



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
- Synthetics fibers (SYNTHAFIX™ SY)

Plastic share:

- Polypropylene (standard module)
- Polyamide (HT and UHT modules)

Dimensions

| | 12" | 12" K | 16" |
|--|-----|--|-----|
| Diameter [mm] | 290 | 290 | 400 |
| Maximum filter area per module [m ²] | 1,8 | 0,68 (6 lenses DOR) 0,56 (5 lenses DOE) | 3,6 |
| Height of DOR adapter [mm] | 330 | 178 | 330 |
| Height of DOE adapter [mm] | 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/m ² min] Δp = 0.3 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

** Δp = 1 bar

Retention rates FIBRAFIX® AF

| Sheet type | Code | Retention rate [µm] | Water value* [l/m ² min] Δp= 1 bar | Filtration type |
|------------|------|---------------------|--|-----------------|
| AF 6 | 003 | 35–15 | 2800–3600 | Coarse |
| AF 9 | 009 | 30–10 | 1500–2100 | Coarse |
| AF 15 | 015 | 20–8.0 | 960–1240 | Coarse |
| AF 21H | 023 | 15–6.0 | 690–865 | Clarifying |
| AF 31H | 033 | 12–5.0 | 280–360 | Clarifying |
| AF 41H | 043 | 9.0–4.0 | 240–300 | Clarifying |
| AF 50 | 053 | 6.0–3.0 | 200–240 | Clarifying |
| AF 71H | 073 | 3.0–1.5 | 170–210 | Fine |
| AF 101H | 103 | 1.5–0.6 | 98–121 | Germ reducing |
| AF ST 110 | 113 | 0.8–0.5 | 69–81 | Sterile |
| AF ST 130 | 133 | 0.6–0.4 | 43–52 | Sterile |
| AF ST 140 | 143 | 0.4–0.2 | 26–34 | Sterile |
| AF ST 145Z | 145 | 0.3–0.1 | 20–28 | 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/m ² min] Δp= 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 | Germ 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/m ² min] Δp= 1 bar | Filtration type |
|-------------|------|---------------------|--|-----------------|
| CH 6P | 003 | 35–15 | 2800–3600 | Coarse |
| CH 9P | 009 | 30–10 | 1500–2100 | Coarse |
| CH 15P | 015 | 20–8.0 | 960–1240 | Coarse |
| CH 21HP | 023 | 15–6.0 | 690–865 | Clarifying |
| CH 31HP | 033 | 12–5.0 | 280–360 | Clarifying |
| CH 41HP | 043 | 9.0–4.0 | 240–300 | Clarifying |
| CH 50P | 053 | 6.0–3.0 | 200–240 | Clarifying |
| CH 71HP | 073 | 3.0–1.5 | 170–210 | Fine |
| CH 101HP | 103 | 1.5–0.6 | 98–121 | Germ reducing |
| CH ST 110P | 113 | 0.8–0.5 | 69–81 | Sterile |
| CH ST 130P | 133 | 0.6–0.4 | 43–52 | Sterile |
| CH ST 140P | 143 | 0.4–0.2 | 26–34 | Sterile |
| CH ST 145ZP | 145 | 0.3–0.1 | 20–28 | Sterile |
| CH ST 150P | 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 103P / SY 103 | Reduction of microbe quantities in the filtrate | | |
| AF 113 / CH 113P | <i>Serratia marcescens</i> | 1.0 x 10 ⁷ /cm ² | >5 |
| SY 123 | <i>Serratia marcescens</i> | 1.0 x 10 ⁷ /cm ² | >6 |
| AF 133 / CH 133P | <i>Serratia marcescens</i> | 1.0 x 10 ⁸ /cm ² | >7 |
| AF 143 / CH 143P | <i>Serratia marcescens</i> | 1.0 x 10 ⁹ /cm ² | >8 |
| AF 145Z / CH 145ZP | <i>Serratia marcescens</i> | 1.0 x 10 ⁹ /cm ² | >8 |
| AF 153 / CH 153P | <i>Brevundimonas diminuta</i> | 1.0 x 10 ⁹ /cm ² | >8 |
| Test microbes | <i>Serratia marcescens</i> : ATCC 14756 <i>Brevundimonas diminuta</i> : 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 |
| HNO ₃ | 5 | r | r | nr |
| H ₂ SO ₄ | 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 fulfill the requirements in accordance with the LFGB (Lebensmittel-Bedarfsgegenstaende und Futtermittel-gesetzbuch = Food Contact Materials and Consumer Products and German Food and Feed Code) Recommendation XXXVI/I of the BfR (Bundesinstitut für 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 fulfill 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 FILTRODISC™ 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 | Sheet grade | Sheet type | Ø in inches | Adapter type | No. of lenses | Seal | Material | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|----------------------|--|-------------|--------------|---------------|---|----------|----------|------|----|-------------------|-----|---|-------------------|----|---|-------------------|----|---|-----------------------------------|----|---|-----------------------------------|----|---|--------------------|----|---|--------------------|----|--|--|--|--|--|--|---|--------------|---|------|---|--------------|---|-----------|---|-----|---|--|----|----|----|----|----|------|
