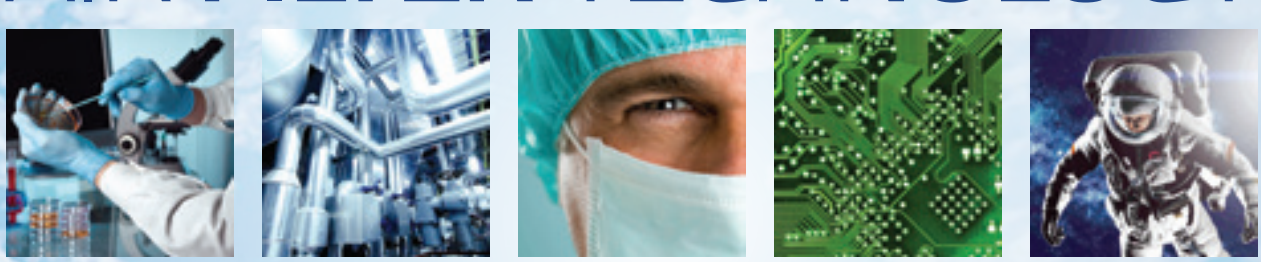
ulpatek

AIR **FILTER** TECHNOLOGY



ADVANCED FILTRATION FOR A BETTER FUTURE

ULPATEK Product Family

ROLL FILTERS
POLYURETHANE FILTERS
METAL FILTERS
Z-LINE FILTERS
BAG FILTERS
PANEL FILTERS
RIGID FILTERS
V-COMPACT FILTERS
HEPA CEILING FILTERS
GEL TYPE HEPA CEILING FILTERS
HEPA TERMINAL HOOD FILTERS
HIGH CAPACITY HEPA FILTERS
COMPACT FILTER WITH ALUMINIUM SEPERATOR
NUCLEAR HEPA FILTERS
FAN FILTER UNITS
CHEMICAL FILTERS
V-COMPACT TYPE ACTIVATED CARBON FILTERS
CARTRIDGE TYPE ACTIVATED CARBON FILTERS
CYLINDRICAL FILTERS
SAFE CHANGE HOUSINGS
HEPA FILTER HOUSINGS
LAMINAR FLOW UNITS FOR OPERATING THEATRES
LAMINAR FLOW UNITS WITH FFUS
MOBILE LAMINAR FLOW UNITS
LAMINAR FLOW CABINS FOR WEIGHING AND SAMPLING
PASS BOXES

About ULPATEK

The founders of ULPATEK company has been active in the field of cleanroom air conditioning in pharmaceutical, health and food sectors for more than 40 years. They know the importance of clean air and filtration from experience. Having the cleanroom filtration requirements in their mind, they established the new company to produce wide range of filters to answer the demands of air conditioning systems from simple AHU's to cleanrooms.

ULPATEK is manufacturing at their modern production facility in a closed area of 12.650 m² in Istanbul. Coarse, Medium, Fine, EPA, HEPA and ULPA filters are produced in cleanroom environment according to European standard ISO 16890 and EN 1822 by most advanced machines in the field of filtration. ULPATEK has ISO 9001 certificate from TUV NORD of Germany to ensure quality operations since the day production started and the most important certificate according to ISO 16890 called "Eurovent" has been received on the March of 2014. ULPATEK has exported their filters more than 70 countries up to the present.

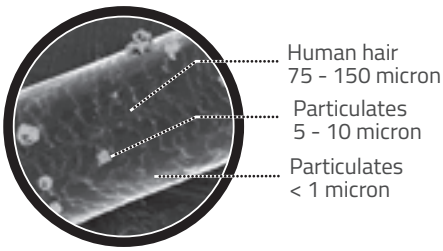
In the R&D facility inside the plant dedicated research engineers work on product support, new product development and application engineering. The company plans to pass its technical knowledge through training programs and with comprehensive literature to educate customers on filtration and IAQ.

Industrialization, population increase in cities as well as the protection of people during an airborne chemical and/or biological attack enhance the importance of filtration everyday more than before. ULPATEK employees take the role in the solution of this global problem as a world citizen .

Classification Standard ISO 16890

ISO 16890 standard is used as a new standard for air filter instead of EN 779 and ASHRAE 52.2. Measuring the efficiency of an air filter at a particle size range of 0,3 µm to 10 µm. The classification is carried out according to new standard for particle size range 0,3-1,0 µm, 0,3-2,5 µm and 0,3-10 µm.

The process is considered while choosing filters according to more detailed and global standard.



ISO 16890 TEST PROCEDURE STEP BY STEP

Step 1
Test procedure of the ISO 16890 standard begins with measuring the efficiency of an air filter at a particle size range of 0,3 µm to 10 µm.

Step 2
The Filter is subjected to an sopropanol vapor atmosphere to eliminate efficiency of electrostatic mechanism.

Step 3
Isopropanol vapor atmosphere conditioned Filter tested again to measure the minimum efficiency $ePM_{1,min}$ and $ePM_{2,5,min}$

Step 4
Efficiency for each PM size is calculated by the mean of both conditioned and the conditioned filter.

Step 5
The efficiencies for ePM1 are calculated for the particle size 0,3 -1 µm, ePM2,5 for the particle size range of up to 2,5 and ePM10 for the particle size range of up to 10 microns.

Step 6
The efficiencies for ePM1 are calculated for the particle size 0,3 -1 µm, ePM2,5 for the particle size range of up to 2,5 and ePM10 for the particle size range of up to 10 microns.

Particulate Matter	Size Range
PM_{10}	0,3 - 10 µm
$PM_{2,5}$	0,3 - 2,5 µm
PM_1	0,3 - 1 µm

ISO 16890 standard considers for the particle size (Particulate Matter = PM) between 0,3 µm and 10 µm for efficiency evaluation.

