

FILTRODISC™ AF

DEPTH FILTER LENTICULAR MODULES WITH FIBRAFIX® SHEETS

For coarse, fine and sterile filtration



Characteristics

Depth filter modules allow the user to handle large filter areas easily in a disposable assembly. Filtration is performed in a closed system. Therefore the safety at work can be increased. Depth filter sheets act as the filter media and have a high dirt holding capacity of up to 4 kg per m². As filtration process the tortuous path inside the filter sheet and electro-kinetical interactions (Zeta potential) slow down and retain (dirt) particles. Through this unique mechanism, a high capacity (long lifetime of filter until plugging) can be achieved. All materials are FDA approved.

Dimensions

Modules are available in the following versions:

Diameter [in]	12	16
Filter Area/Module [sq ft]	19	38
Height (bayonet adapter) [in]	13.2	13.2
Height (flat adapter) [in]	10.9	10.9

Filter area for modules with 16 cells. Modules with reduced number of cells are available upon request.

Adapter types

The FILTRODISC™ depth filter modules are available in all common adapter types:

– flat adapter (= DOE) – bayonet adapter (= DOR)

The bayonet adapter is a safer alternative and for sterile filtration the adapter of choice due to its double-o-ring sealing gaskets.

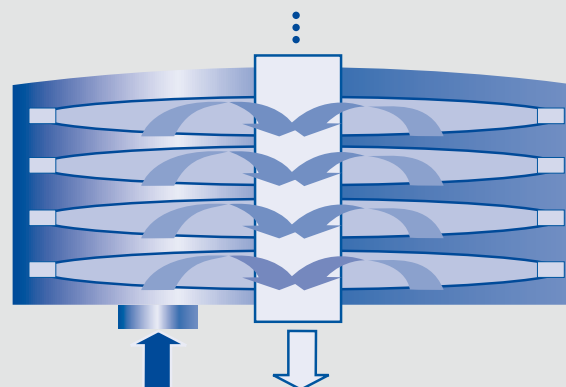
The handling of that adapter type is, in addition, more convenient.

Rigid construction

The module consists of a polypropylene backbone (rigid core) and depth filter sheets on drainage bodies.

Function principle

The module is placed in a special housing. Turbid liquid fills the space between the housing and the outside part of the module. The liquid flows through the sheets where dirt particles are retained. The clear liquid is drained through the inside of the drainage body and the rigid core to the outlet of the filter housing.



Applications

The filtration work is done by the depth filter sheets, which are available in a variety of porosities, from coarse over fine to germ reducing and removing filtration (sterile filtration).

Examples of industries:

- Beverage (Wine, spirits, juice...)
- Fine chemicals
- Cosmetics
- Process water
- Solvents
- Pharmaceutical intermediates

Retention rates of coarse and fine filter sheets

Pore size in depth filter sheets is measured indirectly by the flow rate. The correlation between pore size and flow rate is empirical. The following nominal porosities (retention rates) are available:

Coarse / Fine filtration			Germ-reducing / Sterile filtering		
Type module	Retention rate [µm]	Water value* [GPM/Ft2] Δp = 14.5 psi	Type module	Retention rate [µm]	Water value* [GPM/Ft2] Δp = 14.5 psi
AF03	35–15	69–88	AF73	3.0–1.5	4–5
AF09	30–10	37–52	AF103	1.5–0.6	2.5–3
AF15	20–8.0	24–30	AF113	0.8–0.5	1.7–2
AF23	15–6.0	14–17	AF133	0.6–0.4	1.1–1.4
AF33	12–5.0	7–9	AF143	0.4–0.2	0.6–0.8
AF43	9.0–4.0	6–7	AF153	0.2–0.04	0.2–0.4
AF53	6.0–3.0	5–6			

Pore size in depth filter sheets is measured indirectly by the flow rate. The correlation between pore size and flow rate is empirical. Nominal pore sizes in this list are only values for orientation. The real retention rate depends on the nature of dirt particles, solvent and other factors and must be tested as a part of the method development.

Operating conditions

Max. operating temperature: 82° C
 Max. differential pressure (Module): 2.4 bar
 Recommended rinsing volume: 50 l/m²
 Recommended sterilization: hot water or steam
 For regeneration procedure please refer to our SOP FD_AF1211.

