x450 [80 kg]
3 x 2	2190x1981x450 [120 kg] + 2190x1006x450 [64 kg]
2.5 x 2.5	2682x1489x450 [107 kg] + 2682x1389x450 [103 kg]
3 x 2.5	1981x1489x450 [75 kg] + 1981x1389x450 [71 kg] + 1489x1311x450 [50 kg] + 1389x1311x450 [48 kg]
3.5 x 3	2099x1981x450 [105 kg] + 2041x1311x450 [70 kg] + 1981x1489x450 [70 kg] + 1489x1311x450 [51 kg]
4 x 3	(2x) 2041x1981x450 [104 kg] + (2x) 2041x1429x450 [72 kg]

PF

Size	Dimensions (mm)	Connection dimensions (mm)	Wt. (kg)	N° filters	Approximate dimensions and weights per section (mm-kg)
1.5 x 1.5	1390x1330x450	900x200x150	63	(2x) 126	1390x1330x450 [63 kg]
2 x 1	2060x1025x450	1300x200x150	75	(3x) 96	2060x1025x450 [75 kg]
2 x 1.5	2060x1330x450	1550x200x150	88	(3x) 126	2060x1330x450 [88 kg]
2.5 x 1.5	2610x1390x450	2100x200x150	111	(4x) 126	2610x1390x450 [111 kg]
2 x 2	2060x2000x450	1550x200x150	126	(6x) 96	2012x1371x450 [79 kg] + 2012x820x450 [47 kg]
3 x 1.5	2975x1390x450	2100x200x150	133	(6x) 96	2975x1390x450 [133 kg]
2.5 x 2	2610x2060x450	2100x200x150	156	(6x) 126	(2x) 2190x1311x450 [78 kg]
3 x 2	2975x2060x450	2350x200x150	181	(9x) 96	2987x1371x450 [112 kg] + 2987x820x450 [69 kg]
2.5 x 2.5	2730x2610x450	2350x200x150	196	(8x) 126	(2x) 2740x1371x450 [98 kg]

F22

Filter terminals for monobloc absolute filters

Filtration
Solutions for well-being of every breath

Product	F22
Material	Anodized extruded aluminium frame, plenum in white moulded plastic material integrated into the aluminium frame
Filter media	Simple water-repellent glass fibre

SPECIFICATIONS
F22 monobloc terminal, with the following construction characteristics.
Filter material: plain glass fibre, water-repellent and reinforced multilayer structure.
Separators: thermoplastic wire
Frame: extruded aluminium
The terminal hood is available in both aluminium and white expanded polystyrene integrated into the frame.
External protection grilles: white painted aluminium.
Brass DOP tap with cap integrated into the hood.

FUNCTIONS
F22 filter terminals are used for absolute filtration, installed in modular or smooth false ceilings.

ON REQUEST:
- Butterfly or perforated damper
- Flow breaking mesh
- Custom dimensions not standard

APPLICATIONS
Ultra-high efficiency final filtration in the pharmaceutical, nuclear, electronic, food and photographic industries; air treatment in environments with a high degree of sterilization, such as operating rooms and analysis laboratories.

TECHNICAL FEATURES

	F22
Maximum operating temperature	P 80° / A 90°
Maximum operating relative humidity	100%
Recommended final pressure drop	600 Pa
Maximum pressure drop	1000 Pa

INSTALLATION

The F22 terminal is specifically designed to be installed in modular false ceilings when resting on the ceiling "T" bar, or it can be installed in smooth false ceilings supported by suitable suspension bars.

MAINTENANCE

This type of filter is not regenerable, therefore complete filter replacement is recommended when the recommended final pressure drop is reached.

F22

Filter terminals for monobloc absolute filters

WHITE EXPANDED POLYSTYRENE TERMINAL DIMENSIONS

Dimensions WxHxD mm	H collar mm	Nominal flow rate m^3/h	Filter surface m^2
Overall dimensions H150 mm collar excluded / Efficiency H14 Depth 73			
305x610x150	50	320	5,5
610x610x150	50	600	11,3
610x915x150	50	900	16
610x1220x150	50	1200	22,5

ALUMINIUM TERMINAL DIMENSIONS

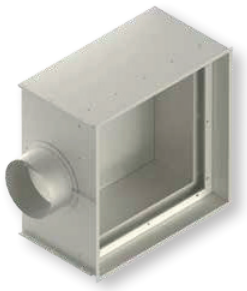
Dimensions WxHxD mm	DN collar Ø mm	Nominal flow rate m^3/h	Filter surface m^2
Overall dimensions H in mm, collar excluded / Efficiency H14			
305x610x110	50/200	300	5,5
600x600x110	50/250	600	9,5
600x1210x110	50/250	1200	20
610x610x110	50/250	600	10
610x915x110	50/250	810	15
915x915x110	50/250	1350	25
592x1195x125	50/250	320	5,5
610x610x125	50/250	600	10
610x1220x125	50/250	1200	20
297x595x150	50/250	320	5,5
300x600x150	50/250	300	4,8
305x305x150	50/150	160	2,8
305x610x150	50/250	300	5,5
595x595x150	50/250	600	9,5
600x600x150	50/250	600	9,4
600x900x150	50/250	840	14
600x1210x150	50/250	1200	20
610x610x150	50/250	600	10
610x1220x150	50/250	1200	20
905x905x150	50/250	1250	22,5
915x915x150	50/250	1350	25

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

F24

Terminal box for absolute filter

Filtration
Solutions for well-being of every breath



Product	F24
Material	Steel box 10/10 painted white RAL 9010
Filter	New generation housing designed to accommodate 3 absolute filter thicknesses (68/150/292 mm), thus offering variable filter performance without changing the housing

SPECIFICATIONS
Terminal filter housing box for supply/return air, for absolute filters.
Steel box 10/10 painted white RAL 9010. Screw clamping device for absolute filters depth 68/150/292 mm. H14 filtration, perforated galvanized and painted steel sheet diffusers. Thickness 1.0 mm.
On the upper part of the box, on all 4 sides, the sheet metal is perforated (D. 8 mm) to allow its fixing (Alphen guides, threaded bars). One-piece 15/10 junction plane positioned at the centre for guaranteed sealing.

Tool-free filter locking using manual clips.
1 set of side connections to indicate upstream/downstream pressure outside the room.
It is also used to remotely measure filter clogging.

APPLICATIONS
Terminal filtration and diffusion in areas with contamination risk level 3 and 2 (according to NF S 90-351) in healthcare facilities: rooms with turbulent airflows, for sterilization or laboratories. Ceiling or wall use

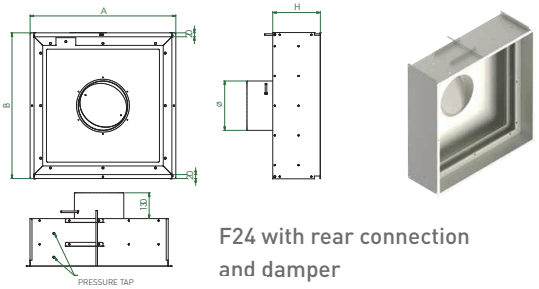
RANGE
Housing designed to accommodate 3 filter thicknesses (68/150/292 mm).
2 types of plenum depending on the installation constraints of the box on site:
Upper/lateral circular connection for classic ceiling installation or ceiling installation with reduced spaces
2 adaptable ceiling diffusers:
- perforated sheet for vertical air outlet
- helical diffuser (rapid mixing with ambient air)

ON REQUEST
AISI 304 stainless steel version,
AISI 316.

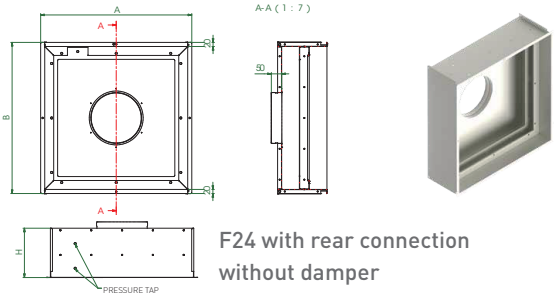
F24

Terminal box for absolute filter

DIMENSIONS



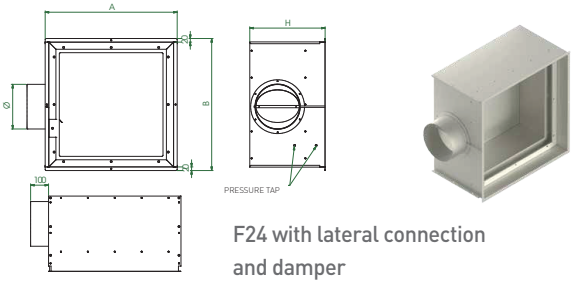
F24 with rear connection and damper



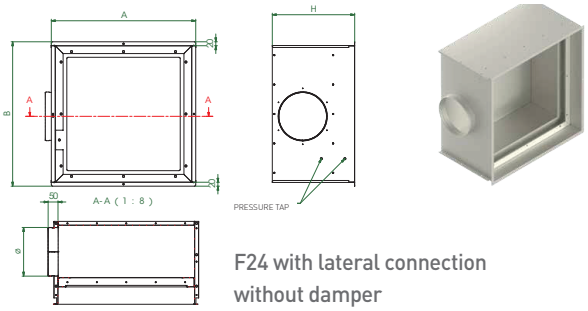
F24 with rear connection without damper

FILTERS	Dimensions (mm)				Weight with damper (kg)	Weight without damper (kg)
	A	B	H	Ø		
305x305x68	490	490	240	160	11	10
457x457x68	590	590	240	200	13	12
545x545x68	590	590	240	200	11	9
610x610x68	738	738	240	250	17	15
610x305x68	738	490	240	200	14	13
915x610x68	1043	738	240	315	23	21
1220x610x68	1348	738	240	315	27	26
305x305x155	490	490	330	200	13	12
457x457x155	590	590	330	250	15	14
545x545x155	590	590	330	315	13	11
610x610x155	738	738	330	315	19	17
610x305x155	738	490	330	250	16	15
915x610x155	1043	738	330	400	26	24
1220x610x155	1348	738	330	400	30	29
305x305x292	490	490	465	250	15	14
457x457x292	590	590	465	315	17	16
545x545x292	590	590	465	315	15	13
610x610x292	738	738	465	355	22	20
610x305x292	738	490	465	315	18	17
915x610x292	1043	738	465	400	29	27
1220x610x292	1348	738	465	400	34	33

DIMENSIONS



F24 with lateral connection and damper



F24 with lateral connection without damper

FILTERS	Dimensions (mm)				Weight with damper (kg)	Weight without damper (kg)
	A	B	H	Ø		
305x305x68	490	490	330	160	13	12
457x457x68	590	590	370	200	15	14
545x545x68	590	590	370	200	13	12
610x610x68	738	738	420	250	21	19
610x305x68	738	490	370	200	17	16
915x610x68	1043	738	485	315	28	26
1220x610x68	1348	738	485	315	33	31
305x305x155	490	490	460	200	15	14
457x457x155	590	590	510	250	18	17
545x545x155	590	590	575	315	17	16
610x610x155	738	738	575	315	25	23
610x305x155	738	490	510	250	20	19
915x610x155	1043	738	600	400	32	30
1220x610x155	1348	738	600	400	37	35
305x305x292	490	490	645	250	18	17
457x457x292	590	590	710	315	22	21
545x545x292	590	590	710	315	20	19
610x610x292	738	738	750	355	29	27
610x305x292	738	490	710	315	24	23
915x610x292	1043	738	795	400	27	25
1220x610x292	1348	738	795	400	43	41

COMBINED DIFFUSERS

Micro-perforated

SIZE
305x305 / 457x457 / 545x545 610x610 /610x305 / 915x610 1220x610

Helical

SIZE
305x305 / 457x457 545x545 / 610x610

FCAN

Safety filter box with bag in-bag out system

Filtration
Solutions for well-being
of every breath

Product	FCAN
Description	Absolute filter box equipped with an integrated bag-in bag-out system to protect operators during filter replacement
Material	Steel box 2 mm thickness, airtight, painted white RAL9010

SPECIFICATIONS

Steel box 2 mm thickness, airtight, painted white RAL9010.
Clamping system consisting of a stainless steel frame that, through a pair of lever mechanisms, acts on the entire contact surface of the filter. Containment bag fastening by means of a double-groove elastic ring supplied as standard. Closing door equipped with 2 handles in RAL 9010. It is inserted with a safety system that ensures clamping only if the filter is in position. Connection of the box to the ducts via pre-drilled rectangular flange. Provision for pressure taps. Bag-in-bag-out system for operator protection. Airtightness of the casing valid up to
± 5000 Pa (L1 classification according to EX 1886, CETIAT test report No. 2514090). Localized air penetration on the junction plane <0.01% (Emery 3004 test). Double-groove flange to ensure bag replacement without interrupting containment.