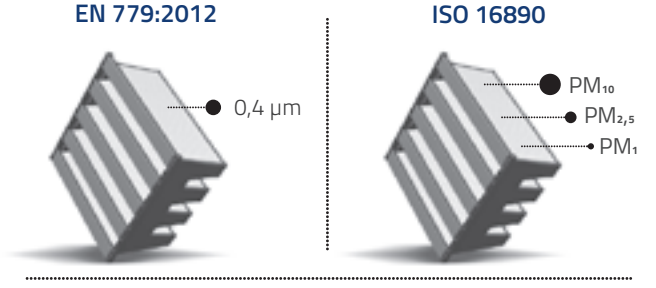
	EN ISO 16890 Classification			
	ePM_1	$ePM_{2,5}$	ePM_{10}	ISO Coarse
ePM_1 min	≥ 50%	-	-	-
$ePM_{2,5}$ min	-	≥ 50%	-	-
ePM_{10} min	-	-	≥ 50%	< 50%

OLD STANDARD **EN 779**	NEW STANDARD **ISO 16890**
Filter classes F7-F8-F9 M5-M6 G2-G3-G4	Four ISO groups ISO ePM_1 ISO $ePM_{2,5}$ ISO ePM_{10} ISO Coarse
The evaluation is carried out with a particle size of only 0,4 µm.	The evaluation is carried out with a particle size from 0,3 µm-10 µm.
Determining of average efficiency/arrestance after loading synthetic dust. Mean of test measurements at 0,4 µm particulate size.	The efficiency is measured according to the particle range. Measuring efficiencies after 24 hours of IPA process. Calculating the ePMx efficiency with mean of test measurements.
Dust holding capacity for synthetic test dust ASHRAE	Dust holding capacity for synthetic test dust ISO A2/AC Fine
Test final Δp G1, G2, G3, G4 = 250 Pa M5, M6, F7, F8, F9 = 450 Pa	Test final Δp ePM10 < 50% = 200 Pa ePM10 ≥ 50% = 300 Pa

European Association of Air Handling and Refrigerating Equipment Manufacturers, Eurovent's certification tells our clients that Ulpatek fine filters are tested by independent research laboratory and that Ulpatek's published product information must be accurate. Ulpatek has also ISO 9001 certificate from TUV NORD of Germany to ensure quality operations since the day production started.

EUROVENT CERTIFIED PERFORMANCE
AIR FILTERS CLASS M5-F9
www.eurovent-certification.com

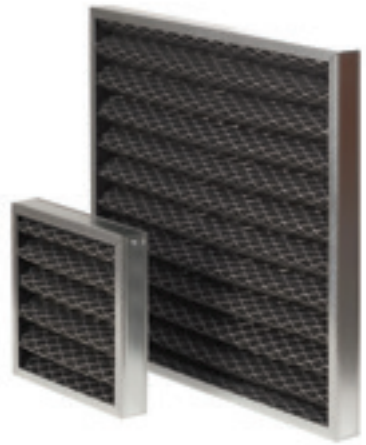
EN 779:2012	EN ISO 16890 – range of actual measured average efficiencies		
Filter Class	ePM_1	$ePM_{2,5}$	ePM_{10}
M5	5%-35%	10%-40%	40%-70%
M6	10%-40%	20%-50%	60%-80%
F7	40%-65%	65%-75%	80%-90%
F8	65%-90%	75%-95%	90%-100%
F9	80%-90%	85%-95%	90%-100%



Reference particle sizes according to EN 779: 2012 and ISO 16890 standards

Polyutrethane Filter

Filter Class (ISO 16890)	ISO Coarse
Filter Class (EN 779)	G2
Media	Polyutrethane
Frame Type	Galvanized steel
Standard Depth	20 - 48mm
Max. Operating Temperature	75°C
Application	Pre-filter for HVAC



Specifications

- Open cells polyurethane filter media
- Small transport volume
- Grid at both sides
- Various frame sizes with any dimensions
- Easy installation
- Washable
- Low pressure drop

Metal Filter

Filter Class (ISO 16890)	ISO Coarse
Filter Class (EN 779)	G2, G3
Standard Depth	20 - 48mm
Media	Expanded metal, wire mesh (stainless or galvanized steel)
Frame Type	Aluminium, stainless or galvanized steel
Application	Grease or oil mist seperation

Specifications

- Long service life
- Long maintenance intervals
- Easy to handle and install
- Multiple layers of media
- Various frame sizes with any dimensions
- Small transport volume
- Resistance to high temperatures
- Low pressure drop
- Mechanical strenght

Z-Line Filter

Filter Class (ISO 16890)	ISO Coarse
Filter Class (EN 779)	G3, G4, M5
Media	Polyester
Frame Type	Galvanized steel
Standard Depth	20 - 48 - 96mm
Max. Operating Temperature	75°C
Application	Pre-filter for HVAC

Specifications

- Lightweight
- Grid at both sides
- Changeable synthetic media
- %100 hot deep galvanized frame
- Fire retardant certified
- Various frame sizes with any dimensions
- Long maintenance intervals
- Easy installation
- High dust holding capacity

Synthetic Z-Line Filter

Filter Class (ISO 16890)	ISO Coarse
Filter Class (EN 779)	G3, G4
Media	Synthetic
Frame Type	Synthetic, cardboard, plastic
Standard Depth	48 - 96 mm
Max. Operating Temperature	75°C
Application	Pre-filter for HVAC

Specifications

- Nature friendly
- Easy destructible
- Disposable
- Lightweight
- Various depths and with any dimensions
- High filtration area

Cardboard Z-Line Filter

Filter Class (ISO 16890)	ISO Coarse
Filter Class (EN 779)	G3, G4
Media	Synthetic
Frame Type	Cardboard
Standard Depth	48 - 96 mm
Max. Operating Temperature	75°C
Application	Pre-filter for HVAC

