Manufacturing Forward

AIR FILTRATION SOLUTIONS FOR FOOD & BEVERAGE INDUSTRY

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Mikropor began its journey in 1987 with a passion to create "Tomorrow's Technology" and has become one of the leading manufacturers of atmospheric air filtration solutions and compressed air treatment systems for a variety of industries.

By closely following the latest developments in technology, Mikropor's "Best in Class" products and solutions are appreciated by customers in more than 140 countries.

The company's sustainable growth has been provided by its passion for innovation and commitment to quality, as well as its dedication to technology. Mikropor is an environmentally conscious company that values people, while developing products that extend the needs and expectations of customers.

With this mission, Mikropor continues to become one of the most recognized brands in the world by expanding its global penetration in the field of technological filtration and contributes to a healthier planet.

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THE IMPORTANCE OF AIR FILTRATION IN THE FOOD & BEVERAGE INDUSTRY

The Food & Beverage Industry is susceptible to microbial reproduction and has processes that require great sensitivity in air filtration. Temperature, humidity and air quality should be monitored in the best possible way. The risk of processing food in unfavourable environments to human health is undeniable. Mikropor produces solutions for the food&beverage industry with more than 30 years of experience in the field of air filtration.

Contaminations that occur during food&beverage processing will incur large production losses and serious costs and, if not intervened in a timely manner, may harm human health.

Protecting the health of consumers should be the most important consideration during any food and beverage production and Mikropor's comprehensive range of filtration solutions help the facilities control and protect the production from contamination.

Multiple researches show that air pollution rates are five times higher indoors than they are in outdoor environments. Pollutants such as mold, spores, bacteria, viruses and fine particles generated by production are present in high quantities in factory environments. Hence, the probability of contaminating products in the food processing and filling processes is too high to be ignored.

SUITABLE ZONES FOR PRODUCTION AND CORRECT FILTER SELECTION

The average number of 0.5 micron particles in food processing and water filling facilities is somewhere between 500,000 and 1,000,000 particles per cubic foot.

Bacteria tend to transfer/spread by attaching to these particles. In order to minimize this risk throughout the industry, FED 209E recommends 1000 or 10,000 classes to prevent micro bacterial growth at points where the product is manufactured, filled or in contact with air. With Mikropor solutions, the average concentration of bacteria can be reduced by 99%.

Mikropor can help the customers prevent contamination by offering an integrated service by supporting the processes with its experience and measurement equipment.

Mikropor Technical Teams analyse the production lines and filtration systems on site, advise the customers on their current status and make recommendations to improve the filtration process to meet the relevant class 1000 or 10,000 requirements. Mikropor determine the needs and offer tailored solutions including correct filter selections, reports and projects for its customers.

STANDARDS			PARTICLE COUNT			
US 209E 1992	ISO 14644 1996	BS 5295 1989	0.1 micron (per m^3)	0.3 micron (per m^3)	0.5 micron (per m^3)	0.5 micron (per ft^3)
-	CLASS 1	-	10	-	-	-
-	CLASS 2	-	100	10	-	-
1	CLASS 3	C	1000	102	35	1
10	CLASS 4	D	10000	1020	353	10
100	CLASS 5	E/F	100000	10200	3530	100
1000	CLASS 6	G/H	1000000	102000	35300	1000
10000	CLASS 7	J	-	-	353000	10000
100000	CLASS 8	K	-	-	3530000	100000