OPERATING PRINCIPLE

FCAN is an absolute filter box equipped with an integrated bag-in bag-out system to protect operators during filter replacement. This version allows high airflow rates as well as a double filtration stage (HE, THE, activated carbon)

APPLICATIONS

Air extraction from microbiological safety laboratories (P3 or P4 containment)
Pharmaceutical and chemical industry or nuclear.
Hospitals, biotechnology, animal care. Filter replacement without risk of contamination; to be used when it is mandatory that the operator or environment not be in contact with contaminated compounds (particles or molecules) present on the filter or in the box.

RANGE

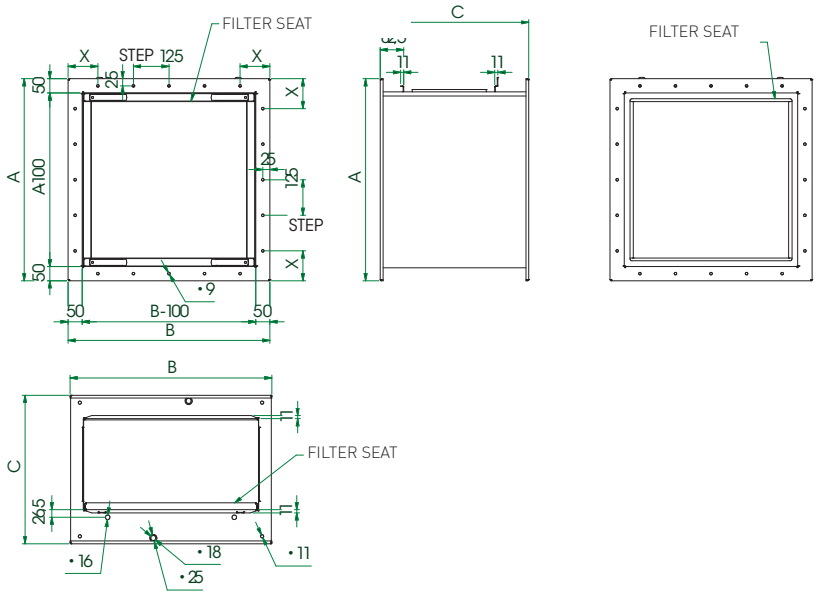
- 4 box dimensions for standard filters: 3-3 (305x305), 4-4 (457x457), 3-6 (305x610), 6-6 (610x610)
- 4 possible filter thicknesses: 48 mm / 68 mm / 150 mm / 292 mm

ON REQUEST

AISI 304 stainless steel version, AISI 316.

FCAN

Safety filter box with bag in-bag out system



DIMENSIONS

Model	LXH Filters (mm)	A (mm)	B (mm)	C / weight (kg) without filters (mm)		
				Filter 48/68	Filter 150	Filter 292
3-3	305x305	406	406	290/19	377/22	522/26
4-4	457x457	558	558	290/26	377/29	522/35
6-3	610x305	711	406	290/28	377/31	522/47
6-6	610x610	711	711	290/35	377/40	522/47

ACTIVATED CARBON FILTERS

Filtration

Solutions for well-being
of every breath

F19PA

Activated carbon panel filters

Product	F19PA
Frame	Robust galvanized steel
Adsorbent element	Granular activated carbon

SPECIFICATIONS
Activated carbon panel filters, model F19PA, consisting of galvanized steel frame, electrolytically galvanized micro-stretched meshes and granular activated carbon.

FUNCTIONS
They function as pre-filtration and must be preceded by high efficiency pre-filters to prevent clogging.

APPLICATIONS
Absorption of odours and toxic substances in gaseous form. Air purification in low airflow systems.
Purification of ambient air from hydrocarbons, inorganic compounds, fume compounds.

VERSIONS

FO - carbon for absorption of odours and organic solvents
FA - impregnated carbon for absorption of acid vapours
FI - impregnated carbon for absorption of toxic gases, radioisotopes

TECHNICAL FEATURES

	FO	FA	FI
Regenerability	Yes	Yes	
Initial pressure drop	50	50	50
Recommended final pressure drop (Pa)	120	120	120
Limit temperature value (°C)	80	80	80
Relative humidity (%)	70	70	70

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

INSTALLATION

Activated carbon cells should be installed both vertically (horizontal airflow) and horizontally (vertical airflow). They can be installed in dedicated counter-frames or duct housings.

MAINTENANCE

This type of filter is completely regenerable: saturated activated carbon must be regenerated using steam.

DISPOSAL

Saturated activated carbon is not a toxic or hazardous waste. For disposal, refer to current regulations based on the substances treated with the activated carbon.

DIMENSIONS

Dimensions mm	Nominal Q m^3/h	Carbon volume dm^3
500x500x23	600	5,0
500x500x48	300	11,2
500x500x96	150	24,0
590x240x18	250	2,0
583x237x18	250	2,2
583x474x18	500	4,5

F19CA

Activated carbon cartridge filters

Product	F19CA
Metal plate	Galvanized steel, epoxy powder coated, black colour
Cartridges	External cladding in painted stretched sheet metal

SPECIFICATIONS

Activated carbon cartridge filters, model F19CA, consisting of powder-coated galvanized steel plate and galvanized steel sheet cartridge containing granular activated carbon.

FUNCTIONS

They are applied in air handling units or ventilation ducts, downstream of high efficiency pre-filters that protect them against dust clogging.

APPLICATIONS

Absorption of odours and toxic substances in gaseous form. Air purification in high airflow systems. Purification of ambient air from hydrocarbons, inorganic compounds, fume compounds.

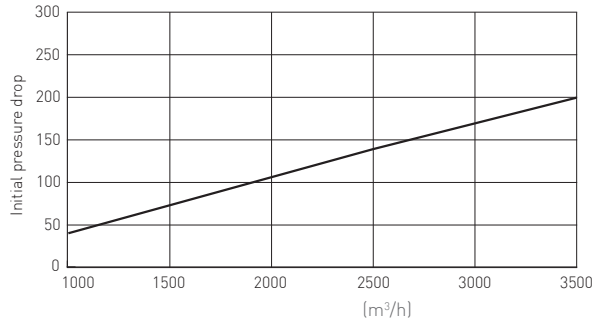
TECHNICAL FEATURES

	F19CA 5 305 610	F19CA 9 610 610	F19CA 8 305 610	F19CA 16 610 610
Regenerability	Yes	Yes	Yes	Yes
Air flow rate (m^3/h)	1500	3000	1750	3400
Pressure drop (Pa)	170	180	270	270
Cartridges No.	5	9	8	16
Total carbon quantity (kg)	16	28	20	40
Plate weight (kg)	3,6	6,6	3,5	6,2
Limit temperature value (°C)	50	50	50	50
Relative humidity (%)	70	70	70	70

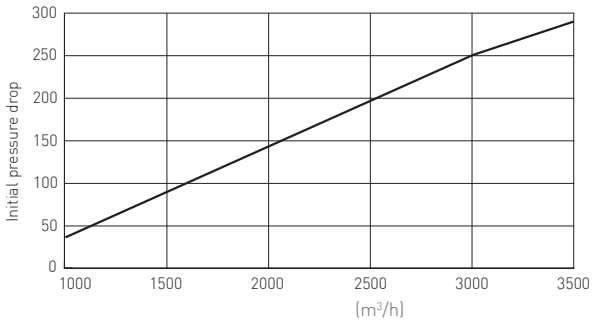
PERFORMANCE CURVES

F19CA

F19CA 610x610 - 9 CARTRIDGES



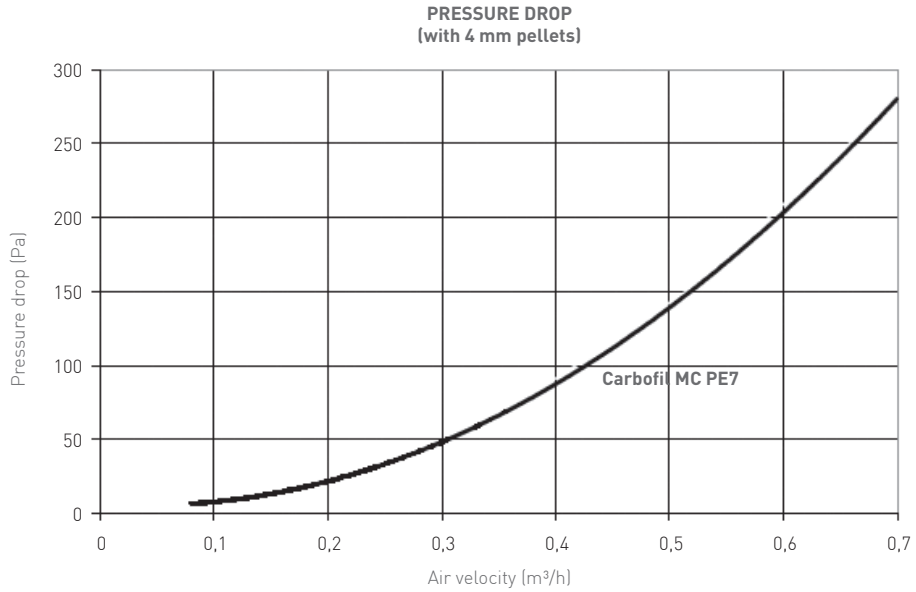
F19CA 610x610 - 16 CARTRIDGES



TECHNICAL CHARACTERISTICS OF THE CONTAINED MATERIAL Cactivated carbon: standard analysis

Appearance	Pellets
Cylinder diameter (mm)	3,5 - 4,0
Cylinder length (mm)	5 -10
Density (Kg/m³)	490 – 520
Internal active surface - BET method (m³/g)	1000 (±-50)
Total pore volume (cm³/g)	0,90
Humidity (%)	8 max
Total ash - ASTM D 2866 (%)	11 max
CCL4 Absorption - ASTM D 3467 (%)	50 min
Recommended face velocity (m/s)	0,3
Recommended contact time (s)	1

PERFORMANCE CURVES
ACTIVATED CARBON

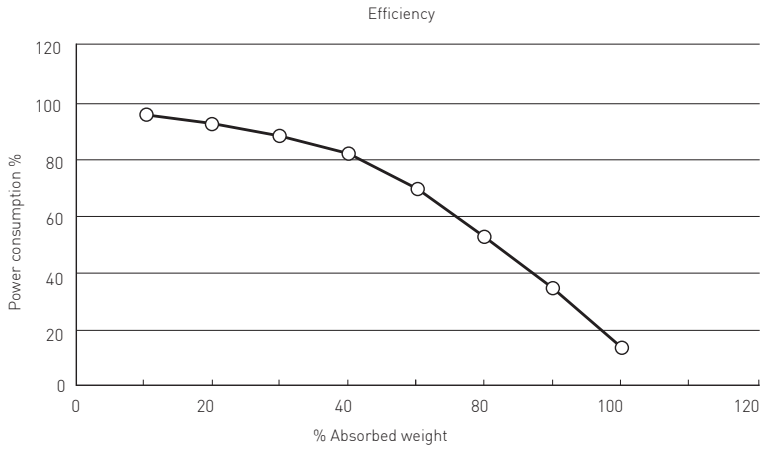


F19CA

Activated carbon cartridge filters

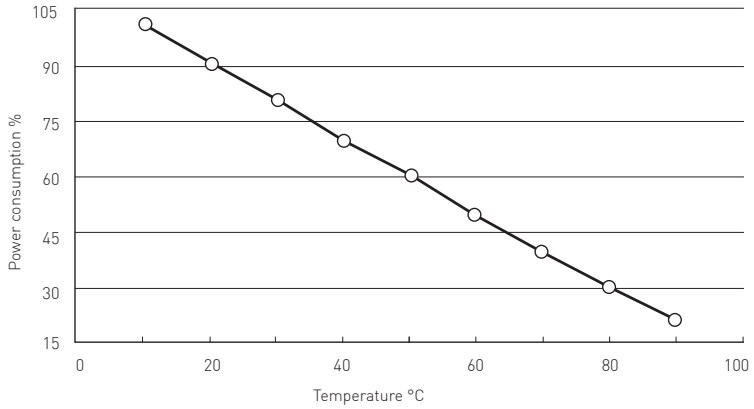
INDICATIVE ACTIVATED CARBON FILTER LIFESPAN

Tests carried out on activated carbon filters have shown that there is a link between the quantity of solvents and the performance of the activated carbon itself. When the weight of the absorbed solvent is half the weight that can be absorbed by the carbon itself, the carbon filter rapidly loses its absorbing power. Therefore it is advisable to replace the carbon.