Specifications

- Nature friendly
- Moisture resistant cardboard frame
- Disposable
- Long maintenance intervals
- High filtration area
- Lightweight
- High dust holding capacity
- Easy destructible

G3-G4 Bag Filter

Filter Class (ISO 16890)	ISO Coarse
Filter Class (EN 779)	G3, G4
Media	Polyester
Frame Type	Galvanized steel, plastic (25 mm)
Max. Operating Temperature	75°C
Application	Pre-filter for HVAC and power plants

Specifications

- Self-supporting pockets
- No special mechanical support required
- Polyester bags
- Low pressure drop
- Long service life
- Small transport volume
- Rigid bag model available (RB)
- Easy installation

Bag Filter

Filter Class (ISO 16890)	ISO ePM1 - ISO ePM10
Filter Class (EN 779)	M5 - F9
Media	Synthetic, glass fibre, nano
Frame Type	Galvanized steel, plastic (25 mm)
Max. Operating Temperature	75°C
Application	HVAC systems

Specifications

- Wide range of application area
- High quality filtration
- Standard pocket filter frames
- Special mechanical support
- Low pressure drop
- Long service life
- Small transport volume
- Easy installation

Panel Filter

Filter Class (ISO 16890)	ISO ePM1 - ISO ePM10
Filter Class (EN 779)	M6 - F9
Media	Glass fibre
Frame Type	Galvanized steel, plastic
Standard Depth	48 - 96mm
Max. Operating Temperature	75°C
Application	HVAC systems

Specifications

- Small transport volume
- Airflow and installation in any direction possible
- Self-supporting and rigid
- Easy installation, long service life
- Plastic and galvanized frame
- High quality glass fibre media
- Large surface area, low pressure drop
- Production of any dimensions
- Any gasket type and faceguard available

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AIR FILTERS CLASS M5-F9
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Filter Model		**P48 / G48 (6 m²)**			
Filter Class (ISO 16890)		ePM10 75%	ePM1 55%	ePM1 75%	ePM1 85%
Filter Class (EN 779)		M6	F7	F8	F9
Nominal Air Flow*	m³/h	2000	2000	2000	2000
Initial Pressure Drop	Pa	60	80	100	145
Filter Model		**P96 / G96 (12 m²)**			
Filter Class (ISO 16890)		ePM10 75%	ePM1 55%	ePM1 70-75%	ePM1 85%
Filter Class (EN 779)		M6	F7	F8	F9
Nominal Air Flow*	m³/h	3000	3000	3000	3000
Initial Pressure Drop	Pa	70	90	110	150

* According to 592 x 592 mm

Rigid Filter

Filter Class (ISO 16890) ISO ePM1 - ISO ePM10
Filter Class (EN 779) M6 - F9
Media Glass fibre
Frame Type Aluminium, plastic
Standard Depth 100 - 130mm
Max. Operating Temperature 75°C
Application HVAC, pre-filter for cleanrooms

Filter Model		A100 (10 m²)			
Filter Class (ISO 16890)		ePM10 70%	ePM1 55%	ePM1 75%	ePM1 85%
Filter Class (EN 779)		M6	F7	F8	F9
Nominal Air Flow*	m³/h	3000	3000	3000	3000
Initial Pressure Drop	Pa	100	125	150	170
Filter Model		**A130L / P130L (6,5 m²)**			
Filter Class (ISO 16890)		ePM10 75%	ePM1 55%	ePM1 75%	ePM1 85%
Filter Class (EN 779)		M6	F7	F8	F9
Nominal Air Flow*	m³/h	2250	2250	2250	2250
Initial Pressure Drop	Pa	75	100	130	170
Filter Model		**A130H / P130H (13 m²)**			
Filter Class (ISO 16890)		ePM10 75%	ePM1 55%	ePM1 75%	ePM1 85%
Filter Class (EN 779)		M6	F7	F8	F9
Nominal Air Flow*	m³/h	3000	3000	3000	3000
Initial Pressure Drop	Pa	90	110	140	160

* According to 592 x 592 mm

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AIR FILTERS CLASS M5-F9
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Specifications

- Low pressure drop; less energy consumption
- Anodized aluminium and plastic frame
- Airflow and installation in any direction possible
- Header depths are 20 and 25mm
- Easy installation
- Faceguard available

V-Compact Filter

Filter Class (ISO 16890) ISO ePM1 - ISO ePM10
Filter Class (EN 779) M6 - F9
Media Glass fibre
Frame Type Plastic, polycarbonate, metal
Max. Operating Temperature 75°C
Model HVAC, Energy, Temperature
Application HVAC, power plants and pre-filter for cleanrooms

Specifications

- Header depth is 25mm
- %100 recycled plastic frame
- Less maintenance and energy consumption
- Nature friendly
- Any gasket type and faceguard available
- Both sides can be used for any air flow directions
- Large surface area; low pressure drop
- Self-supporting and rigid
- High temperature model up to 120°C

EUROVENT CERTIFIED PERFORMANCE
AIR FILTERS CLASS M5-F9
www.eurovent-certification.com

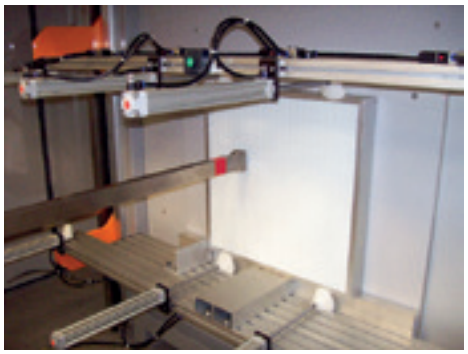
Filter Model		V-Compact (14 m²)				V-Compact Energy / Temperature (18 m²)			
Filter Class (ISO 16890)		ePM10 75%	ePM1 55%	ePM1 75%	ePM1 80%	ePM10 75%	ePM1 55%	ePM1 75%	ePM1 85%
Filter Class (EN 779)		M6	F7	F8	F9	M6	F7	F8	F9
Nominal Air Flow*	m³/h	4250	4250	4250	4250	4250	4250	4250	4250
Initial Pressure Drop	Pa	108	130	150	185	100	110	130	150