Measurements & Analysis

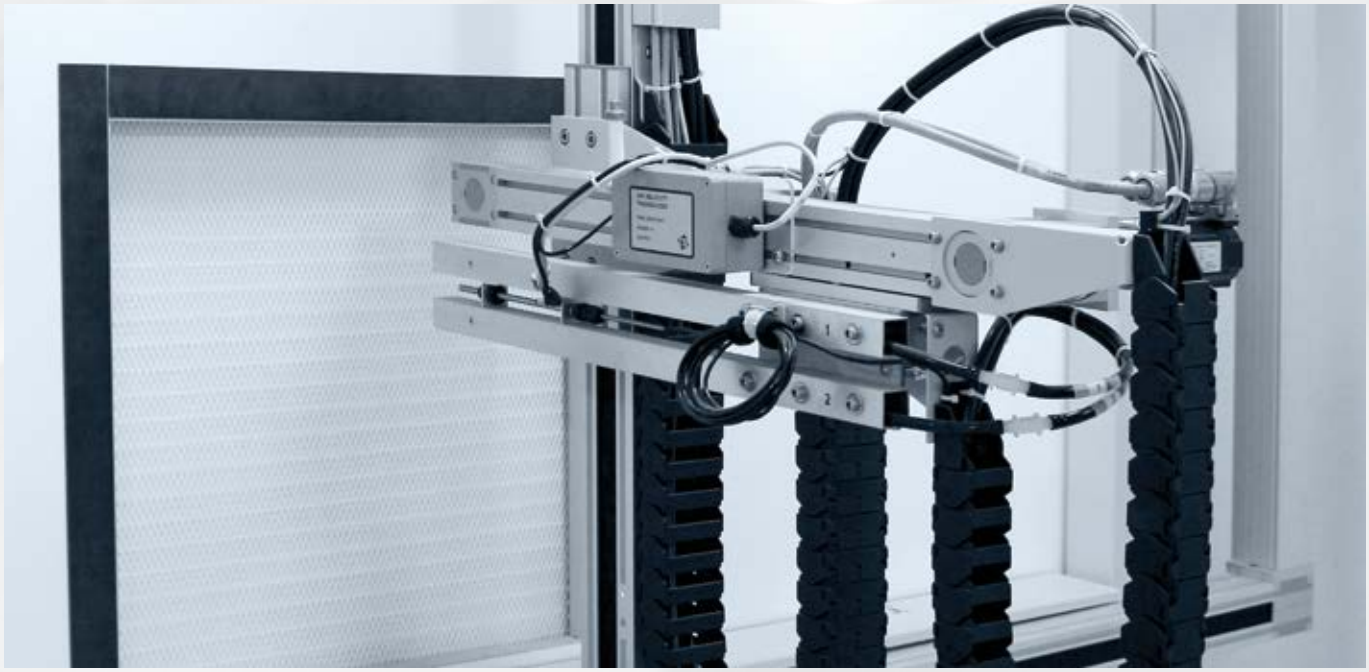
- Particle measurements of production areas and filling machines according to ISO 14644
- Filter leakage tests, differential pressure measurements
- Determination of compressed air quality according to ISO 8573.1: 2010 Standard
- Analysis of filters used in HVAC & AHU systems and determination of their suitability for food

FILTER CLASSIFICATION: EN 1822

Contaminants in air differ in size and affect different areas in a pharmaceutical process so classification of filters take a critical role. EPA, HEPA and ULPA filters are the main filter types for classification according to EN 1822 for filtration efficiency in Europe. HEPA and ULPA filters are also subject to individual tests. The international standard ISO 29463 is based on European standard EN 1822 and will probably replace this standard in the future. Both standards are based on the latest particle counting methods. The EN 1822 Standard involves, high-efficient and ultra-low permeability air filters (EPA, HEPA, ULPA) used in ventilating and air-conditioning, cleanroom technologies or applications in nuclear and pharmaceutical industries. Their classification is based on the measuring of the size of particles (MPPS) passing to the clean side at a specific air speed.

FILTER CLASSIFICATION	EFFICIENCY (%) @MPPS		PENETRATION (%) @MPPS	
EN 1822	Overall Value	Local Volue	Overall Penetration	Local Penetration
E10	85	-	15	-
E11	95	-	5	-
E12	99.50	-	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

EN 1822 reports must show average and local efficiency at the stated flow rate, initial pressure drop and class of the filter.



HYGIENE IN THE FOOD & BEVERAGE INDUSTRY

One of the most important factors of food safety is the hygiene of the materials that are in contact with the product. A hygienic environment in the food&beverage production process limits contamination and thus extends the shelf life of products. In the long term, the decrease in product losses provides a serious cost reduction to enterprises.

Mikropor provides suitable products for hygienic processes with VDI 6022 and VDI 3803 (Certification of Hygienic Conformity).