RELATIONSHIP BETWEEN ABSORPTION AND OPERATING TEMPERATURE

% absorption as a function of temperature.



INSTALLATION

Filters can be installed both vertically and horizontally, installed in ducts or in dedicated housings or inside filtration modules.

MAINTENANCE

This type of filter is completely regenerable: saturated activated carbon must be regenerated using steam.

DISPOSAL

Saturated activated carbon is not a toxic or hazardous waste. For disposal, refer to current regulations based on the substances treated with the activated carbon.

PLATE DIMENSIONS

Front dimensions W x H x D mm	Cartridge holes N.	Cartridge outer diameter mm
305x610x24	5	160
305x610x24	8	140
592x592x24	9	160
592x592x24	16	140
610x610x24	9	160
610x610x24	16	140

CARTRIDGE DIMENSIONS

External dimensions mm	Internal diameter mm	Height mm	Carbon quantity kg
140	70	400	2,5
160	90	400	3,1

F18CA

Activated carbon filters for gaseous pollutants

Product	F18CA
Frame	Self-draining in MOPLEN, rigid PU sealing system
Filter media	Pleated non-woven fabric panels containing a layer of activated carbon micro-granules (300-350 g/m²)

SPECIFICATIONS

Activated carbon rigid pocket filter, model F18CA, built with a robust self-draining MOPLEN (PPE) frame, higher breaking load, lower density and greater thermal and abrasion resistance. Filter media in pleated non-woven fabric panels containing a layer of activated carbon micro-granules (300-350 g/m²).

FUNCTIONS

Thanks to their low pressure drop and standard dimensions, they are used as the final filtration stage within units or in ducts within dedicated housings.

APPLICATIONS

Activated carbon pocket filters model F18CA can be used in air handling units and any other type of unit where modest pollutant filtration is required, such as: shopping centres, airports, industrial kitchens, print shops, laboratories, museums.

TECHNICAL FEATURES

Class EN779 / ISO 18690	F7 / ePM1 50%
Initial pressure drop (Pa)	120
Operating temperature (°C)	50
Maximum operating relative humidity (%)	70

FILTER MATERIAL

Carbon weight (g/m²)	300
Thickness 0.5 kPa µm	1500
Permeability 200 Pa l/m²/s	1750
Dry tensile strength N/m	MD 2100 CD 1500
Wet tensile strength N/m	MD 1400 CD 950
Elongation (%)	MD 8 CD 11
Dry tear resistance cN	MD 1400 CD 1700
Wet tear resistance cN	MD 1000 CD 1100
Gurley stiffness dry (mg)	MD 3900 CD 3100

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

INSTALLATION

Filters can be installed both vertically and horizontally, installed in ducts or in dedicated housings or inside filtration modules.

MAINTENANCE

This type of filter is completely regenerable: saturated activated carbon must be regenerated using steam.

DISPOSAL

Saturated activated carbon is not a toxic or hazardous waste. For disposal, refer to current regulations based on the substances treated with the activated carbon.

DIMENSIONS

Dimensions mm	Nominal flow rate m^3/h	Filter surface m^2	Carbon kg
287x592x292	1800	8	2,7
490x592x292	2600	14	4,2
592x592x292	3400	18	5,5

ELECTROSTATIC FILTERS

Filtration

Solutions for well-being
of every breath

FE-H
Electrostatic filters

p. 94

FE-H

Electrostatic filters

PATENTED

Product	FE-H
Frame	Lightweight aluminium, fully recyclable
Power supply	230 Volt 50-60 Hz

SPECIFICATIONS

Electrostatic filter cell, model FE-H, built with aluminium frame, ionizing section and collector cell in aluminium monobloc configuration, electronics with internal voltage booster and operating indicator.

FUNCTIONS

Thanks to their standardized dimensions in compliance with the dimensional characteristics of traditional filter pockets and the watertight integrated electronic circuit, they guarantee perfect interchangeability with pocket modules and flat filters with standard sizes that require costly and continuous replacements.

APPLICATIONS

Electrostatic filters are used in civil and industrial systems where very high efficiency is required for medium-fine pollutants (←1 µm). Excellent solution against outdoor pollution from PM10, PM2.5 and PM1, as well as being an excellent protection for heat exchange coils and air distribution ducts from atmospheric pollutant contamination.

TECHNICAL FEATURES

Class EN779	F7
Initial pressure drop (Pa)	120
Operating temperature (°C)	50
Maximum operating relative humidity (%)	70

FILTER MATERIAL

Regenerability	Yes
Class UNI 11254	A
Class EN 1822	E12
Initial pressure drop (Pa)	24
ILH Efficiency on 0.4µm A	99,60
Fine dust limit value (g)	600
Limit temperature value (°C)	60
Relative humidity (%)	90

INSTALLATION

Electrostatic filter installation offers numerous alternatives in both civil and industrial fields. With simple operations it is possible to convert a pocket filtration system to an electrostatic filtration system, using the same sliding guides.

MAINTENANCE

This type of filter is fully regenerable, through washing with dedicated detergents that through a chemical reaction detach the particulate from the filter, avoiding costly and continuous replacements.

DISPOSAL

Depending on the type of use and the filtered pollutant, the washing liquid (water-soluble detergent) can be disposed of through normal channels and/or retained in dedicated containers to be delivered to specialized disposal companies.

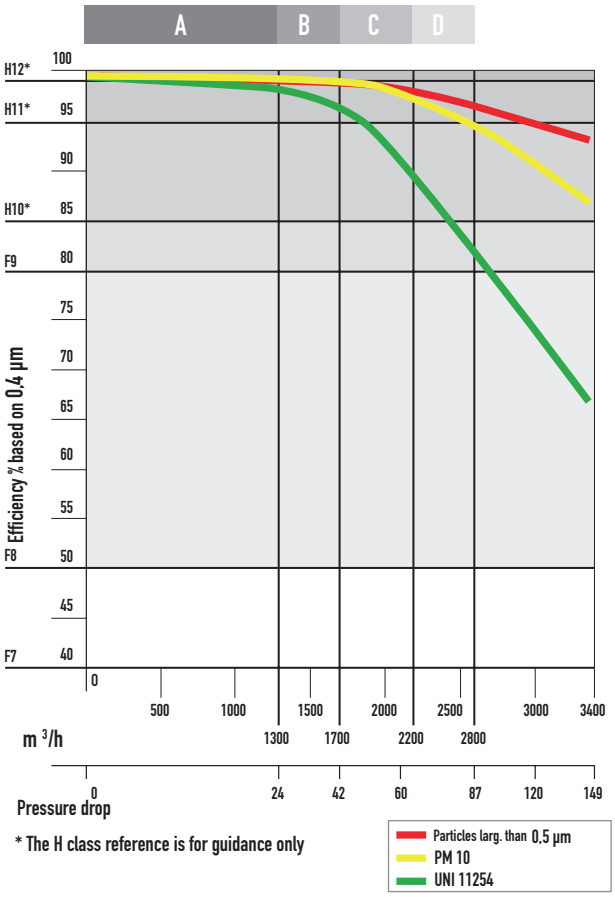
DIMENSIONS

WxHxD	Flow rate air	Pressure drop initial	Wt.	Class of filtration	Efficiency ILH Particles ≥0,4 µm	Power supply electrical	Power electrical
mm	m^3/h	Pa	kg	UNI 11254	%	Volt/Hz	Watt
592 x 592 x 218	1300	24	19	A	99,60	230/50-60	16
	1700	42	19	B	99,50	230/50-60	16
	2100	60	19	C	98,40	230/50-60	16
	2550	87	19	D	97,30	230/50-60	16
	3360	149	19	-	93,20	230/50-60	16
287 x 592 x 218	600	24	10	A	99,60	230/50-60	9
	800	42	10	B	99,50	230/50-60	9
	1000	60	10	C	98,40	230/50-60	9
	1200	87	10	D	97,30	230/50-60	9
	1600	149	10	-	93,20	230/50-60	9

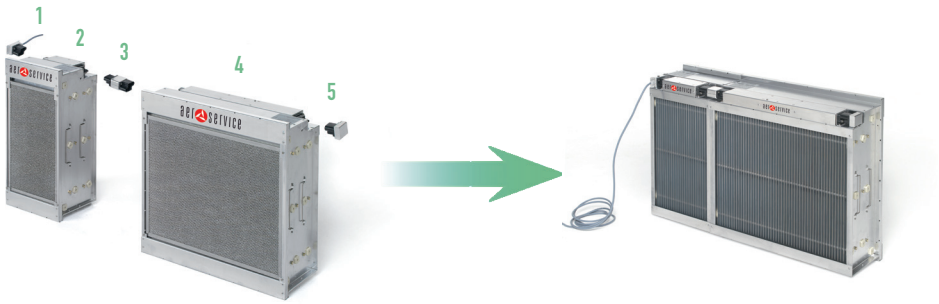
FE-H

Electrostatic filters

CLASSIFICATION ACCORDING TO UNI 11254

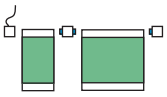
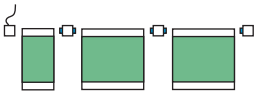
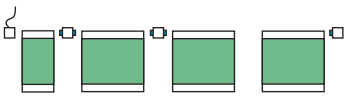
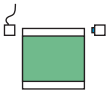
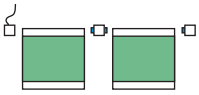
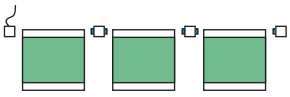
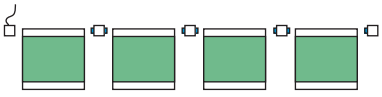


APPLICATION EXAMPLES: FILTER COMBINATIONS WITH RELATED CONNECTORS



LEGEND

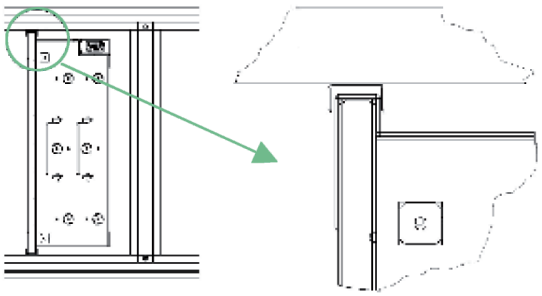
1 Power supply connector
2 Filter FE-H 287 x 592 x 218
3 Junction connector
4 Filter FE-H 595 x 592 x 218
5 Terminal connector