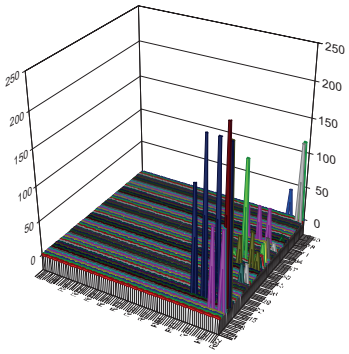
* According to 592 x 592 mm

Classification Standard EN1822 / TS EN ISO 29463

Efficient air filters (EPA), high efficiency air filters (HEPA) and ultra low penetration air filters (ULPA) are classified and tested according to EN 1822 standard for ventilation and air conditioning systems such as cleanroom applications.

New ISO 29463 standard formed as global standard with 5 sections, adapted from EN 1822 called "High-efficiency filters and filter media for removing particles in air".





Each HEPA and ULPA filters are tested and certified individually according to European and American Standards by Ulpatek. Prefiltering with close subclass filters to increase the service life of HEPA and ULPA filters is recommended.

Filter Classes and Equivalents

ISO 29463	Efficiency	IEST*	EN 1822
ISO 15 E	>95%	-	H 11
ISO 20 E	>99%	-	
ISO 25 E	>99.5%	-	H 12
ISO 30 E	>99.9%	-	
ISO 35 H	>99.95%	-	H 13
-	>99.97%	A,B,E,H,I	-
ISO 40 H	>99.99%	C,J,(K)	
ISO 45 H	>99.995%	K	H14
ISO 50 U	>99.999%	D	
ISO 55 U	>99.9995%	F	U15
ISO 60 U	>99.9999%	G	
ISO 65 U	>99.99995%	G	U 16
ISO 70 U	>99.99999%	G	
ISO 75 U	>99.999995%	G	U 17

IEST Type A, B, C, D, and E are classified per test result using photometers (Mil Std 282).
Types F, G, H, I, J, and K are classified per test result using particle counters.

Classification Standard EN ISO 14644-1

ISO 14644-1 defines the classification of air cleanliness in cleanrooms and associated controlled environments exclusively in terms of concentration of airborne particles. Only particle populations having cumulative distributions based on threshold (lower limit) particle sizes ranging from 0,1 µm to 5 µm are considered for classification purposes.

Cleanroom Classification

ISO Class Number	Maximum allowable concentrations (particles/m³) for particles equal to and greater than the considered sizes (a)						Fed Std. 209 (Class)
	0,1 µm	0,2 µm	0,3 µm	0,5 µm	1,0 µm	5,0 µm	particles/ft³
ISO 1	10	(d)	(d)	(d)	(d)	(e)	-
ISO 2	100	24 (b)	10 (b)	(d)	(d)	(e)	-
ISO 3	1.000	237	102	35 (b)	(d)	(e)	1
ISO 4	10.000	2.370	1.020	352	83 (b)	(e)	10
ISO 5	100.000	23.700	10.200	3.520	832	(d), (e), (f)	100
ISO 6	1.000.000	237.000	102.000	35.200	8.320	293	1.000
ISO 7	(c)	(c)	(c)	352.000	83.200	2.930	10.000
ISO 8	(c)	(c)	(c)	3.520.000	832.000	29.300	100.000
ISO 9	(c)	(c)	(c)	35.200.000	8.320.000	293.000	-

Notes:

a) All concentrations in the table are cumulative, e.g. for ISO Class 5, the 10.200 particles shown at 0,3 µm include all particles equal to and greater than this size.
b) These concentrations will lead to large air sample volumes for classification. Sequential sampling procedure may be applied; see Annex D.
c) Concentration limits are not applicable in this region of the table due to very high particle concentration.
d) Sampling and statistical limitations for particles in low concentrations make classification inappropriate.
e) Sample collection limitations for both particles in low concentrations and sizes greater than 1 µm make classification at this particle size inappropriate, due to potential particle losses in the sampling system.
f) In order to specify this particle size in association with ISO Class 5, the macroparticle descriptor M may be adapted and used in conjunction with at least one other particle size (See C.7.).

HEPA Ceiling Filter

Filter Class	H13 - H14 - U15
Media	High quality glass fibre
Frame Type	Aluminium, MDF
Faceguard	Painted aluminium
Gasket	EPDM, PU foam
Sealant	Two component polyurethane
Separators	Hotmelt
Max. Operating Temperature	75°C
Max. Final Pressure Drop	600 Pa

Specifications

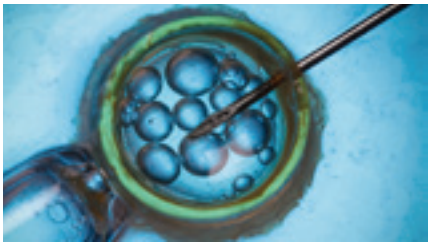
- Optimized velocity distribution
- Clean/both sides faceguard available
- Special gasket available
- Production of any dimensions
- With individual test certificate
- Low pressure drop, less energy consumption

Filter Model / Pleat Code		MN/1	AN/1	AN/1	AN/1	AM/3	AM/3	AL/6	AX/7
Filter Class (EN 1822)		H13	H13	H14	U15	H13	H14	H13	H13
Pleat Height	mm	50	50	50	50	75	75	100	125
Initial Pressure Drop @ 0,45 m/s	Pa	100	100	125	140	75	90	65	55

