FILTRODISC™

LENTICULAR MODULE

Closed system – easy handling

Depth filter modules make it possible to handle large filter areas in a simple manner. Filtration is carried out in an enclosed system (DISCSTAR®). The installed depth filter sheets have a particle absorption capacity of up to 4 kg/m². Within the filtration process itself, the particles are slowed down in the filter sheet and finally held back due to their size or electrokinetic forces. These effects allow using the filter for a longer time than surface filters. All utilized materials are FDA-approved. All offered filter sheets can be installed in the modules.

Material

Filter sheets:
- Cleansed and bleached cellulose
- Natural filter aids (kieselgur, perlite)
- Kationic wet strength agent
- HDPE (SYNTHAFIX™ SY)

Plastic share:
- Polypropylene (standard module)
- Polyamide (HT and UHT modules)

Dimensions

	10″	12″	12″K	16″
Diameter [mm]	255	290	290	400
Maximum filter area per module [m²]	1,3	1,8	0,68 (6 lenses DOR) 0,56 (5 lenses DOE)	3,6
Height of DOR adapter [mm]	330	330	178	330
Height of DOE adapter [mm]	272	272	132	272

DOR = double O ring adapter; DOE = flat adapter

Construction

The modules are made out of a support structure of polypropylene (polyamide in the HT and UHT modules). The lenses from filter sheets, including drainage bodies, are fastened on them. In modules with fewer than 16 lenses (2–7 lenses), outside support bars can be applied for stabilization.

Operating conditions

Max. operating temperature* standard: ..... 82 °C / 90 °C
Max. operating temperature*
high temperature (HT): ..... 110 °C / 140 °C
Max. operating temperature*
ultrahigh temperature (UHT): ..... 180 °C / 250 °C
Max. differential pressure (module): ..... 2.4 bar
Recommended flushing volume: ..... 50 l/m²
Recommended sterilization: ..... Hot water or chemical

Note: In chemical sterilization with oxidizing reagents, do not exceed the recommended contact time. Inline steam sterilization requires cautious handling in order to avoid back pressure.

* first value = continuous load
  second value = short term load

Retention rates FIBRAFIX® TS

Sheet type	Code	Retention rate [µm]	Water value* [l/m² min] Δ p = 1 bar	Filtration type
TS 2	002	55–35	2468–4444	Coarse
TS 4	004	50–30	2400–3600	Coarse
TS 5	005	40–25	1723–3064	Coarse
TS 7	007	35–20	677–1203	Coarse
TS 10	010	30–10	1583–2815	Coarse
TS 12	012	20–8.0	1119–1989	Coarse

* does not correspond to the effective flow rate

Retention rates FIBRAFIX® AF

Sheet type	Code	Retention rate [µm]	Water value* [l/m² min] Δ p = 1 bar	Filtration type
AF 03	003	35–15	2800–3600	Coarse
AF 09	009	30–10	1500–2100	Coarse
AF 15	015	20–8.0	960–1240	Coarse
AF 21 H	023	15–6.0	560–700	Clarifying
AF 31 H	033	12–5.0	280–300	Clarifying
AF 41 H	043	9.0–4.0	240–300	Clarifying
AF 50	053	6.0–3.0	200–240	Clarifying
AF 71 H	073	3.0–1.5	170–210	Fine
AF 101 H	103	1.5–0.6	100–120	Bacteria reducing
AF ST 110	113	0.8–0.5	60–80	Sterile
AF ST 130	133	0.6–0.4	45–56	Sterile
AF ST 140	143	0.4–0.2	26–34	Sterile
AF ST 145 Z	145	0.3–0.1	10–16	Sterile
AF ST 150	153	0.2–0.04	10–16	Sterile