Mikropor's HEPA filters are produced in clean rooms with automation and robotic systems, in accordance with the hygiene standards, and individually tested according to EN1822 & ISO 29463.


DMT

Certification of Hygienic Conformity


DMT

Certification of Hygienic Conformity

ONE STEP FORWARD WITH ANTIMIC

Mikropor face a constant ongoing battle against all kinds of bacteria and viruses that threaten human health. In addition to our research and development activities, carried out in our laboratories, we collaborate with universities to stay ahead in the battle to keep human beings healthy & disease free.

Our filter groups are covered with Antimic® solution which is developed in cooperation with Sabancı and Istanbul Universities and neutralize 99.98%* of micro-organisms within the first hour.

Antimic® is a safe solution with a 3 and 4 profile toxicology approval from the E.P.A. (US Environmental Protection Agency). It is practically described as a non-toxic substance and is self-soluble in nature.

*AATCC Test Method 100-2004, % reduction of Legionella Pneumophila, Sabancı University, 2012

Advantages

- An intagrated service with Mikropor's experience and measurement equipment.
- Products for the food&beverage industry worldwide with the hygienic standards we observed in Mikropor's production facilities.
- Food safety guaranteed by VDI certification.
- Radical solution against bacterial growth with Antimic®.

MIKROPOR SOLUTIONS

With more than 20 years of global filtration experience as a World Class Manufacturer utilizing state of the art technologies and equipment, Mikropor understands its customers' demands and thus is the preferred partner for Food & Beverage applications worldwide.

MSKPN SERIES

Media	Synthetic
Frame	Plastic (ABS), Galvanized Steel, Stainless Steel
Final Pressure Drop	250 Pa
Operating Temperature	80°C
Filter Efficiency*	G4
Filter Class**	ISO Coarse
Sealant	Polyurethane
Separators	Thermoplastic Adhesive
Gasket	Optional

Applications
- Primary filtration

Advantages
- Tidy pleat spacing
- Light and rigid filter
- Leakage free

MV SERIES

Media	Microglass Fiber
Frame	PS
Final Pressure Drop	450 Pa
Operating Temperature	80°C
Filter Efficiency*	M6-F7-F8-F9
Filter Class**	ISO ePM10 / ISO ePM1
Gasket	Optional
Sealant	Polyurethane
Separators	Hot Melt
Header Thickness	20 mm, 25 mm

Applications
- HVAC
- Cleanroom applications
- Air purification of smokes, pollens

Advantages
- Compact design
- High surface area
- High efficiency
- Energy saver

* According to EN 779:2012 ** According to ISO 16890

MIKROPOR SOLUTIONS

MVHHT SERIES

Media	Micro Glass Fiber
Separators	Micro Glass Fiber
Frame	Stainless Steel or Galvanized Steel
Sealant	Silicone
Temperature Max	250°C
Final Pressure Drop	600 Pa

Applications

- Air conditioning systems
- Industrial processes

MV-ACP SERIES

Media	Active Carbon between Layers of Synthetic Media
Frame	Plastic (PS)
Final Pressure Drop	450 Pa
Operating Temperature	70°C
Carbon Weight	500 gr/m^2
Gasket	Optional
Sealant	Polyurethane

Applications

- Deodorization and purfication of gaseous polluants

Advantages

- High air flow

MPS FINE SERIES

Media	Synthetic
Frame	Galvanized Steel
Final Pressure Drop	450 Pa
Operating Temperature	80°C
Filter Efficiency*	M5-M6-F7-F8
Filter Class**	ISO ePM10 / ISO ePM2,5 / ISO ePM1
Media Color	M5: White / M6: Green / F7: Pink / F8: Yellow