Composition example front section (not applicable in battery) and related technical characteristics efficiency mm	FE-H 287 x 592 x 218	FE-H 592 x 592 x 218	I	II	V	Flow rate air m^3/h	Pressure drop initial Pa	Class di filtration UNI 11254	Efficiency ILH Particles ≥0,5µm %
	1	-	1	1	-	650	24	A	99,60
	1	-	1	1	-	850	42	B	99,50
	1	-	1	1	-	1100	60	C	98,40
	1	-	1	1	-	1300	87	D	97,30
	1	-	1	1	-	1600	149	-	93,20
	1	1	1	1	1	1950	24	A	99,60
	1	1	1	1	1	2550	42	B	99,50
	1	1	1	1	1	3300	60	C	98,40
	1	1	1	1	1	3900	87	D	97,30
	1	1	1	1	1	5000	149	-	93,20
	1	2	1	1	2	3250	24	A	99,60
	1	2	1	1	2	4250	42	B	99,50
	1	2	1	1	2	5500	60	C	98,40
	1	2	1	1	2	6500	87	D	97,30
	1	2	1	1	2	8400	149	-	93,20
	1	3	1	1	3	4550	24	A	99,60
	1	3	1	1	3	5950	42	B	99,50
	1	3	1	1	3	7700	60	C	98,40
	1	3	1	1	3	9100	87	D	97,30
	1	3	1	1	3	11800	149	-	93,20
	-	1	1	1	-	1300	24	A	99,60
	-	1	1	1	-	1700	42	B	99,50
	-	1	1	1	-	2200	60	C	98,40
	-	1	1	1	-	2600	87	D	97,30
	-	1	1	1	-	3400	149	-	93,20
	-	2	1	1	1	2600	24	A	99,60
	-	2	1	1	1	3400	42	B	99,50
	-	2	1	1	1	4400	60	C	98,40
	-	2	1	1	1	5200	87	D	97,30
	-	2	1	1	1	6800	149	-	93,20
	-	3	1	1	2	3900	24	A	99,60
	-	3	1	1	2	5100	42	B	99,50
	-	3	1	1	2	6600	60	C	98,40
	-	3	1	1	2	7800	87	D	97,30
	-	3	1	1	2	10200	149	-	93,20
	-	4	1	1	3	5200	24	A	99,60
	-	4	1	1	3	6800	42	B	99,50
	-	4	1	1	3	8800	60	C	98,40
	-	4	1	1	3	10400	87	D	97,30
	-	4	1	1	3	13600	149	-	93,20

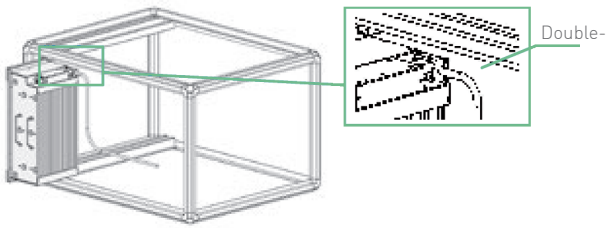
N.B. The filtration efficiency (UNI 11254) can be converted in a purely indicative way according to EN 1822, and therefore analysis of the relevant graph is recommended.

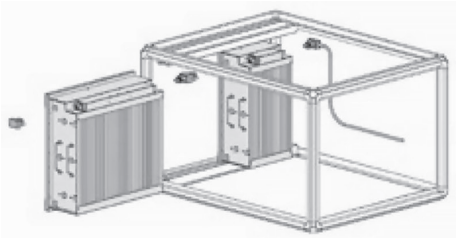
INSTALLATION

For easy installation, a C-profile must be provided to insert the electrostatic filter as shown in the figure; or use the existing one in the case of replacing fabric filters, ensuring perfect sealing.
The electrostatic filter must be powered at 230 volt 50/60 Hz through the dedicated connector (1) CA.
When using more than one filter, a junction connector (2) CG must be used to supply electrical power to the next filter.
In the terminal filter, the CT terminal connector must be provided for electrical protection (3).



1. Insert the power supply connector into an electrostatic cell, remove the adhesive protective film from the back of the power supply connector, clean the bottom and insert the filter into the support frame guides
2. Press the electrostatic cell onto the bottom so that the adhesive allows the power supply connector to remain attached to the back wall
3. Remove the cell leaving the power supply contact attached to the bottom
4. Fix the power supply connector with 4 self-tapping screws or rivets
5. Insert the filters one after another placing the junction connector between two filters
6. Insert the terminal connector at the head of the last filter and fix it mechanically with the supplied screw. This is an additional safety measure to prevent accidental electrical contact.



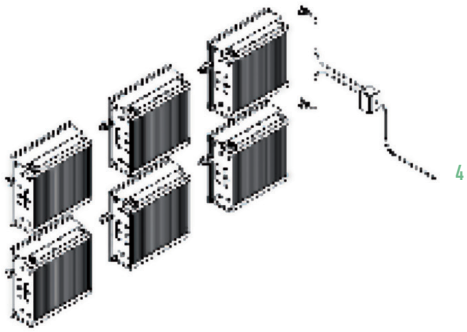


INSTALLATION ON TWO OR MORE ROWS

If it is necessary to electrically connect two rows of filters, the junction box (4) must be used.
This makes it possible to:

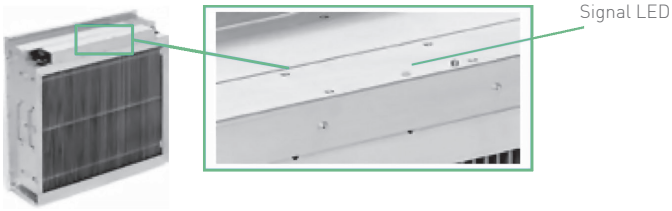
- provide a single electrical power supply
- provide a single filter enable command
- obtain a single alarm signal

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com



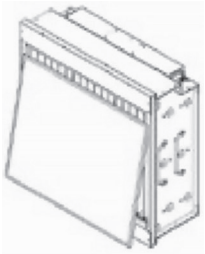
ELECTRONIC CIRCUIT SIGNALLING

The electrostatic filter features a green indicator LED that allows direct visualization of its correct operation on the filter installed in the air handling unit. A steady green LED indicates correct operation, while a flashing LED indicates filter blockage and intervention is required to remove the cause of the blockage.



FILTER MAINTENANCE

To perform correct maintenance, first remove the pre-filter built into the electrostatic cell by lifting it approximately one centimetre and extracting it as shown in the figure.



For washing, obtain the following:

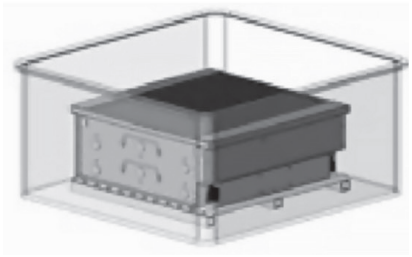
1. a plastic or stainless steel tank with a settling bottom
2. detergent (the one supplied by the machine manufacturer is recommended)
3. protective gloves and goggles
4. suitable clothing
5. running water.

Provide a stainless steel frame that keeps the filters raised from the bottom of the tank to have a sludge settling bottom. Prepare the tank with warm water (maximum 45°C) or cold water depending on the type of detergent being used. Add the detergent diluted according to the proportions indicated on the container label and proceed:

a. immerse the electrostatic cell in the tank
b. soak for the time indicated in the detergent usage instructions or until the dirt is completely dissolved from the cell
c. remove the cell, let it drip over the tank, rinse it thoroughly with running water taking care not to break the ionization

wires

d. Dry the cell keeping it raised from the floor with wooden strips or in a dryer at a maximum temperature of 60°C
e. ensure that the cell is clean and dry, then insert it into its seat according to the instructions on the sticker on the door



Stainless steel frame

N.B. Some alkaline-based detergents may leave residues on the surface of the blades and insulators, residues that cannot be removed with a simple rinse, and which cause voltage losses and therefore efficiency losses of the electrostatic cell in the presence of ambient humidity even at 50%. To remedy this phenomenon, immerse the cell for a few minutes in an acidulated bath and then rinse it again.
Wash the prefilter in the same way, taking care not to damage it by bending or fraying the filter mesh. In the event that maintenance is not carried out according to the instructions given here, the company assumes no responsibility for any breakdowns, malfunctions or shortening of maintenance intervals.

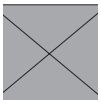
ACCESSORIES TO COMPLEMENT THE INSTALLATION

Description
1 230 V power supply connector for one filter row
2 230 V junction connector for one filter row
3 230 V closure connector for one filter row
4 Resin alarm
5 Junction box with 230 V alarm relay for 1-3 filter rows + bicolour LED
6 Junction box with 230 V alarm relay for 1 filter row
7 Microswitch for filter unit inspection
8 Electrostatic cell cleaning detergent in 10 kg container

1

2

3



4

5-6

7

8

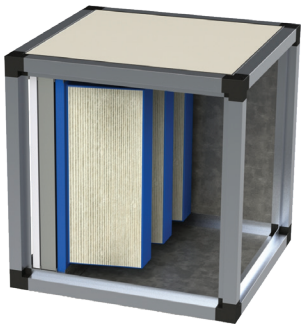
FILTER UNITS

Filtration

Solutions for well-being of every breath

UFT

Mechanical filtration unit with rigid pockets



Product UFT

Construction Structure with 40 mm extruded aluminium profiles connected by die-cast aluminium corner joints

Filter media Flat section aluminium wire, polyester fibre, flame-retardant water-repellent glass microfibre

SPECIFICATIONS

Filter unit, built with 40 mm extruded aluminium frame.
Filter F13 class (EN 779) G2 in flat section aluminium wire (ISO coarse 25%).
Filter F12 class (EN 779) G4 pleated polyester fibre (ISO coarse 75%).
Filter F18 class (EN 779) F8 (ISO ePM1 60%) 4 rigid pockets.

FUNCTIONS

Thanks to a compact and lightweight structure, as well as high mechanical resistance, the filter unit ensures easy handling and simple installation, making it suitable for both civil and industrial systems.

APPLICATIONS

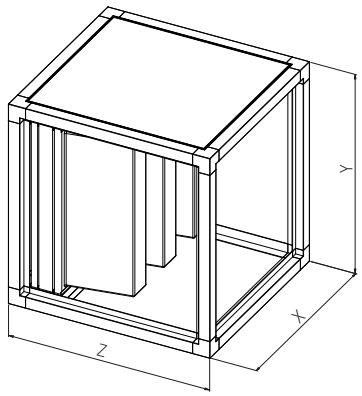
The use of the rigid pocket unit is recommended in civil and industrial systems where very high performance is required. Ideal for electronics and food industry systems and laboratories.

QUICK SELECTION TABLE

Size	Flow rate	F13				F12		
		Quantity	Dimensions	Efficiency	Pressure drop medium / recommended final	Quantity	Dimensions	Efficiency
		N.	mm		Pa	N.	mm	
3000	3000	1	592x592x22	G2 ISO coarse 25%	80 / 150	1	592x592x48	G4 ISO coarse 75%
6000/6000V	6000	2	592x592x22			2	592x592x48	
9000	9000	2	592x592x22			2	592x592x48	
		2	592x287x22			2	592x287x48	
12000	12000	4	592x592x22			4	592x592x48	
18000	18000	6	592x592x22			6	592x592x48	

DIMENSIONAL

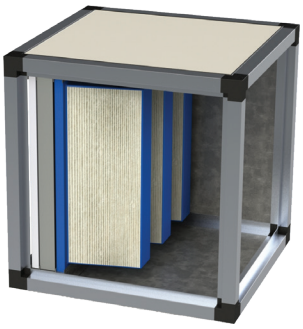
Size	Type box	Wt. kg	X mm	Y mm	Z mm
3000	1	39	655	715	700
6000	1	61	1250	715	700
6000V	1	61	655	1310	700
9000	1	83	1250	1005	700
12000	1	86	1250	1310	700
18000	1	130	1845	1310	700



			F18		Total average pressure drop Pa	Total final pressure drop Pa
Pressure drop medium / recommended final Pa	Quantity N.	Dimensions mm	Efficiency	Pressure drop medium / recommended final Pa		
125 / 200	1	592x592x292	F8 ISO ePm1 60%	330 / 600	535	950
	2	592x592x292				
	2	592x592x292				
	2	592x287x292				
	4	592x592x292				
	6	592x592x292				

UFTH

Absolute filtration unit with rigid pockets



Product UFTH

Construction Structure with 40 mm extruded aluminium profiles connected by die-cast aluminium corner joints

Filter media Flat section aluminium wire, polyester fibre, flame-retardant water-repellent glass microfibre

SPECIFICATIONS

Filter unit, built with 40 mm extruded aluminium frame.
Filter F13 class (EN 779) G2 in flat section aluminium wire
(ISO coarse 25%).
Filter F12 class (EN 779) G4 pleated polyester fibre
(ISO coarse 75%).
Filter F18H class (EN 779) H13
(ISO ePm1 99%) 4 rigid pockets.