* does not correspond to the effective flow rate

Retention rates SYNTHAFIX™ SY

Sheet type	Code	Retention rate [µm]	Water value* [l/m² min] Δ p = 1 bar	Filtration type
SY 30	033	12.0–5.0	421–758	Clarifying
SY 50	053	6.0–3.0	225–393	Clarifying
SY 100	103	1.5–0.6	140–253	Bacteria reducing
SY ST 120	123	0.7–0.4	62–96	Sterile

* does not correspond to the effective flow rate

Retention rates PURAFIX® CH P

Sheet type	Code	Retention rate [µm]	Water value* [l/m² min] Δ p = 1 bar	Filtration type
CH 03 P	003	35–15	2800–3600	Coarse
CH 09 P	009	30–10	1500–2100	Coarse
CH 15 P	015	20–8.0	960–1240	Coarse
CH 21 HP	023	15–6.0	560–700	Clarifying
CH 31 HP	033	12–5.0	280–300	Clarifying
CH 41 HP	043	9.0–4.0	240–300	Clarifying
CH 50 P	053	6.0–3.0	200–240	Clarifying
CH 71 HP	073	3.0–1.5	170–210	Fine
CH 101 HP	103	1.5–0.6	100–120	Bacteria reducing
CH ST 110 P	113	0.8–0.5	60–80	Sterile
CH ST 130 P	133	0.6–0.4	45–56	Sterile
CH ST 140 P	143	0.4–0.2	26–34	Sterile
CH ST 145 ZP	145	0.3–0.1	10–16	Sterile
CH ST 150 P	153	0.2–0.04	10–16	Sterile

* does not correspond to the effective flow rate

All modules are also available in high temperature and ultrahigh temperature versions.
Physical key values of the individual filter sheets are found in the Technical Data Sheet for the individual sheet type.

Logarithmic bacterial retention value (LRV)

Type	Test microbe	Load	LRV
AF 103 / CH 103 P	Reduction of microbe quantities in the filtrate		
AF 113 / CH 113 P / SY 113	Serratia marcescens	1.0 x 10^7/cm^2	>5
SY 123	Serratia marcescens	1.0 x 10^7/cm^2	>6
AF 133 / CH 133 P	Serratia marcescens	1.0 x 10^8/cm^2	>7
AF 143 / CH 143 P	Serratia marcescens	1.0 x 10^9/cm^2	>8
AF 145 Z / CH 145 ZP	Serratia marcescens	1.0 x 10^9/cm^2	>8
AF 153 / CH 153 P	Brevundimonas diminuta	1.0 x 10^9/cm^2	>8
Test microbes	Serratia marcescens: ATCC 14756 Brevundimonas diminuta: ATCC 19146		

Chemical resistance

Substance	Concentration [%]	Resistance Filter medium T = 50 °C	Resistance Polypropylene T = 50 °C	Resistance Polyamide T = 20 °C
NaOH	1	r	r	r
	2	r	r	r
HCl	5	r	lr	nr
HNO3	5	r	r	nr
H2SO4	10	r	r	nr
Acetic acid	Conc.	r	lr	nr
Citric acid	10	r	r	r
Peracetic acid	0.1	r	r	nr
Butanol	80	r	lr	r
Ethanol	80	r	r	r

r = resistant; lr = limitation of resistance; nr = not resistant
For other chemicals, please contact FILTROX directly.

Extractable substances

FILTROX filter sheets fulfil the requirements in accordance with the LFGB (Lebensmittel-Bedarfsgegenstaende und Futtermittelgesetzbuch = Food Contact Materials and Consumer Products and German Food and Feed Code) Recommendation XXXVI/I of the BfR (Bundesinstitut fuer Risikobewertung = Federal Risk Assessment Institute), as well as the testing criteria of the FDA (US Food and Drug Administration) CFR 21 § 177.2260. The filter sheets are manufactured under controlled conditions in order to meet the highest demands on quality and purity (FDA Drug Master File: DMF # 16418).

The utilized plastics polypropylene and polyamide correspond to the EU Directive 2002/72 and FDA 21CFR 177.1520 of the foods contact regulations.