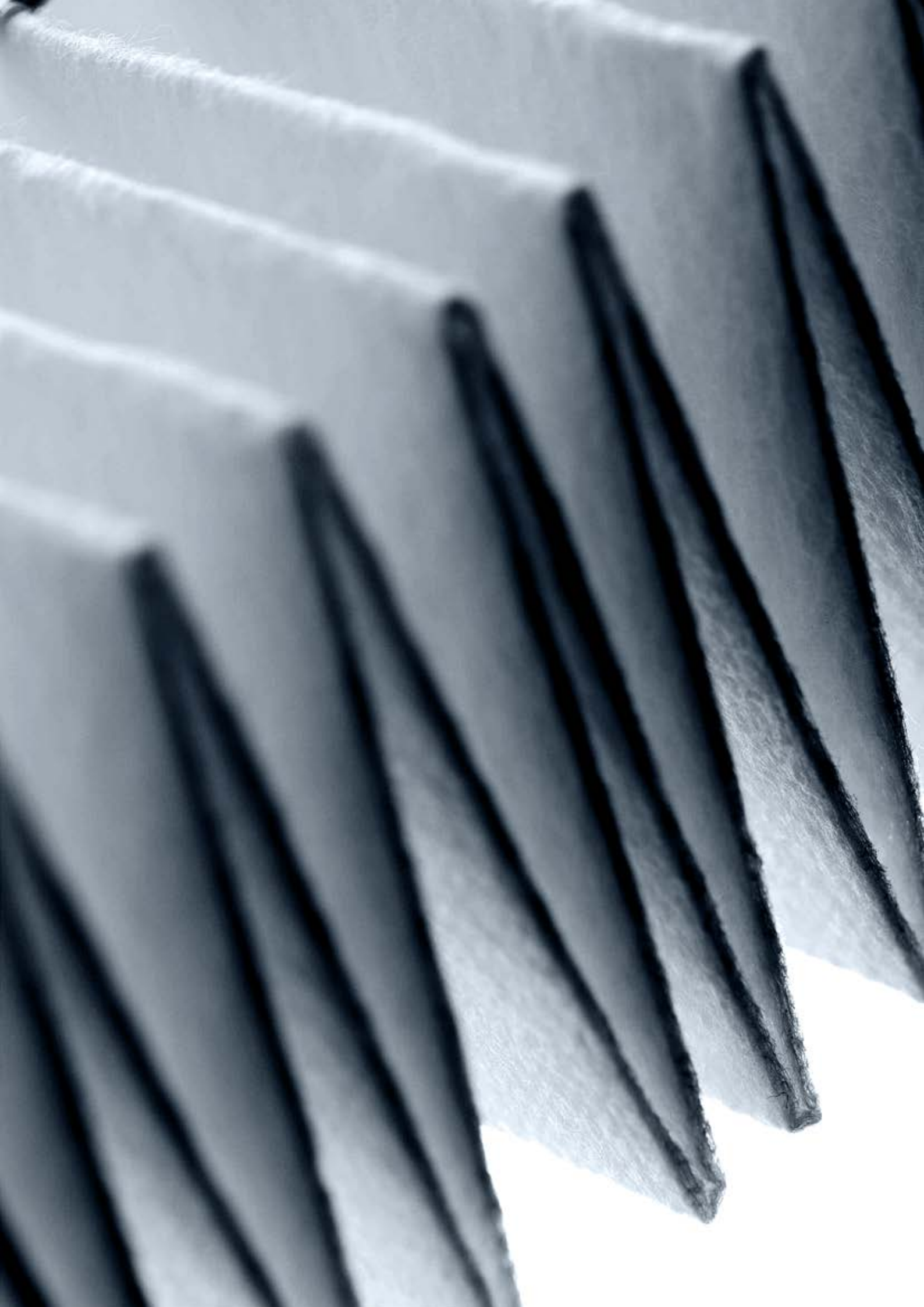
Applications

- HVAC

Advantages

- Low initial pressure drop

* According to EN 779:2012 ** According to ISO 16890



MIKROPOR SOLUTIONS

HFN SERIES ALUMINIUM PROFILE 78 mm

Media	Microglass Fiber
Frame	Extruded Anodized Aluminium
Final Pressure Drop	600 Pa
Operating Temperature	80°C
Filter Efficiency**	E10-U15
Gasket	Flat Neoprene
Protection Grids	Painted Aluminium on Both Sides
Separators	Hotmelt