Frame Depth Code		AC	AS	AN	AD	AM	AF	AK	AL	AX
Available Standard Depth	mm	66	69	78	90	100	110	117	125	150
Available Pleat Heights Interval	mm	50	50	50	50-65	50-75	50-85	50-90	50-100	50-125

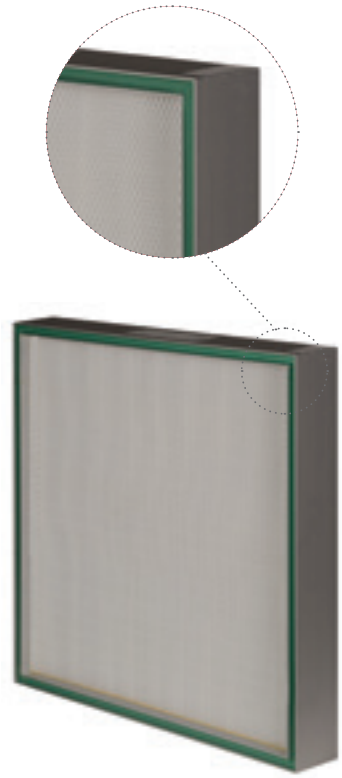
Pleat Code	Pleat Height	Filter Class	Min. Efficiency @ MPPS (EN 1822) (%)	Min. Efficiency @ 0,3µm (DOP) (%)	Filtration Area per Face Area (m^2/m^2)	Pack Resistance @ 0,45 m/s (Pa)	Available Frame Code for Pleat	Available Frame Depth for Pleat (mm)
1	50	H13	99,95	99,99	24,2	100	AC, AS, AN, ASM, AD, AM, AF, AK, AL, AX	66, 69, 78, 89, 90, 100, 110, 117, 125, 150
		H14	99,995	99,999	25,3	125		
		U15	99,9995	-	26,9	140		
2	65	H13	99,95	99,99	31,4	85	AD, AM, AF, AK, AL, AX	90, 100, 110, 117, 125, 150
		H14	99,995	99,999	32,8	110		
3	75	H13	99,95	99,99	36,3	75	AM, AF, AK, AL, AX	100, 110, 117, 125, 150
		H14	99,995	99,999	37,9	90		
4	85	H13	99,95	99,99	41,1	70	AF, AK, AL, AX	110, 117, 125, 150
		H14	99,995	99,999	43,0	85		
5	90	H13	99,95	99,99	41,1	70	AK, AL, AX	117, 125, 150
		H14	99,995	99,999	43,0	85		
6	100	H13	99,95	99,99	48,4	65	AL, AX	125, 150
		H14	99,995	99,999	50,5	80		
7	125	H13	99,95	99,99	60,5	55	AX	150
		H14	99,995	99,999	63,2	70		

High efficiency HEPA Ceiling filters protect people, equipment and processes from airborne particulate contamination. They are designed for cleanroom ceilings and laminar flow units requiring high or very high levels of air purity.



Gel Type HEPA Ceiling Filter

Filter Class	H13 - H14 - U15
Media	High quality glass fibre
Frame Type	Aluminium
Faceguard	Painted aluminium
Gasket	Gel (liquid) gasket
Sealant	Two component polyurethane
Separators	Hotmelt
Max. Operating Temperature	75°C
Max. Final Pressure Drop	600 Pa



Specifications

- Optimized velocity distribution
- Excellent sealing
- Faceguard on both sides
- Production of any dimensions
- With individual test certificate
- Low pressure drop, less energy consumption
- Suitable for knife edge frame systems

Filter Model		ANJ/N		AJ/J		AMJ/M		ALJ/L	
Filter Class (EN 1822)		H13	H14	H13	H14	H13	H14	H13	H14
Initial Pressure Drop @ 0,45 m/s	Pa	100	125	90	115	85	100	65	80
Frame Depth	mm	80		91		104		128	
Filtration Area	m²	9	9,4	10,7	11,3	12,4	13,1	18	18,8

* According to 610 x 610 mm

HEPA Terminal Hood Filter

Filter Class	H13 - H14 - U15
Media	High quality glass fibre
Frame Type	Aluminium
Faceguard	Painted aluminium
Sealant	Two component polyurethane
Separators	Hotmelt
Max. Operating Temperature	75°C
Max. Final Pressure Drop	600 Pa

Specifications

- Optimized velocity distribution
- EMERY (DOP) and ΔP nozzles included
- Easy installation for the low ceiling
- With fixed air distribution plate and without divider option
- With adjustable air distribution plate and divider option
- With individual test certificate
- Low pressure drop, less energy consumption
- Production of any dimensions
- Special gasket depends on application
- Spigot of any standard dimensions

HEPA Terminal Hood Filter Model		Disposable Filter Model			Changeable Filter Model		
HEPA Terminal Hood Filter Code		AL/1			AMJ/M		
Filter Class (EN 1822)		H13	H14	U15	H13	H14	U15
Initial Pressure Drop @ 0,45 m/s	Pa	90	115	135	85	100	115
Filtration Area	m²	11	11	11	11	11,6	12,4

* According to 610 x 610 mm HEPA Terminal Hood Filter

Disposable Filter Model

- Single module
- Frame depth; 125 and 175 mm

Changeable Filter Model

- Gel type filter (AMJ; 104 mm)
- Filter; 33mm less than module
- Frame depth; 175 mm

High Capacity HEPA Filter with Single Pleat

Filter Class	E10 - E11 - E12 - H13 - H14
Media	High quality glass fibre
Frame Type	Galvanized steel, stainless steel, aluminium, MDF
Faceguard	Painted aluminium sheet metal
Gasket	EPDM, PU foam
Sealant	Two component polyurethane
Separators	Hotmelt
Max. Operating Temperature	75°C
Max. Final Pressure Drop	600 Pa