| FD | Retention rate in µm | Available sheet type | Code | AF | A | <table border="1"> <thead> <tr> <th>Number</th> <th>Comments</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>16</td> <td>long core housing</td> <td>16L</td> </tr> <tr> <td>9</td> <td>long core housing</td> <td>9L</td> </tr> <tr> <td>6</td> <td>long core housing</td> <td>6L</td> </tr> <tr> <td>6</td> <td>short core housing (standard DOR)</td> <td>6K</td> </tr> <tr> <td>5</td> <td>short core housing (standard DOE)</td> <td>5K</td> </tr> <tr> <td>3</td> <td>short core housing</td> <td>3K</td> </tr> <tr> <td>2</td> <td>short core housing</td> <td>2K</td> </tr> <tr> <td></td> <td>CARBOFIL™ CA modules have a maximum of 15 lenses</td> <td></td> </tr> <tr> <td></td> <td>Other combinations are possible upon request</td> <td></td> </tr> </tbody> </table> | 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 | | <table border="1"> <thead> <tr> <th>MVQ/Silicone</th> <th>S</th> </tr> </thead> <tbody> <tr> <td>EPDM</td> <td>E</td> </tr> <tr> <td>FEP/Teflon®*</td> <td>T</td> </tr> <tr> <td>FKM/Viton</td> <td>V</td> </tr> <tr> <td>NBR</td> <td>N</td> </tr> </tbody> </table> | MVQ/Silicone | S | EPDM | E | FEP/Teflon®* | T | FKM/Viton | V | NBR | N | <table border="1"> <thead> <tr> <th>PP</th> <th>ST</th> </tr> </thead> <tbody> <tr> <td>PA</td> <td>HT</td> </tr> <tr> <td>PA</td> <td>UHT*</td> </tr> </tbody> </table> | PP | ST | PA | HT | PA | UHT* |
| | 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | PP | ST | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | PA | HT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | PA | UHT* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 55-35 | T | 002 | CH P | C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 50-30 | T | 004 | TS | T | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 40-25 | T | 005 | SY | S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 35-20 | T | 007 | AK | K | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 35-15 | A, C | 003 | FD | F | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 30-10 | A, C | 009 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 30-10 | T | 010 | 12 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20-8.0 | T | 012 | 16 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20-8.0 | A, C | 015 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15-6.0 | A, C | 023 | DOE | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12-5.0 | A, C, S | 033 | DOR | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | 145 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.2-0.04 | A, C | 153 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - | F | 000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CARBOFIL™ grade | Available sheet type | Code | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LWT | K | LWT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RW | K | ORW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RHC | K | RHC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CA | K | OCA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PXS | K | PXS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PR | K | OPR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PSA | K | PSA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PA | K | OPA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PHA | K | PHA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* only DOR adapter

* only available as 12" module and upon request

Example:
FD003A2R16LSST = FILTRODISC™ AF03 12" DOR 16 lenses silicone seal PP plastic

For more information on activated carbon sheet grades, refer to the CARBOFIL™ documentation.

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