FUNCTIONS

Thanks to a compact and lightweight structure, as well as high mechanical resistance, the filter module ensures easy handling and simple installation, making it suitable for both civil and industrial systems.

APPLICATIONS

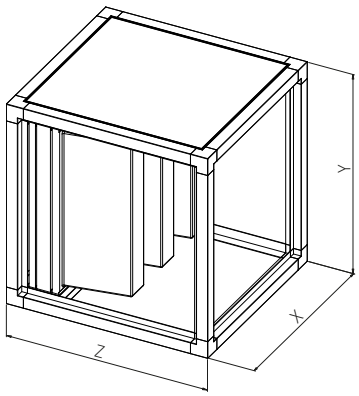
Rigid pocket absolute filtration units have various uses: in air conditioning or ventilation systems, as pre-filtration for ultra-high efficiency absolute filters or as a final stage in large controlled contamination environments.

QUICK SELECTION TABLE

Model	Flow rate	F13				F12		
		Quantity	Dimensions	Efficiency	Pressure drop medium / recommended final	Quantity	Dimensions	Efficiency
		N.	mm		Pa	N.	mm	
3000	3000	1	592x592x22	G2 ISO coarse 25%	80 / 150	1	592x592x48	G4 ISO coarse 75%
6000	6000	2	592x592x22			2	592x592x48	
9000	9000	2	592x592x22			2	592x592x48	
		2	592x287x22			2	592x287x48	
12000	12000	4	592x592x22			4	592x592x48	
18000	18000	6	592x592x22			6	592x592x48	

DIMENSIONAL

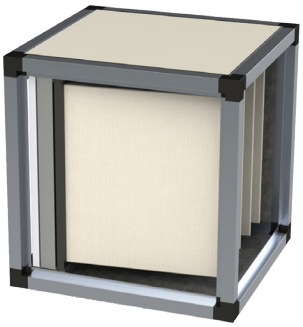
Size	Type box	Wt. kg	X mm	Y mm	Z mm
3000	1	39	655	715	700
6000	1	61	1250	715	700
9000	1	83	1250	1005	700
12000	1	86	1250	1310	700
18000	1	130	1845	1310	700



			F18H		Total average pressure drop Pa	Total final pressure drop Pa
Pressure drop medium / recommended final Pa	Quantity N.	Dimensions mm	Efficiency	Pressure drop medium / recommended final Pa		
125 / 200	1	592x592x292	H13 ISO ePm1 99%	425 / 600	630	950
	2	592x592x292				
	2	592x592x292				
	2	592x287x292				
	4	592x592x292				
	6	592x592x292				

UFTF

Mechanical filtration unit with soft pockets



Product UFTF

Construction Structure with 40 mm extruded aluminium profiles connected by die-cast aluminium corner joints

Filter media Flat section aluminium wire, polyester fibre, synthetic microfibre

SPECIFICATIONS

Filter unit, built with 40 mm extruded aluminium frame.
Filter F13 class (EN 779) G2 in flat section aluminium wire (ISO coarse 25%).
Filter F12 class (EN 779) G4 pleated polyester fibre (ISO coarse 75%).
F16 S class (EN 779) F9 (ISO ePM1 85%) 12 limp pockets depth 380 mm.

FUNCTIONS

Thanks to a compact and lightweight structure, as well as high mechanical resistance, the filter unit ensures easy handling and simple installation, making it suitable for both civil and industrial systems.

APPLICATIONS

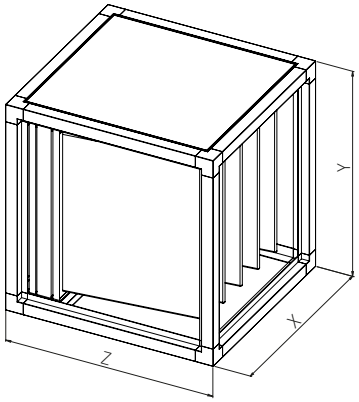
The use of the limp pocket unit is recommended in civil and industrial systems where very high performance is required. Ideal for electronics and food industry systems and laboratories.

QUICK SELECTION TABLE

Model	Flow rate	F13				F12		
		Quantity	Dimensions	Efficiency	Pressure drop medium / recommended final	Quantity	Dimensions	Efficiency
		N.	mm		Pa	N.	mm	
3000	3000	1	592x592x22	G2 ISO coarse 25%	80 / 150	1	592x592x48	G4 ISO coarse 75%
6000/6000V	6000	2	592x592x22			2	592x592x48	
9000	9000	2	592x592x22			2	592x592x48	
		2	592x287x22			2	592x287x48	
12000	12000	4	592x592x22			4	592x592x48	
18000	18000	6	592x592x22			6	592x592x48	

DIMENSIONAL

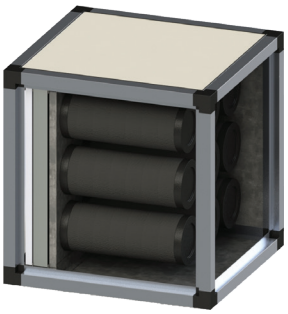
Size	Type box	Wt. kg	X mm	Y mm	Z mm
3000	1	39	655	715	700
6000	1	61	1250	715	700
6000V	1	61	655	1310	700
9000	1	83	1250	1005	700
12000	1	86	1250	1310	700
18000	1	130	1845	1310	700



			F16 90 S		Total average pressure drop Pa	Total final pressure drop Pa
Pressure drop medium / recommended final Pa	Quantity N.	Dimensions mm	Efficiency	Pressure drop medium / recommended final Pa		
125 / 200	1	592x592x500	F9 ISO ePm1 85%	310 / 450	535	950
	2	592x592x500				
	2	592x592x500				
	2	592x592x500				
	4	592x592x500				
	6	592x592x500				

UFC

Activated carbon filter unit



Product UFC

Construction Structure with 40 mm extruded aluminium profiles connected by die-cast aluminium corner joints

Filter media Flat section aluminium wire, polyester fibre, activated carbon

SPECIFICATIONS

Filter unit, built with frame in extruded aluminium with 40 mm thickness. Filter F13 class (EN 779) G2 in flat section aluminium wire (ISO coarse 25%). Filter F12 class (EN 779) G4 pleated polyester fibre (ISO coarse 75%).
Filter F19C (CTC 45%) 160 mm cartridges (3.1 kg activated carbon each) or on request 140 mm (2.5 kg activated carbon each).

FUNCTIONS

Thanks to a compact and lightweight structure, as well as high mechanical resistance, the filter unit ensures easy handling and simple installation, making it suitable for both civil and industrial systems.

APPLICATIONS

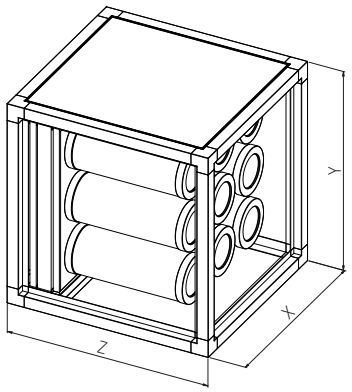
The use of the activated carbon unit is recommended in civil and industrial systems where high performance is required
for significant odour reduction.

QUICK SELECTION TABLE

Model	Flow rate	F13				F12			
		Quantity N.	Dimensions mm	Efficiency	Pressure drop medium / final recommended Pa	Quantity N.	Dimensions mm	Efficiency	Pressure drop medium / final recommended Pa
3000	3000	1	592x592x22	G2 ISO coarse 25%	80 / 150	1	592x592x48	G4 ISO coarse 75%	125 / 200
6000/6000V	6000	2	592x592x22			2	592x592x48		
9000	9000	2	592x592x22			2	592x592x48		
		2	592x287x22			2	592x287x48		
12000	12000	4	592x592x22			4	592x592x48		
18000	18000	6	592x592x22			6	592x592x48		

DIMENSIONAL

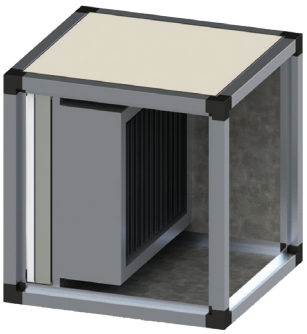
Size	Type box	Wt. kg	X mm	Y mm	Z mm
3000	1	63	655	715	700
6000	1	118	1250	715	700
6000V	1	120	655	1310	700
9000	1	164	1250	1005	700
12000	1	210	1250	1310	700
18000	1	300	1845	1310	700



F19 C									Total average pressure drop (F19 160/140)	Total final pressure drop (F19 160/140)
Quantity	Plate size	Efficiency	160 mm cartridges			140 mm cartridges				
			Cartridges	Carbon active	Pressure drop	Cartridges	Carbon active	Pressure drop		
N.	mm		mm / No.	kg	Pa	mm / No.	kg	Pa	Pa	Pa
1	592x592x24	CTC 45%	Ø 160x400 / 9	3,1	180	Ø 140x400 / 16	2,5	250	385/530	530/600
2	592x592x24		Ø 160x400 / 9	3,1	180	Ø 140x400 / 16	2,5	250		
2	592x592x24		Ø 160x400 / 9	3,1	180	Ø 140x400 / 16	2,5	250		
2	592x592x24		Ø 160x400 / 4	3,1	180	Ø 140x400 / 7	2,5	250		
4	592x592x24		Ø 160x400 / 9	3,1	180	Ø 140x400 / 16	2,5	250		
6	592x592x24		Ø 160x400 / 9	3,1	180	Ø 140x400 / 16	2,5	250		

UFES

Electrostatic filtration unit



Product UFES

Construction Structure with 40 mm extruded aluminium profiles connected by die-cast aluminium corner joints

Filter media Flat section aluminium wire, polyester fibre, electrostatic filter

SPECIFICATIONS

Filter unit, built with 40 mm extruded aluminium frame.
Filter F13 class (EN 779) G2 in flat section aluminium wire (ISO coarse 25%).
Filter F12 class (EN 779) G4 pleated polyester fibre (ISO coarse 75%).
Filter FE-H class (EN 779) E10 electrostatic filter (ISO ePM1 95%).

FUNCTIONS

Thanks to a compact and lightweight structure, as well as high mechanical resistance, the filter unit ensures easy handling and simple installation, making it suitable for both civil and industrial systems.

APPLICATIONS

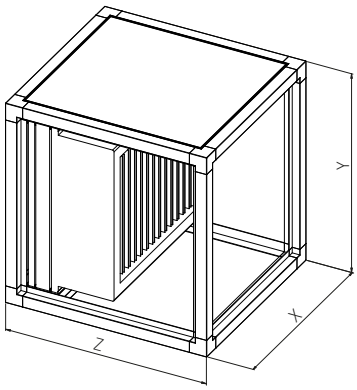
I electrostatic filters are used in civil and industrial systems where very high efficiency is required for medium-fine pollutants (<1 µm). Excellent solution against outdoor pollution from PM10, PM2.5 and PM1, as well as being an excellent protection for heat exchange coils and air distribution ducts from atmospheric pollutant contamination.