Logarithmic bacteria retention value (LRV)

LRV of germ reducing or germ removing sheets in modules:

Type	Test germ	Load	LRV
AF 103	Reduction of germ quantity in filtrate		
AF 113	<i>Serratia marcescens</i>	1.0 X 10 ⁷ /cm ²	> 5
AF 133	<i>Serratia marcescens</i>	1.0 X 10 ⁸ /cm ²	> 7
AF 143	<i>Serratia marcescens</i>	1.0 X 10 ⁹ /cm ²	> 8
AF 153	<i>Brevundimonas diminuta</i>	1.0 x 10 ⁹ /cm ²	> 8
Test germs:	<i>Serratia marcescens</i> , ATCC 14756 <i>Brevundimonas diminuta</i> , ATCC 19146		

FILTROX quality assurance

FILTROX assures the best quality control according to international standards:

- ISO 9001 (Quality management)
- ISO 14001 (Environmental management)
- ISO 22000
- FDA drug master file: # 16418
- Kosher certificate

External tests of lenticular modules and filter sheets were performed and certified according to

- USP plastic class test VI (BSL, Munich)
- other CFR requirements by the NAMSA

Extractables

Heavy metals content referring to recommendations XXXVI/1 German BgVV (law on foodstuffs and items of practical use): < 50 ppm

FILTROX is using polyamidoamine, as wet strength agent, in its filter sheets. The ISEGA Institute for food analysis in Aschaffenburg (Germany) performed a test for extractable MCPD and DCP. The FILTROX filter sheets extracts were below the detection limit of the approved standard method. The filter sheets are free of GMO and common allergens.

Gasket material

- Silicone (standard)
- EPDM
- Teflon® (encapsulated gaskets)
- Viton

Chemical resistance

Substance	Concentration [%]	Resistance Filter Medium T = 50 °C	Resistance Polypropylene T = 50 °C
NaOH	1	r	r
	2	r	r
HCl	5	r	lr
HNO ₃	5	r	r
H ₂ SO ₄	10	r	r
Acetic acid	Conc.	r	lr
Citric acid	10	r	r
Peracetic acid	0.1	r	r
Butanol	80	r	lr
Ethanol	80	r	r

r = resistant; lr = limited resistant

For other substances please contact your FILTROX dealer.

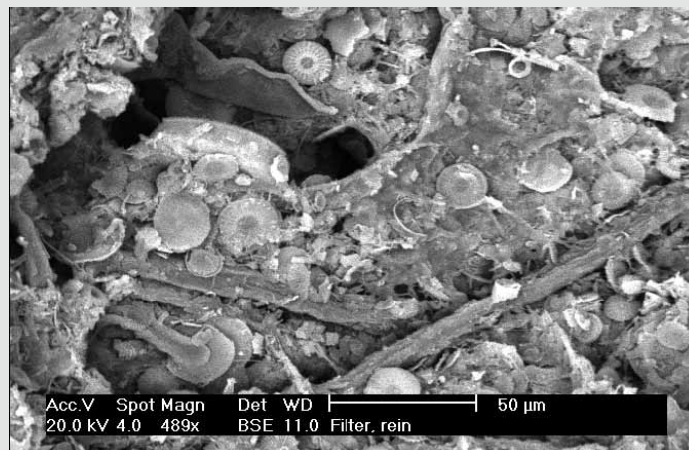
Material

Filter sheets: purified and bleached cellulose, natural inorganic filter aid and polyamidoamine (< 3%).

Solid core and lenticulars: polypropylene.

Diatomaceous earth

Sheets with an ash content > 1% contain diatomaceous earth (DE / Kieselguhr) or perlite as an inorganic filter aid. FILTROX uses only natural kieselguhr with a cristobalite content < 1% (detection limit).



REM picture of a depth filter sheet: round/disc-structures are DE particles, long structures represent cellulosic fibers.

Your FILTROX dealer:

The information contained in this document is up-to-date at the time of release. However, each end user is requested to check the suitability of their product(s) with the types of filtration mentioned in this leaflet. Technical modifications are reserved.