

# FILTRODISC™ AF

## DEPTH FILTER LENTICULAR MODULES WITH FIBRAFIX® SHEETS

For coarse, fine and sterile filtration



### Characteristics

Depth filter modules allow the operator to handle large surface areas easily in a disposable assembly. Filtration is performed in a closed system increasing operator safety. Depth filter sheets act as the filter media with a high dirt holding capacity of up to 4 kg per m<sup>2</sup>. During the filtration process the filter sheet's tortuous path (matrix) and electrokinetical interactions (Zeta potential) slow down and retain (dirt) particles. The filter sheet's unique cellulose structure and retention mechanism promotes high loading increasing the sheet's useful life. All materials are FDA approved.

### Dimensions

Modules are available in the following versions:

	12"	16"
Diameter [mm]	300	400
Filter Area/Module [m <sup>2</sup> ]	1.8	3.6
Height (bayonet adapter) [mm]	330	330
Height (flat adapter) [mm]	272	272

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)

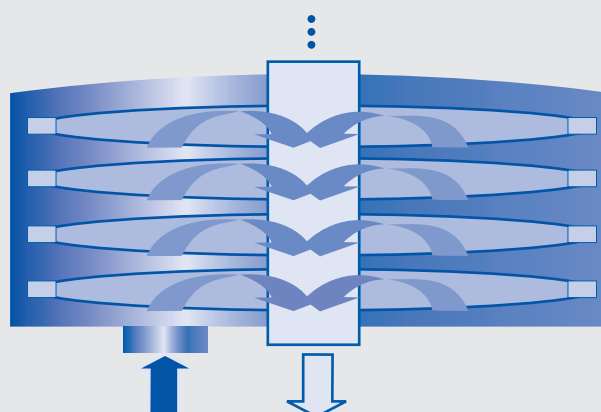
The bayonet adapter is a safer alternative, and is recommended as the adapter of choice for sterile filtration applications due to its double-o-ring sealing gaskets. Additionally, handling for the bayonet adapter is more convenient for the operator.

### 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. Pressure forces the liquid to flow through the sheets where dirt particles are retained. After passing through the sheet, the clear liquid collects inside the lenses drainage body before entering the module's rigid core then outlet of the filter housing.



### Applications

The filtration work is performed by the depth filter sheets, which are available in a variety of porosities, ranging from coarse to sterile filtration for germ reduction/removal.

Examples of industry applications:

- Beverage (Wine, spirits, juice...)
- Cosmetics
- Solvents
- Fine chemicals
- Process water
- 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 [l/m <sup>2</sup> min] Δp = 1 bar	Type module	Retention rate [µm]	Water value [l/m <sup>2</sup> min] Δp = 1 bar
AF03	35–15	2800–3600	AF73	3.0–1.5	170–210
AF09	30–10	1500–2100	AF103	1.5–0.6	100–120
AF15	20–8.0	960–1240	AF113	0.8–0.5	68–80
AF23	15–6.0	560–700	AF133	0.6–0.4	45–56
AF33	12–5.0	280–360	AF143	0.4–0.2	26–34
AF43	9.0–4.0	240–300	AF153	0.2–0.04	10–16
AF53	6.0–3.0	200–240			

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/m<sup>2</sup>  
 Recommended sterilization: ..... hot water or steam  
 For regeneration procedure please refer to our SOP FD\_RG89.

### 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	Serratia marcescens	1.0 X 10 <sup>7</sup> /cm <sup>2</sup>	> 5
AF 133	Serratia marcescens	1.0 X 10 <sup>8</sup> /cm <sup>2</sup>	> 7
AF 143	Serratia marcescens	1.0 X 10 <sup>9</sup> /cm <sup>2</sup>	> 8
AF 153	Brevundimonas diminuta	1.0 x 10 <sup>9</sup> /cm <sup>2</sup>	> 8
Test germs:	Serratia marcescens, ATCC 14756 Brevundimonas diminuta, ATCC 19146		

### FILTROX quality assurance

FILTROX assures the highest 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 BfR (law on foodstuffs and items of practical use): ..... < 50 ppm

FILTROX uses 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 <sub>3</sub>	5	r	r
H <sub>2</sub> SO <sub>4</sub>	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.

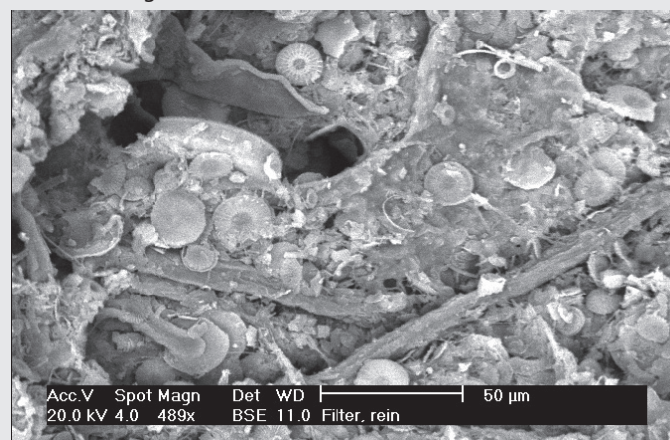
### Material

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.