QUICK SELECTION TABLE

Model	Flow rate	F13				F12		
		Quantity	Dimensions	Efficiency	Pressure drop medium / recommended final	Quantity	Dimensions	Efficiency
		N.	mm		Pa	N.	mm	
3000	3000	1	592x592x22	G2 ISO coarse 25%	80 / 150	1	592x592x48	G4 ISO coarse 75%
6000	6000	2	592x592x22			2	592x592x48	
9000	9000	2	592x592x22			2	592x592x48	
		2	592x287x22			2	592x287x48	
12000	12000	4	592x592x22			4	592x592x48	
18000	18000	6	592x592x22			6	592x592x48	

DIMENSIONAL

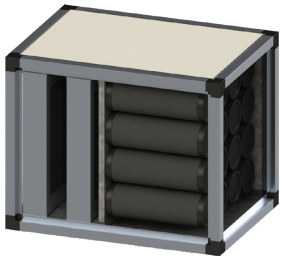
Size	Type box	Wt. kg	X mm	Y mm	Z mm
3000	1	54	655	715	700
6000	1	91	1250	715	700
9000	1	125	1250	1005	700
12000	1	155	1250	1310	700
18000	1	250	1845	1310	700



	FE-H electrostatic filter				Total average pressure drop Pa	Total final pressure drop Pa
Pressure drop medium / recommended final Pa	Quantity N.	Dimensions mm	Efficiency	Pressure drop medium / recommended final Pa		
125 / 200	1	592x592x292	E10 ePm1 95%	50 / 80	255	430
	2	592x592x292				
	2	592x592x292				
	2	592x287x292				
	4	592x592x292				
	6	592x592x292				

UFIOC

Filter module with ozone cells and ionizing cells and activated carbon



Product	UFIOC
Construction	Structure with 40 mm extruded aluminium profiles connected by die-cast aluminium corner joints
Filter media	Ionizing cell, ozone cell, activated carbon

SPECIFICATIONS

Filter unit, built with 40 mm extruded aluminium frame.
Ionizing cell (ion emission 5 million per cm^3.
Ozone cell (O3 emissions 294 $\mu g/m^3$).
Filter F19C (CTC 45%) 160 mm cartridges (3.1 kg activated carbon each) or on request 140 mm (2.5 kg activated carbon each).

FUNCTIONS

Thanks to a compact and lightweight structure, as well as high mechanical resistance, the filter unit ensures easy handling and simple installation, making it suitable for both civil and industrial systems.

APPLICATIONS

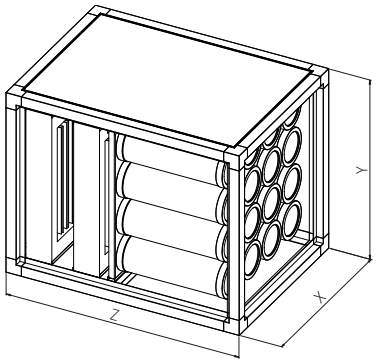
The combined module of ozone cells, ionizing cells and carbon filter is recommended for civil and industrial systems where high air sanitization performance against viruses and bacteria and significant odour reduction are required

QUICK SELECTION TABLE

Model	Flow rate	Ionizing cell			Ozone cell		
		Quantity	Dimensions	Emission ion	Quantity	Dimensions	Ozone emission
		N.	mm	million/cm^3	N.	mm	$\mu g/m^3$
3000	3000	1	592x592x100	5	1	592x592x48	196
6000	6000	2	592x592x100		2	592x592x48	
12000	12000	4	592x592x100		4	592x592x48	
18000	18000	6	592x592x100		6	592x592x48	

DIMENSIONAL

Size	Type box	Wt. kg	X mm	Y mm	Z mm
3000	2	92	655	715	1000
6000	2	170	1250	715	1000
12000	2	286	1250	1310	1000
18000	2	440	1845	1310	1000



F19 C									Total average pressure drop	Total final pressure drop
Quantity	Plate size	Efficiency	160 mm cartridges			140 mm cartridges				
N.	mm		Cartridges mm / No.	Carbon active kg	Pressure drop Pa	Cartridges mm / No.	Carbon active kg	Pressure drop Pa	Pa	Pa
1	592x592x24	CTC 45%	Ø 160x400 / 9	3,1	180	Ø 140x400 / 16	2,5	250	630	950
2	592x592x24		Ø 160x400 / 9	3,1	180	Ø 140x400 / 16	2,5	250		
4	592x592x24		Ø 160x400 / 9	3,1	180	Ø 140x400 / 16	2,5	250		
6	592x592x24		Ø 160x400 / 9	3,1	180	Ø 140x400 / 16	2,5	250		

AIR SANITIZERS

Filtration

Solutions for well-being of every breath

OXYPUR OP300

Air sanitizer

Product OXYPUR OP300

Application Sanitization of living spaces

Description Deep sanitization technology via UV light, controlled ozone, ionization and photocatalytic oxidation

SPECIFICATIONS

The OXYPUR OP300 air sanitizer eliminates eliminates 99.99% of viruses, bacteria and allergens present in the air or on surfaces in 30 minutes, thanks to deep sanitization achieved through UV light, controlled ozone emission, positive and negative ion emission and photocatalytic oxidation.

FUNCTIONS

Controlled ozone levels proactively oxidize germs present on surfaces and ensure environmental cleanliness and hygiene.
The incredible oxidation capacity of ozone helps eliminate bacteria, viruses and fungi dispersed in the air and effectively control unpleasant odours.
Millions of negative ions improve indoor air quality and also have a relaxing effect, reducing stress and increasing concentration.
Air, purified from allergens, moulds, mites, pollen and unpleasant odours such as smoke and pets, improves breathing and quality of life.

APPLICATIONS

The OXYPUR OP300 sanitizer eliminates 99.99% of viruses, bacteria and allergens present in the air or on surfaces in 30 minutes.
Improves quality of life in civil environments.

TECHNICAL FEATURES

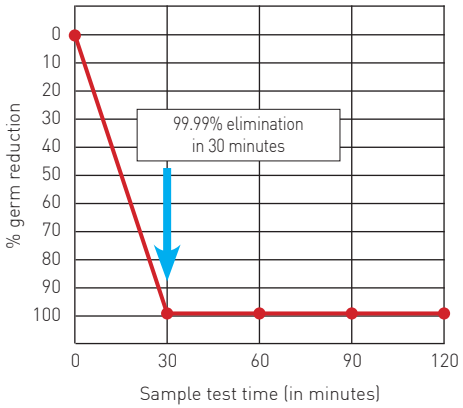
Sanitization technology	Controlled ozone, PCO, negative ions, UV light				
Power	DC 38V/3A (with power supply)				
Filter	Washable pre-filter				
Coverage area	279 m^2				
Settings	1	2	3	4	5
Noise level	32 dB	36 dB	41 dB	46 dB	51 dB
Display	LCD Screen				
Ion concentration	2 x 10^6 ↑/cm^3				
Power	54 W				
Dimensions (LxWxH)	315 x 229 x 280 cm				
Wt.	3,86 kg				

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

SURFACE TEST RESULTS

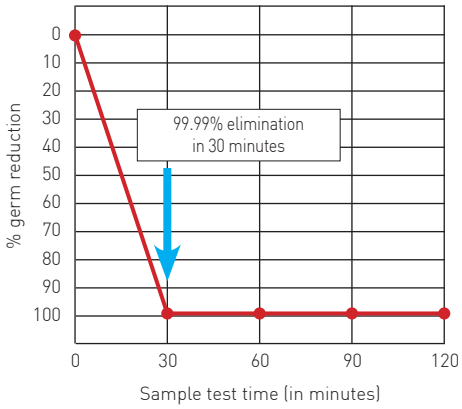
99.99% ELIMINATION IN 30 MINUTES OF STAPHYLOCOCCUS ALBUS FROM SURFACES

Eliminates germs from surfaces, such as Staphylococcus albus, with an efficacy rate of up to 99.99% in 30 minutes



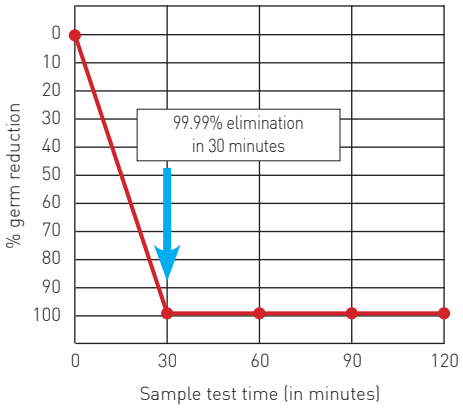
99.99% ELIMINATION IN 30 MINUTES OF STAPHYLOCOCCUS AUREUS FROM SURFACES

Eliminates germs from surfaces, such as Staphylococcus aureus, with an efficacy rate of up to 99.99% in 30 minutes



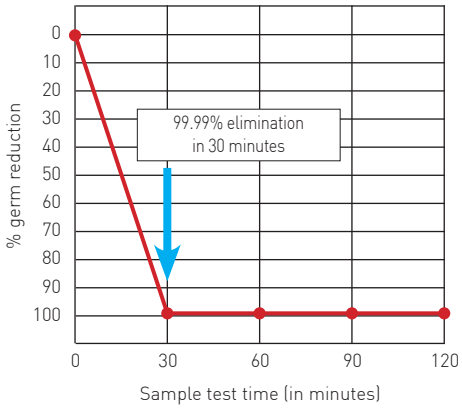
99.99% ELIMINATION IN 30 MINUTES OF ESCHERICHIA COLI FROM SURFACES

Eliminates germs from surfaces, such as Escherichia coli, with an efficacy rate of up to 99.99% in 30 minutes



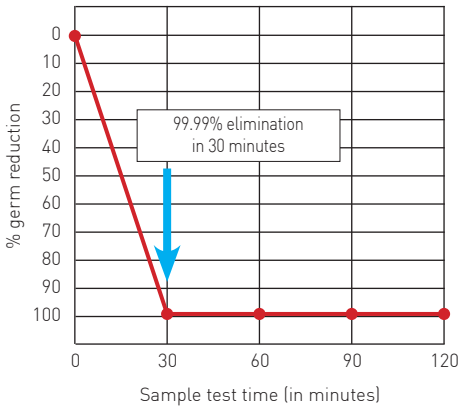
99.99% ELIMINATION IN 30 MINUTES OF KLEBSIELLA PNEUMONIAE FROM SURFACES

Eliminates germs from surfaces, such as Klebsiella pneumoniae, with an efficacy rate of up to 99.99% in 30 minutes



99.99% ELIMINATION IN 30 MINUTES OF H1N1 FROM SURFACES

Eliminates germs from surfaces, such as H1N1, with an efficacy rate of up to 99.99% in 30 minutes



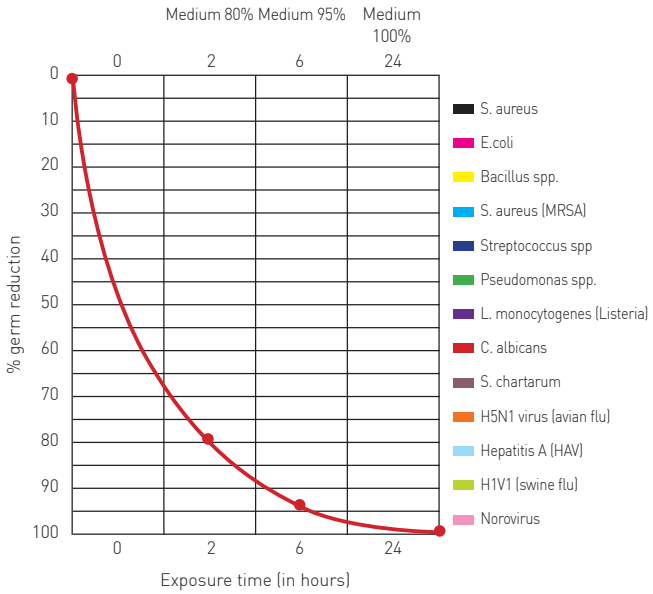
OXYPUR OP300

Air sanitizer

APPLICATION EXAMPLES

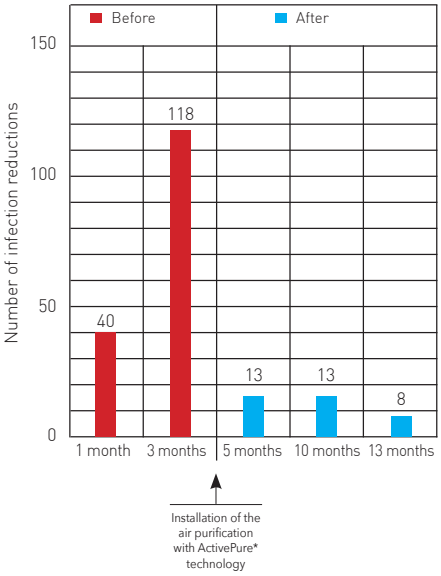
AVERAGE REDUCTION OF CONTAMINANTS ON SURFACES