The standard silicone seals are also listed in FDA 21CFR 177.2600 and are therefore safe. Other seal types (nitrile, viton, EPDM) are available upon request.

FILTRODISC™ CH P modules with polypropylene plastic fulfil the USP Biological Test classification VI.

Ion values PURAFIX® CH P module

Ion	ppm	Ion	ppm
Ca	<1	Cu	<0.01
Mg	<0.5	Ni	<0.02
Pb	<0.06	Co	<0.025
Zn	<0.01	Fe	<0.05
Cd	<0.005	Al	<0.05

The measurement method is described in the filter sheet validation guide.

Available seals
The following seals are available for the FILTRODSC™ modules:
– MVQ / silicone
– NBR
– EPDM
– FKM / viton
– FEP / Teflon® (coated seals only for DOR)

Pyrogen values
Endotoxin release: ..... <0.125 EU/ml

The measurement method is described in the Validation Guide Module.

FIBRAFIX® TS and FIBRAFIX® AF
Heavy metals: according to the
recommendations of XXXVI/I BFR: ..... <50 ppm
MCPD and DCP of
wet strength agent: ..... in the statutory guidelines
GMO: ..... free
Allergy triggering substances: ..... free

Disposal
Unused modules can be disposed of with household waste. Used modules must be disposed of in accordance with the type of contamination.

Quality assurance
Quality controls correspond to international standards:
– ISO 9001:2008 (Quality Management)
– ISO 14001:2004 (Environmental Management)
– ISO 22000 (Food Safety)
– FDA Drug Master file: DMF #16418
– FDA 21 CFR Compliance
– Kosher Certificate
– EU safety data sheets can be downloaded from the website.

FILTRODISC® order code

Article	Retention rate	Sheet type	∅ in inches	Adapter type	No. of lenses	Seal	Material

FD

Retention rate in µ	Available sheet type	Code
55–35	T	**002**
50–30	T	**004**
40–25	T	**005**
35–20	T	**007**
35–15	A, C	**003**
30–10	A, C	**009**
30–10	T	**010**
20–8.0	A, C	**012**
20–8.0	T	**015**
15–6.0	A, C	**023**
12–5.0	A, C, S	**033**
9.0–4.0	A, C	**043**
6.0–3.0	A, C, S	**053**
3.0–1.5	A, C	**073**
1.5–0.6	A, C, S	**103**
0.8–0.5	A, C	**113**
0.7–0.4	S	**123**
0.6–0.4	A, C	**133**
0.4–0.2	A, C	**143**
0.3–0.1	A, C	**148**
0.2–0.04	A, C	**153**
–	F, K*	**000**

* For the nomenclature of the activated carbon module, see the Technical Data Sheet for CARBOFIL

AF	**A**
CH P	**C**
TS	**T**
SY	**S**
AK	**K**
FD	**F**

10	**0**
12	**2**
16	**6**

DOE	**E**
DOR	**R**

Number	Comments	Code
16	long core housing	**16L**
9	long core housing	**9L**
6	long core housing	**6L**
6	short core housing (standard DOR)	**6K**
5	short core housing (standard DOE)	**5K**
3	short core housing	**3K**
2	short core housing	**2K**
	Carbofil™ CA modules have a maximum of 15 lenses	
	Other combinations are possible upon request	

MVQ/Silicone	**S**
EPDM	**E**
FEP/Teflon®*	**T**
FKM/Viton	**V**
NBR	**N**

* only DOR adapter

PP	**ST**
PA	**HT**
PA	**UHT***

* only available as 12" module and upon request

FD003A2R16LSST = FILTRODISC™ AF03 16" DOR 16 lenses silicone seal PP plastic

Sheet types:

T = FIBRAFIX® TS = TS
A = FIBRAFIX® AF = AF
C = PURAFIX® CH P = CH P
S = SYNTHAFIX™ = SY
F = FILTRODUR® = FD
K = CARBOFIL™ = AK

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