78 mm Aluminium Profile View

Applications

- Air conditioning systems (Hospitals, Laboratories, Museums)
- Industrial processes (Pharmaceutical, Food, Microelectronics)

Advantages

- HFN product line fully meets the requirements for VDI 6022

MVH SERIES METAL FRAME 292 mm

Media	Microglass Fiber
Frame	Galvanized Steel, Aluminium, Stainless Steel
Final Pressure Drop	600 Pa
Operating Temperature	80°C
Filter Efficiency**	E10-H14
Gasket	Flat Neoprene or Half Round Endless Polyurethane
Protection Grids	Optional
Separators	Hotmelt

Applications

- Air conditioning systems (Hospitals, Laboratories, Museums)
- Industrial processes (Pharmaceutical, Food, Microelectronics)

Advantages

- Strong frame
- MVH product line fully meets the requirements for VDI 6022

ACTIVATED CARBON CARTRIDGES

Filter Part Name	MHA 165-450-ACG
Carbon Type	ACG
Material	Galvanized Steel with Epoxy Paint
Gasket	Epdm
Amount of Carbon	~4kg
RH. Max	70%
Max Temperature	40°C

Applications

- Absorption of odors and gases

MIKROPOR SOLUTIONS

FFU (Fan Filter Unit)

Manual / Electronic Fan Speed Adjustment
AC / EC Fan Motor
Aluminium or Stainless-Steel Frame
Low sound level
Available in STD / Custom Dimensions
Room Side HEPA Change Option

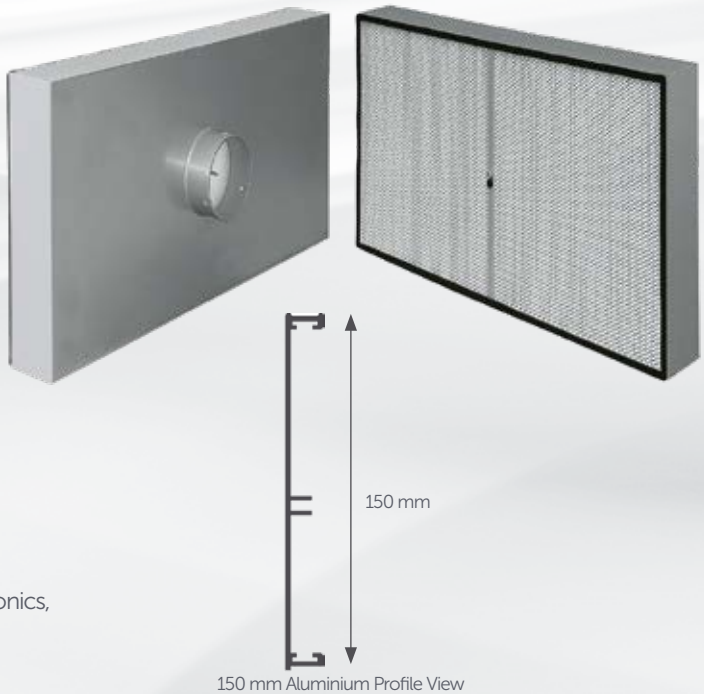
Media	Microglass Fiber
Frame	Extruded Anodized Aluminium / SS
Final Pressure Drop	600 Pa
Operating Temperature	80°C
Filter Efficiency****	E10-U15
Gasket	Half Round Endless
Protection Grids	Painted Aluminium / SS
Separators	Hotmelt

Applications

• Industrial processes (Pharmaceutical, Food & Beverage, Microelectronics, Hospitals)

MHH SERIES MICRO HOOD FILTER 150 mm

Media	Microglass Fiber
Frame	Extruded Anodized Aluminium
Final Pressure Drop	600 Pa
Operating Temperature	80°C
Filter Efficiency****	E10-U15
Collar Dimensions	150 mm, 200 mm, 250 mm, 300 mm, 400 mm
Collar Height	65 mm
Protection Grids	Painted Aluminium on Downstream Side
Separators	Hotmelt



150 mm Aluminium Profile View

Applications

• Industrial processes (Pharmaceutical, Food & Beverage, Microelectronics, Hospitals)

**** According to EN 1822

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