ActivePure* Technology (RCI) - 24-hour test
conducted by Kansas State University



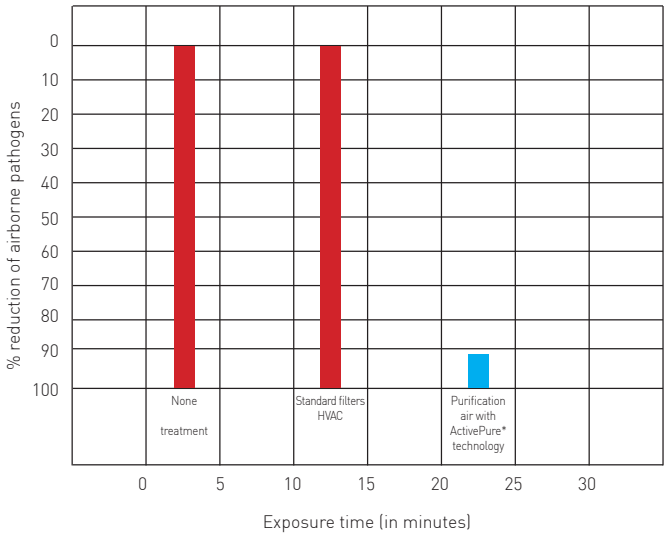
OVER 80% REDUCTION IN FLU INFECTIONS

ActivePure* Technology
installed in the Indiana School Facility



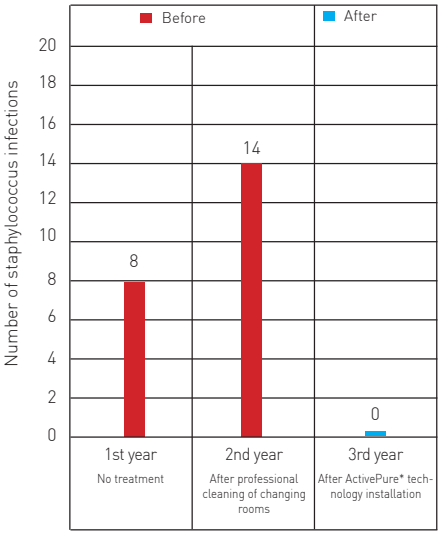
AVERAGE REDUCTION OF CONTAMINANTS IN THE AIR

ActivePure* Technology
Test conducted by the University of Cincinnati



100% REDUCTION OF STAPHYLOCOCCUS INFECTION

ActivePure* Technology installed
in the Ohio School Sports Facilities



Source: FA2.0 air sterilizer US testing

OXYPUR OP600

Professional air sanitizer

Filtration
Solutions for well-being of every breath

Product	OXYPUR OP600
Application	Professional air sanitization for civil and industrial environments
Description	Deep sanitization technology via G2 pre-filter, HEPA filter, UV light, controlled ozone and photocatalytic oxidation

SPECIFICATIONS

Sturdy aluminium structure equipped with swivel wheels.
Pre-painted sound-absorbing sandwich panels, 25 mm thickness.
Inspection door fitted with practical airtight closures.
Pre-filter with G2 efficiency.
HEPA filter H14 efficiency 99.995%.
UV lamp for sanitization of environments and surfaces through photocatalysis.
Ozone generator: natural measure for the elimination of bacteria, viruses and spores.
BRUSHLESS fan with high energy savings, low noise emissions, maintenance-free. Display-adjustable speed.
Programmable backlit LCD display.

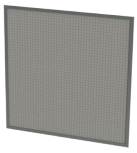
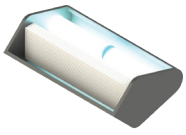
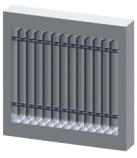
FUNCTIONS

The professional air sanitizer blocks fine dust through a G2 efficiency pre-filter and a HEPA H14 absolute filter.
Subsequently the UV lamp irradiates the noble metal (in this case titanium dioxide - TiO_2) which acts as a photocatalyst. The action, combined with air humidity, triggers the reaction that generates hydrogen peroxide (H_2O_2). This, spreading throughout the surrounding environment, enables the sanitization of the air and – by settling – also of the surfaces of the treated rooms.
It is also possible to set, via the LCD display, the ozone production function at specific time slots, so that the treatment takes place in the absence of people in the treated rooms.

APPLICATIONS

OXYPUR OP600 combines in a single device a combined filtration and disinfection technology, without the use of polluting and harmful chemical substances.
It is the ideal solution for environments such as: industries, warehouses, offices, shops, kitchens and the hotel sector, medical clinics, gyms.

COMPONENTS

PRE-FILTER	ABSOLUTE FILTER FOR LAMINAR FLOWS	UV LAMP (ultraviolet rays)	OZONE GENERATOR	BRUSHLESS FAN
				
Class G2 Dim. mm 592x592x5	Class H14 efficiency 99.995% Dim. mm 592x592x68	Photocatalysis		

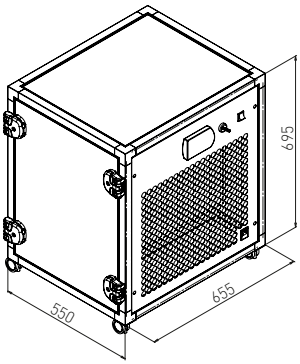
OXYPUR OP600

Professional air sanitizer

TECHNICAL FEATURES

Power supply	230V/1ph/50Hz
Max Absorption	200W
Fan flow rate	600 m^3/h
Wt.	50Kg

DIMENSIONAL

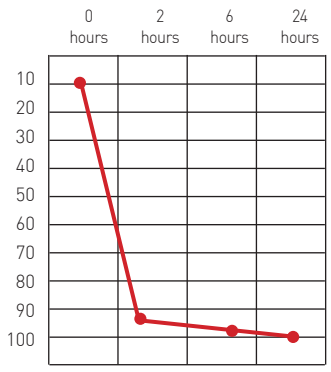


SOME EXAMPLES OF OZONE TREATMENT DURATION

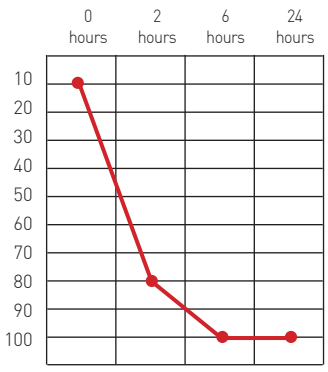
Environment to be treated (m^3)	Equivalent surface (room with height 2.7 m) (m^2)	Treatment duration with 3 air recirculations with 2.4 ppm of O_3 (minutes)	Treatment Duration with 5 air recirculations with 4.1 ppm of O_3 (minutes)
108	45	32	54
202	75	60	101
270	100	81	135
405	150	121	202
540	200	161	270
702	260	210	351

Reference data published by the Ministry of Health CNSA 27/10/2010

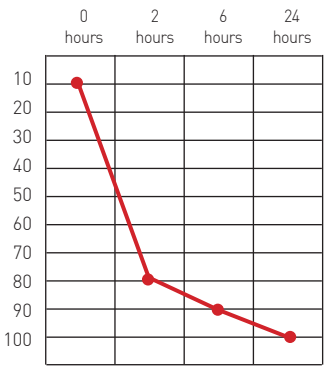
STAPHYLOCOCCUS AUREUS (MRSA)



ESCHERICHIA COLI

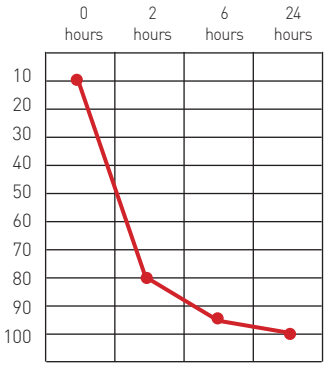


STREPTOCOCCUS SPP.

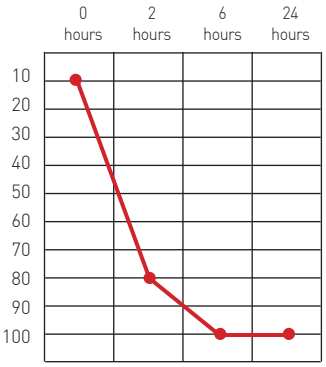


Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

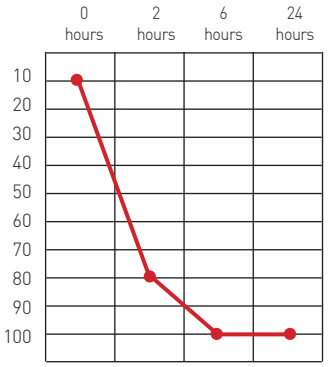
CANDIDA ALBICANDIS



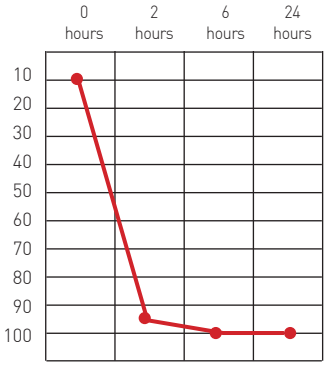
SWINE (H1N1)



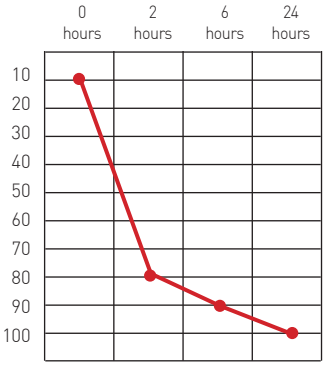
PICORNVIRIDAS (HEPATITIS A)



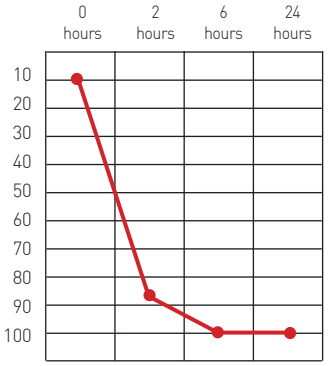
S. CHARTARUM



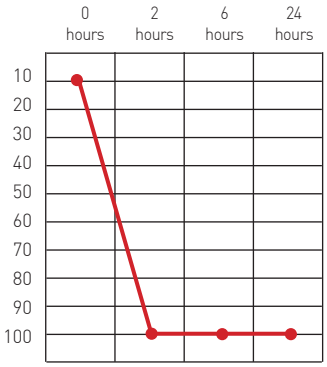
PSEUDOMONAS SPP.



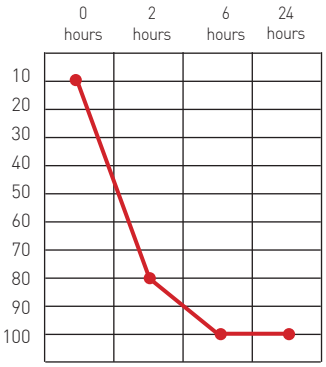
MURINE NOROVIRUS



LEGIONELLA PNEUMOPHILA



ASPERGILLUS BRASILINESIS



The graphs demonstrate the effectiveness of photocatalytic oxidation technology combined with ozone in reducing the bacterial load present in the environment. Tests were conducted over a 24-hour time span.

OXY CI

Ionizing cell

Product	OXY CI ionizing cell
Application	Professional air sanitization
Description	Negative ionization cell

SPECIFICATIONS

The new OXY CI negative ionization cell has been designed and built to be applied inside air handling units or along air distribution ducts

FUNCTIONS

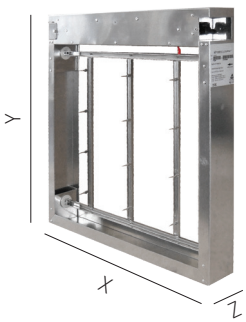
Thanks to its multipolar connection system, it is possible to insert multiple ionizing cells according to filtration and airflow requirements; assembly and disassembly is achieved by simple sliding on the filter holder frame of the air handling unit.
The integrated electronic power supply circuit is equipped with an LED that signals correct filter operation.

APPLICATIONS

OXY CI represents an absolute novelty in the air treatment sector.
Its insertion, after high efficiency electrostatic or absolute filtration, ensures greater sterilization and odour reduction, combined with greater environmental comfort.