Specifications

- Suitable for high air flow rate
- Clean/both sides faceguard available
- Special gasket available
- With individual test certificate
- Low pressure drop, less energy consumption
- Production of any dimensions

Filter Model		M20 / G20		M30 / G30	
Filter Class (EN 1822)		H13	H14	H13	H14
Nominal Air Flow*	m^3/h	2000	2000	3000	3000
Initial Pressure Drop	Pa	240	250	250	270
Filtration Area	m^2	18	20	26	30

* According to 610 x 610 mm

High Capacity HEPA Filter with V-Modul Design

Filter Class	E10 - E11 - E12 - H13 - H14
Media	High quality glass fibre
Frame Type	Galvanized steel, stainless steel, aluminium, plastic
Gasket	EPDM, PU foam
Sealant	Two component polyurethane
Separators	Hotmelt
Max. Operating Temperature	75°C - 120 °C
Max. Final Pressure Drop	600 Pa

Specifications

- Suitable for high air flow rate
- Special gasket option
- Low pressure drop, less energy consumption
- With individual test certificate
- Use for air velocities up to 3m/s
- High temperature model up to 120°C
- Compact and strong construction

Filter Model		G30		G40	
Filter Class (EN 1822)		H13	H14	H13	H14
Nominal Air Flow*	m^3/h	3000	3000	4000	4000
Initial Pressure Drop	Pa	250	250	290	300
Filtration Area	m^2	26	30	37	40

* According to 610 x 610 mm

Compact Filter with Aluminium Seperator

Filter Class	E10 - E11 - E12 - H13 - H14
Media	High quality glass fibre
Frame Type	Galvanized steel, stainless steel, MDF
Gasket	EPDM, PU foam, Silicon
Sealant	Two component polyurethane and silicon
Separators	Corrugated aluminium seperator
Max. Operating Temperature	75°C - 120 °C - 220°C
Max. Final Pressure Drop	600 Pa

Specifications

- Suitable for high operating temperatures
- High dust holding capacity
- With individual test certificate
- With single, double or without flange
- Low pressure drop, less energy consumption
- Clean/both sides faceguard available

Filter Class (EN 1822)		H13	H14
Nominal Air Flow*	m^3/h	2500	2200
Initial Pressure Drop	Pa	250	250
Filtration Area	m^2	22	22

* According to 610 x 610 mm

Nuclear HEPA Filter

Filter Class	Nuclear type H13
Media	High quality glass fibre
Frame Type	Galvanized sheet metal, stainless sheet metal
Gasket	Silicon
Sealant	Two component polyurethane
Separators	Hotmelt
Max. Operating Temperature	120°C
Max. Final Pressure Drop	600 Pa

Specifications

- Suitable for high air flow rate
- Compact and strong construction
- With individual test certificate
- Accordance with standard of ASME AG-1
- Low pressure drop, less energy consumption

The glass fibre accordance with standards of ASME AG-1 and EN1822.

Filter Model		G26	G34
Filter Class (EN 1822)		H13	H13
Nominal Air Flow*	m^3/h	2600	3400
Initial Pressure Drop	Pa	250	300
Filtration Area	m^2	26	37

* According to 610 x 610 mm

V-Compact EPA and HEPA Filters

Filter Class	E10 - E11 - E12 - H13 - H14
Media	High quality glass fibre
Frame Type	Plastic, galvanized steel
Frame Depth	292 - 430mm
Gasket	EPDM, PU foam
Sealant	Two component polyurethane
Separators	Hotmelt
Max. Operating Temperature	75°C
Max. Final Pressure Drop	600 Pa

Specifications

- Faceguard on clean side available
- Both sides can be used for any air flow directions
- High filtration area avalaible (430mm)
- Suitable for HVAC systems and power plants

Filter Model		EPA & HEPA V-Compact			
Filter Class (EN 1822)		E10	E11	E12	H13
Nominal Air Flow*	m^3/h	4000	3400	3000	2500
Initial Pressure Drop	Pa	200	190	270	250

* According to 592 x 592 mm

Cylindrical Filter

Specifications

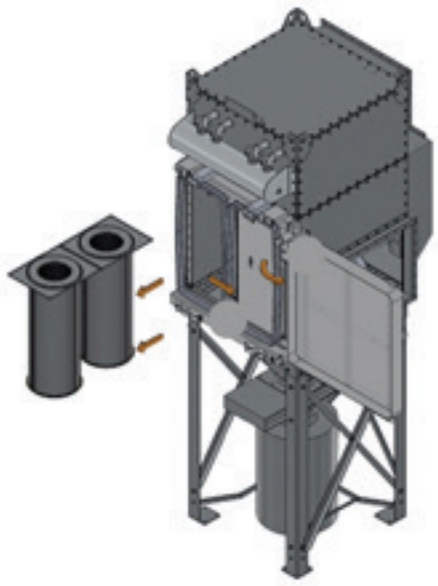
- Standard and special installation solutions
- Inner/outer faceguard option
- Both sides can be used for any air flow directions
- High filtration area available
- Special gasket depends on application

Filter Paper Types

- Glass fibre
- Synthetic fibre
- Synthetic - Cellulose fibre blend
- Different type of antistatic media
- Various polyester solutions

Aplication Areas

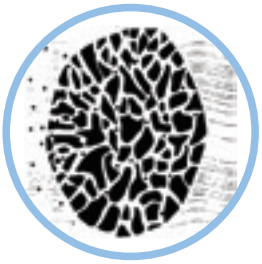
- Dust collection systems
- Power plants
- Compressors
- Pharmaceutical industries
- Food industries
- Welding applications



GAS PHASE FILTERS

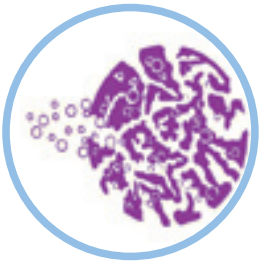
Gas phase filter media is made up of pellet pieces that chemically absorb pollutants gases from the air. Chemical filtration media is not based on a carbon adsorption process as other air filtering systems. Media is instead specifically created to neutralize specific gases.