TECHNICAL AND DIMENSIONAL FEATURES

Model	Flow rate air min/max m^3/h	Ion Emission cm^3	Electrical Power W	Dimensions XxYxZ mm	Wt. Kg
OXY CI 300	700 ÷ 1600	5 million	9	287x592x100	2,5
OXY CI 500	1070 ÷ 2770	5 million	16	490x592x100	3,0
OXY CI 600	1300 ÷ 7800	5 million	16	592x592x100	3,3
OXY CI 250	500 ÷ 1200	5 million	9	287x490x100	2,5
OXY CI 450	900 ÷ 2100	5 million	16	490x490x100	3,0
OXY CI 550	1000÷ 5800	5 million	16	592x490x100	3,3



OXY CO

Ozone cell

Filtration

Solutions for well-being of every breath

Product	OXY CO ozone cell
Application	Professional air sanitization
Description	Ozone cell

SPECIFICATIONS

The OXY CO ozone cell is ideal for sanitization, hygiene and disinfection of systems and environments as it is capable of degrading and eliminating any polluting or harmful element such as viruses, bacteria, mites, spores, moulds, insects and even harmful chemicals and unpleasant odours.

Multipolar connection system to insert multiple ozone cells according to filtration and airflow requirements. Assembly and disassembly by simple sliding on the air handling unit filter holder frame.

Integrated electronic power supply circuit with LED indicating correct filter operation.

FUNCTIONS

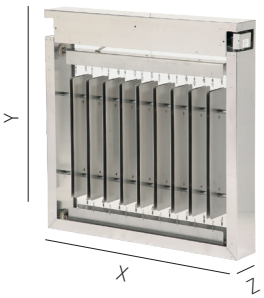
The cell exploits the oxygen naturally present in the air. Through a fan, the air flows inside the machine, where electronically the "corona effect" is generated, which splits oxygen molecules into single atoms. The oxygen atom naturally combines with the molecule free, forming an ozone molecule. In just a few minutes, OXY CO thus generates enough ozone to saturate the room. During the ozonization process, the rooms must be free of people.

APPLICATIONS

The application sectors that can benefit most from the adoption of the OXY CO cell are the public, healthcare, agri-food, hotel and catering sectors.

TECHNICAL AND DIMENSIONAL FEATURES

Model	Air speed m/s	Max flow rate m^3/h	O emissions$_3$ ppm	O emissions$_3$ $\mu g/m^3$	Dimensions XxYxZ mm
OXY CO 1	1	426	0,4	785	287x592x100
OXY CO 2	2	850	0,2	393	287x592x100
OXY CO 3	3	1274	0,15	294	287x592x100
OXY CO 4	4	1702	0,1	196	287x592x100
OXY CO 1	1	852	0,4	785	592x592x100
OXY CO 2	2	1700	0,2	393	592x592x100
OXY CO 3	3	2548	0,15	294	592x592x100
OXY CO 4	4	3404	0,1	196	592x592x100



OXY CO

Ozone cell

COMPARISON WITH GENERIC SANITIZERS

Action	Ozone	General
Odour	Typical	Unpleasant
Power	Excellent oxidant	Good oxidant
Antiviral activity	High	No
Antibacterial activity	High	Variable

OZOGEN

Odour abatement system with ozone technology

Product OZOGEN

Function Ozone generator

Use The use of ozone is the simplest and most effective sanitization tool, and should only be used in enclosed spaces such as: hotel rooms, homes, condominiums, meeting rooms, offices, clinics, nursing homes, medical clinics, kitchens, vehicles.

DESCRIPTION

Odour abatement system using ozone technology. Thanks to its use, the odorous impact is significantly reduced without resorting to the use of chemical products. Unlike many chemical products, ozone literally eliminates odours, it does not mask them. Ozone is a modification of oxygen, it finds no limits to its use since, after performing its oxidizing function, it decomposes again into oxygen leaving no odours or toxic residues.

Tests carried out on exhaust air from the environment have verified approximately 70% reduction of the odour units present in the flow.

OPERATING PRINCIPLE

The ozone generator operation is synchronized and modulated with the hood operation.

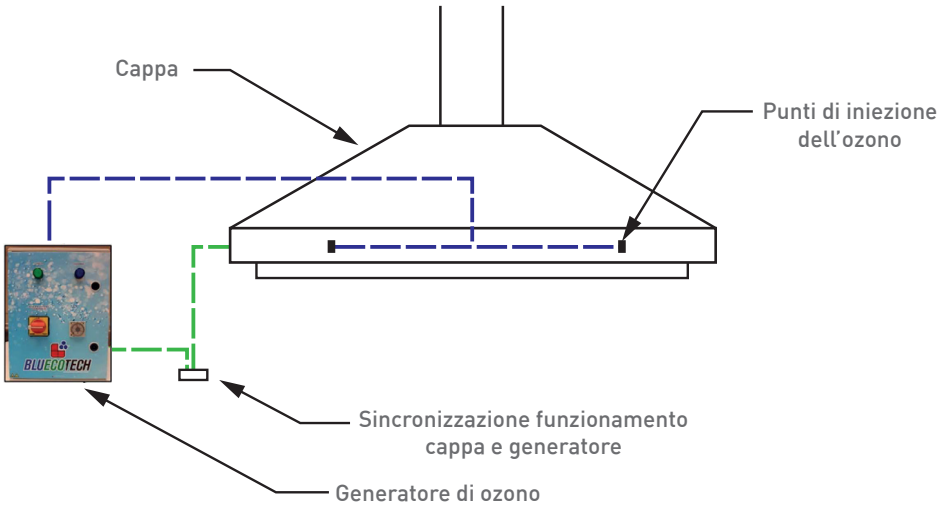
Ozone is injected directly into the hood so that it intercepts the outgoing airflow, mixing with and oxidizing the substances responsible for odours. The exhausted air will have a drastically reduced odorous component.

ADVANTAGES

It is ecological: it does not require the use of chemicals or consumables;

It degrades immediately while performing its oxidizing action against odorous substances;

Reduces overall operating costs as it is a simple, automated and easy-to-manage system.



OZOGEN

Odour reduction systems with ozone technology

REGULATION

The Italian Ministry of Health, with Protocol no. 24482 of 31/07/1996, recognized the use of ozone in water and air treatment as a natural agent for the sterilization of environments contaminated by bacteria, viruses, spores, moulds and mites. This sanitization method is recognized by the Food and Drug Administration in the Code of Federal Regulation (Title 21) and by the USDA in FSIS Directive 7120.1.

MODEL	OZOGEN
DIMENSIONS	405x500x200 mm
WEIGHT	8 kg
POWER SUPPLY	220 / 230 V – 50 / 60 Hz 12 / 24 V DC (Optional)
ABSORPTION	400 W
PRODUZIONE OZONO MAX	20 gr/h
POWER CONTROL	Yes
AIR FLOW REGULATION	Yes
AUTOMATIC OPERATION	Yes
TIMED OPERATION	Optional
OPERATION DELAY	Optional
AIR SUPPLY	- Built-in compressor - From company network (optional) - Dedicated compressor (optional) - Oxygen concentrator (optional)

RANGE COMPLETION PRODUCTS

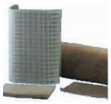
On request

Filtration
Solutions for well-being
of every breath

GLASS MICROFIBRE BAG FILTERS

F16V
Glass microfibre bag filters

PAINTING FILTERS



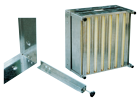
FAN
Inertial filters for paint overspray

FMS
Multi-layer filters for paint overspray

FLV
Long glass fibre filter media for paint overspray (paint stop)

FPC
Flat cardboard cells with long glass fibre filter media (paint stop)

ACCESSORIES



F23
Sub-frames

F26
Duct filter housings

F27
Duct safety housings for absolute filters

Terms of sale

Orders are subject to these General Terms and Conditions of Sale, unless otherwise agreed in writing. The purchase conditions expressly proposed in writing by the customer do not bind TEKNOWOOL AIR in any way and are superseded by these General Terms and Conditions of Sale.
Orders are considered accepted only after the official order confirmation is sent by TEKNOWOOL AIR. The buyer must report any anomalies or discrepancies within 24 hours of receipt. After this deadline, the COC is considered fully accepted. The order, at this point, cannot be revoked and/or modified in any way by the buyer without the written consent of TEKNOWOOL AIR. Otherwise, the buyer must reimburse Teknowool AIR for all costs incurred.

Price and payment terms

1. Unless otherwise specified, our price lists are purely indicative and may be modified in relation to any increases in the cost of labour, raw materials and other cost elements that may occur from the date of contract completion to the date of goods shipment.
2. The prices indicated are net of VAT, packaging and transport costs and any other charges, including tax, not expressly borne by contract or by law by TEKNOWOOL AIR.
3. For orders less than 150 euros net taxable merchandise, payment must be made in cash, cash on delivery or advance bank transfer.
4. All payments shall be made by the customer at the current and future offices of TEKNOWOOL AIR, against the issue of an invoice or other accounting document.
   The issue of bank receipts and the release of promissory notes shall not change the place of payment, which shall remain the offices of TEKNOWOOL AIR.
5. Late payment entitles TEKNOWOOL AIR, without the need for formal notice of default, to charge the Customer late payment interest at the conventional rate equal to the highest "Prime Rate" applied on the day of actual payment by regional banks (BIN), increased by 5%. In such case, TEKNOWOOL AIR is also entitled to withdraw from the contract without any compensation by simple notice via registered letter, with the obligation for the customer to immediately return the products already delivered.
6. Set-offs are not permitted. Any deferred payments may not be delayed or suspended even in cases of disputes, claims or delays by TEKNOWOOL AIR.
7. TEKNOWOOL AIR reserves the right to suspend and/or cancel orders in progress if there are doubts about the buyer's solvency, subject to making delivery conditional upon advance payment or the provision of suitable guarantees.

Delivery

8. Delivery, unless otherwise agreed, shall be ex-works from TEKNOWOOL AIR, packaging excluded. Even in the case of delivery to destination, delivery is considered completed at TEKNOWOOL AIR.
9. Transport risks are always borne by the customer.
10. Delivery is considered completed from the day following the notice of goods ready for transport.
11. Delivery terms are purely indicative and not binding. TEKNOWOOL AIR reserves the right to postpone delivery without this constituting cause for contract termination or a source of damage compensation.
12. We reserve the right to partially fulfil orders received and to proceed with separate invoicing of individual deliveries made.
13. TEKNOWOOL AIR, due to force majeure, including strikes, production plant failures and other causes attributable to third parties, has the right to reduce supply quantities, defer the delivery deadline or terminate the contract, without this giving the customer the right to compensation for damages.

Complaints and warranties

14. The buyer must verify within 7 days of delivery that the supply corresponds to the product requested. After this period, no dispute may be raised regarding the non-correspondence of the delivered product to what was

Tel. +39 049 641 679 | commerciale@teknowoolair.com | www.teknowoolair.com

ordered.

15. All claims concerning products delivered and sold must be submitted to Teknowool Air in writing within seven days of delivery, by registered mail with return receipt, under penalty of forfeiture. Claims cannot in any case justify late or non-payment. Shortages and damages must be reported to the carrier at the time of delivery.
16. It is expressly agreed that the warranty of Teknowool Air consists in the repair of the product supplied or its possible replacement, services that replace in all respects the warranties provided by law, which are expressly excluded together with the consequent rights to contract termination, damage compensation or price reduction.
17. Teknowool Air guarantees its products against manufacturing defects according to current European standards. The warranty is limited to the replacement or repair of products found to be originally defective; the cost of labour, travel and accommodation expenses for any travel by Teknowool Air technical personnel are borne by the customer. Parts to be repaired or replaced must be sent carriage paid to Teknowool Air. Parts to be repaired or replaced will be delivered to the customer carriage forward.
18. Teknowool Air reserves the right to modify technical and dimensional data without any prior notice.

Competent court

19. The Court of Padua has exclusive jurisdiction for any dispute arising from or connected to this contract.

NOTES

TEKNOWOOL® AIR
ADVANCED AIR TREATMENT SOLUTIONS

TEKNOWOOL AIR Srl
www.teknowoolair.com

Via Marconi, 1 - 35020 Legnaro PD
VAT No.: 04888500289 - Tel. +39 049 641679
commerciale@teknowoolair.com

Ventilation

Diffusion

VMC

Fire & Smoke