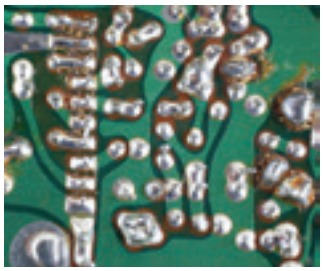
This means that the pollutants gases are actually converted into harmless particles inside the filter and most filters will not become dangerous to handle.Ulpatek has a wide range of media granules each of which reacts to a specific pollutant. After a needs analysis, custom media mixes can be created to deal with a facility's healthy air and may be used to control corrison.



Gas pollutants are filtered on media surface with weak van der Waal's forces in physical method. That works also reversible after the removal capacity saturate.

Gas pollutants reacted to media's surface via chemical bonds in chemical method. Chemical adsorption is irreversible.





Corrosion Problems

Odor Problems

Toxic Problems

IAQ Problems

Product Family	Gas Phase Pollutants											
	CxHy	Cl_2	Odor	VOC's	H_2S	SO_2	NO_2	HCHO	HCl	Hg	R.active Iodine	NH_3
ULP-Bi-On AC Active Max	√		√	√								
ULP-Bi-On +11%					√	√	√	√				
ULP-Bi-On +11% / AC	√		√	√	√	√	√	√				
ULP-Bi-On KOH		√			√	√			√			
ULP-Bi-On KI4%					√	√		√		√	√	
ULP-Bi-On ACPA												√
ULP-Bi-On Cl		√							√			
ULP-Bi-On S										√		
ULP-Bi-On Triple Blend	√	√	√	√	√	√	√	√	√			

ULP-Bi-On KOH

ULP-Bi-On Cl

ULP-Bi-On KI4%

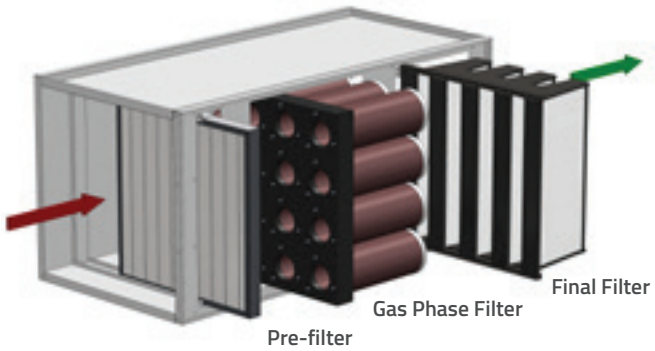
ULP-Bi-On +11%

ULP-Bi-ON AC Active Max

ULP-Bi-On Triple Blend

Use of Gas Phase Filter

Gas phase filtration and particulate filtration must work together for acceptable indoor air quality in controlled environments. Gas pollutants are filtered with Ulpatek's gas phase air filters which are produced from one or mix filter media.



Commercial Applications

People usually spend their time in closed spaces like offices, schools, shopping malls, restaurants, cafes, hospitals, hotels, factories etc. That's why controlling airborne pollutants is critical to maintaining sufficient indoor air quality. Particulate and gas pollutants must be filtered for sufficient indoor air quality.

Hospital

Office

Airport

Museum

IAQ & Energy Conversation According to ASHRAE Standard 62.1

Indoor contaminants are controlled with minimum required airflow "34m³/h x person" according to ASHRAE's "Ventilation Rate Procedure".

Outdoor air requirement can be reduced to "8,5m³/h x person" according to the IAQ Procedure of ASHRAE's Standard 62.1 by using gas phase filtration.

Sick Building Syndrome

Some buildings are surrounded with sick building syndrome due to the change of user requirements and insufficient HVAC designs.

Inadequate ventilation's reasons depend on many parameters, but the most important parameter is the contamination control. Gas phase and particulate filtration can help the buildings for recovering from the sick building syndrome.

Use of Gas Phase Filters According to ODA and SUP Categories

Following the provisions of EN 16798-3:2017, it is recommended to apply additional gas filters to complement particle filtration for the following combinations of outdoor air quality (gaseous) and supply air quality classes:

Outdoor Air Quality	Supply Air Quality				
	SUP 1	SUP 2	SUP 3	SUP 4	SUP 5
ODA (G) 1	Recommended				
ODA (G) 2	Required	Recommended			
ODA (G) 3	Required	Required	Recommended		

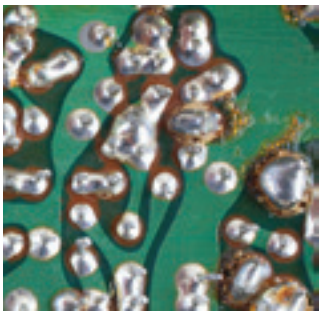
ODA: Outdoor air according to particulate matter concentration
SUP: Supply air according to particulate matter concentration

Industrial Applications

Corrosion Control

Petrochemical Refinery

Process control systems, data centers and other rooms that have instrumentation which has to be environmental controlled must appropriate to G1 classification according to ISA requirements. Achieving room ventilation design requirement must supply a minimum room pressurization of 1-3 air changes per hour and recirculation of 6-12 air changes per hour. Temperature is typically 22°C (±2°C) with humidity less than 50% relative humidity. Tightness of the room is also another parameter while defining the design parameters. In addition to these parameters, hazardous pollutants are main parameter which must be removed from the enclosed space. According to the ANSI/ISA 71.04, contamination concentration levels are defined as follows.



Corrosion

Severity Level Contaminant		Gas	G1 / Mild	G2 / Moderate	G3 / Harsh	GX / Severe
			Concentration (ppbv)			
		H_2S	<3	< 10	<50	≥50
	Group A	SO_2	<10	<100	<300	≥300
Reactive Species		Cl_2	<1	<2	<10	≥10
		NOx	<50	<125	< 1.250	≥ 1.250
		HF	<1	<2	< 10	≥10
	Group B	NH_2	<500	< 10.000	< 25.000	≥25.000
		O_3	<2	<25	<100	≥100

Passive Monitoring: It is made with copper-silver coupons which must be used at the site with 30-90 days periods for defining remaining life and design parameters.

Online Monitoring: It has an instant measurement of gas contamination.

Copper-Silver Coupon

Severity Level	G1 / Mild	G2 / Moderate	G3 / Harsh	GX / Severe
Copper reactivity level (angstroms)	<300	<1000	<2000	≥2000
Silver reactivity level (angstroms)	<200	<1000	<2000	≥2000

Online Monitoring Device

Odor and Toxic Gas Control

Odors are generally formed from commercial and industrial facilities like biogas, waste water treatment plants, etc.

Toxic gas scrubbing is generally needed for filtration and neutralizing of chlorine (Cl_2), sulfur dioxide (SO_2) or ammonia (NH_3).

Waste Water Treatment Plant

Drum Scrubber

V-Compact Type Activated Carbon Filter

Media Carbon media between synthetic layers
Frame Type Plastic, galvanized steel
Frame Depth 292 mm
Sealant Two component polyurethane
Max. Operating Temperature 50°C

Specifications

- General gas phase applications
- Both sides can be used for any air flow directions
- Low pressure drop, energy saving

Application Areas

- Public buildings
- Airports
- Hospitals
- Food and Pharmaceutical industry
- Comfort air conditioning systems
- Dining hall ventilation

Cartridge Type Activated Carbon Filter

Media Virgin and enriched pellets
Frame Type Galvanized steel, stainless steel, plastic
Cartridge Height 400-450-500-600 mm
Gasket EPDM
Max. Operating Temperature 50°C

Specifications

- Powder coated cartridge in any RAL code
- Sealed cap with robust pin
- High efficiency in gas filtration
- Mounting frame with special plaster
- Easy assemble with podger
- Recommended pre-filtration

Application Areas

- Public buildings
- Airports
- Hospitals
- Food and Pharmaceutical industry
- Comfort air conditioning systems
- Kitchen ventilation

Filter Model	Filter Class	Dimensions (WxHxD) (mm)	Nomial Air Flow (m^3/h)	Initial Pressure Drop (Pa)	Cartridges Quantity (pcs.)	Cartridge Volume (dm^3)
AC-H8-305x610x400	Cartridge Filter	305x610x400	1200	<150	8	4,7
AC-H16-610x610x400	Cartridge Filter	610x610x400	2400	<150	16	4,7
AC-H8-305x610x450	Cartridge Filter	305x610x450	1280	<150	8	5,3
AC-H16-610x610x450	Cartridge Filter	610x610x450	2560	<150	16	5,3
AC-H8-305x610x600	Cartridge Filter	305x610x600	1700	<150	8	7,0
AC-H16-610x610x600	Cartridge Filter	610x610x600	3400	<150	16	7,0

Cartridge Model	Cartridge Type	Cartridge Volume (dm^3)	Cartridge Air Flow (m^3/h)
CR-145N-400-P	N	3,9	150
CR-145N-450-P	N	4,4	160
CR-145N-600-P	N	5,9	212,5
CR-145H-400-P	H	4,7	150
CR-145H-450-P	H	5,3	160
CR-145H-600-P	H	7	212,5

* P: Powder coated cartridge
* Volume; N: Normal, H: High

Frame Model	Dimensions (WxHxD) (mm)	Cartridges Quantity (pcs.)
UCF(N)-16-610x610-P	610x610x70	16
UCF(N)-12-508x610-P	508x610x70	12
UCF(N)-8-305x610-P	305x610x70	8
UCF(N)-4-305x305-P	305x305x70	4

* P: Powder coated frame
* Frame Model: UCFH, UCFN

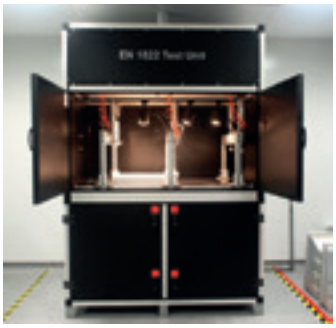
ULPALAB

ULPATEK Filter Testing Laboratory

ISO 16890 Test System - FTS 3401

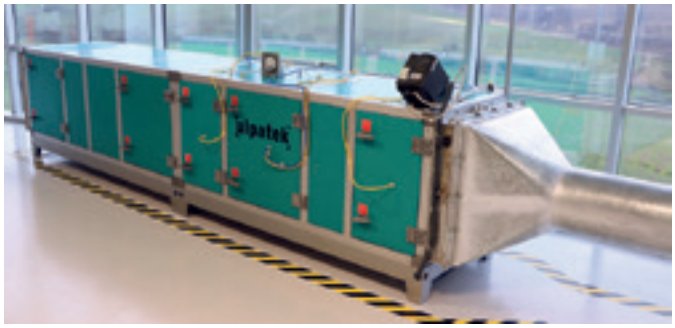
HEPA / ULPA Filter Test System - HUF-SCAN 4002

HEPA / ULPA Filter Test System - HF-SCAN 3004



HEPA / ULPA Filter Test System
HF-OIL MIST 1200

Filter Media Test System
FMT 102



Performance Test System - PTS 5002

AIR **FILTER** TECHNOLOGY

ADVANCED FILTRATION FOR A BETTER FUTURE

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