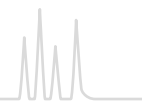


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## Sample filtration

Syringe filters are used for filtration of suspended matter from liquid samples or gases. With CHROMAFIL® rapid purification and removal of particles is very simple: just place the filter on the syringe and you are ready for filtration. Special manipulations are not required. The contamination of sensitive instrumentation by solid impurities can be avoided, which leads to an increase of lifetime of chromatographic columns and equipment.

## Advantages

### Polypropylene housing

- Considerably better solvent stability compared to acrylate and polystyrene filters, featuring a low content of extractable substances

### Lowest content of extractable substances

- The housing of every CHROMAFIL® filter is ultrasonically sealed (welded), not glued, because glue may have extractable ingredients. Welding leads to a tight connection between both parts, thus the filter can be used in both directions. The special thick rim of the housing is ideal for use in laboratory robots (e.g., SOTAX®, Benchmate™).

### Luer lock on the side of entry

- For a safe connection on the high-pressure side every filter provides a Luer lock on the side of entry.

### Luer exit

- For 3, 13 and 25 mm filters: standard Luer exit
- For 15 mm filters: minispike · This Luer configuration offers a low hold-up volume and easy filtration into autosampler vials and NMR tubes.
- With the aid of a special adapter, filter inlet and filter exit can be fitted to all CHROMABOND® columns and accessories for selective sample preparation.

### No rupture of membrane due to the impact plate

- The input solvent stream is broken and distributed by the impact plate and does not directly hit the membrane: this prevents rupture of the membrane. The high pressure stream is diverted into four lanes.

Optimum flow geometry because of the starshaped distribution device

- The stream of liquid is broken into 4 lanes by the impact plate and then further distributed to 8 slots in the form of a star connected with 5 or 8 circular channels (for 13, 15 and 25 mm filters, respectively). Thus, the fluid is able to penetrate the membrane on the whole surface, not only on a small region; the filter is not plugged up rapidly, which results in a high-flow efficiency.

### Color coded filters

- Filters with 0.2 µm pores have a yellow upper shell, that of filters with 0.45 µm pores is colorless; the different membrane types are distinguished by different colors of the lower shell.

### Different pore sizes for versatile filtration

- Standard pore sizes 0.2 and 0.45 µm (additionally: PET filters with 1.2 µm, glass fiber filters with 1 µm, PES filters with 5 µm). Filters with 0.45 µm pore size efficiently remove fine particles that can plug chromatography columns. Filters with 0.2 µm pore size are excellent for filtration of UHPLC samples or other techniques requiring high purity samples.

### Filter sizes

- 3, 13, 15 and 25 mm diameter: the small diameter filters are especially recommended for very small samples, which require extremely low dead volumes: 5 µL for 3 mm Ø, 30 µL for 13 mm Ø, 35 µL for 15 mm Ø, 80 µL for 25 mm Ø

### Recommended filter size depending on sample volume

| Sample volume | Recommended filter diameter |
|---------------|-----------------------------|
| ≤ 1 mL        | 3 mm                        |
| 1–5 mL        | 13 mm, 15 mm                |
| 5–100 mL      | 25 mm                       |

Filters can be autoclaved at 121 °C, 1.1 bar for 30 min.

All 25 mm CHROMAFIL® filters are designed to be 100 % compatible and reliable for use with the SOTAX® AT70 smart fully automated dissolution testing systems.



Depending on your filtration task you can choose filter membranes made from different materials:

| Material                                         | Page |
|--------------------------------------------------|------|
| Combi filters with glass fiber prefilters        |      |
| Polyester (GF/PET)                               | 85   |
| Regenerated cellulose (GF/RC)                    | 85   |
| Polyvinylidene difluoride (GF/PVDF)              | 85   |
| Syringe filters without prefilters               |      |
| Polyester (PET)                                  | 86   |
| Regenerated cellulose (RC)                       | 87   |
| Polytetrafluoroethylene (PTFE)                   | 88   |
| Hydrophilized polytetrafluoroethylene (H-PTFE)   | 88   |
| Cellulose mixed esters (MV)                      | 89   |
| Cellulose acetate (CA) · sterile and non-sterile | 89   |
| Polyamide / Nylon (PA)                           | 90   |
| Polyethersulfone (PES)                           | 90   |
| Polyvinylidene difluoride (PVDF)                 | 91   |
| Glass fiber (GF)                                 | 91   |
| Special filter for ion chromatography (IC)       | 92   |

## CHROMAFIL® BIGbox

- 400 color-coded quality syringe filters or 400 labeled Xtra syringe filters (25 mm)
- Food safe PE box with screw cap

## CHROMAFIL® Xtra

Labeled for method validation and certification

- Xtra: imprint for direct identification of the membrane type, diameter and pore size
- Xtra: low bleeding PP housing
- Xtra: color-free plain polypropylene



## CHROMAFIL® combi filters

Combi syringe filters with a coarse glass fiber prefilter and a small pore membrane as main filter

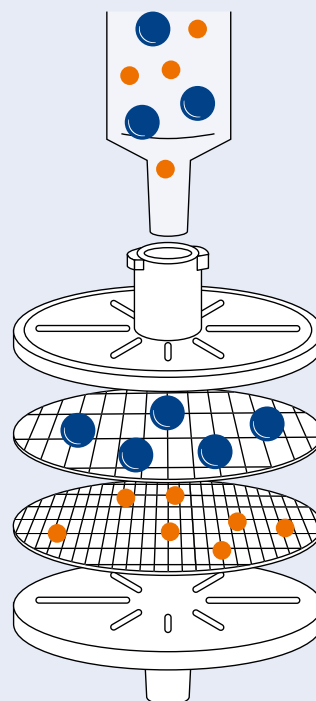
User benefits:

- For solutions with a high load of particulate matter: lower back pressure, easy filtration
- For high yields of filtrate: more mL of pure filtrate per filter

### The technology

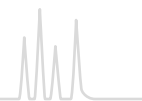
The glass fiber membrane (1.0 µm) removes coarse particles, before they can block the fine main membrane. This results in a better filtration efficiency, especially for highly contaminated samples.

- Housing: Solvent-resistant, ultra low bleeding polypropylene
- Inlet: Luer lock
- Exit: Luer
- Pore size: 1.0/0.20 µm or 1.0/0.45 µm
- Filter diameter: 25 mm
- Dead volume: < 80 µL
- Packing unit: 100 filters; BIGbox with 400 filters



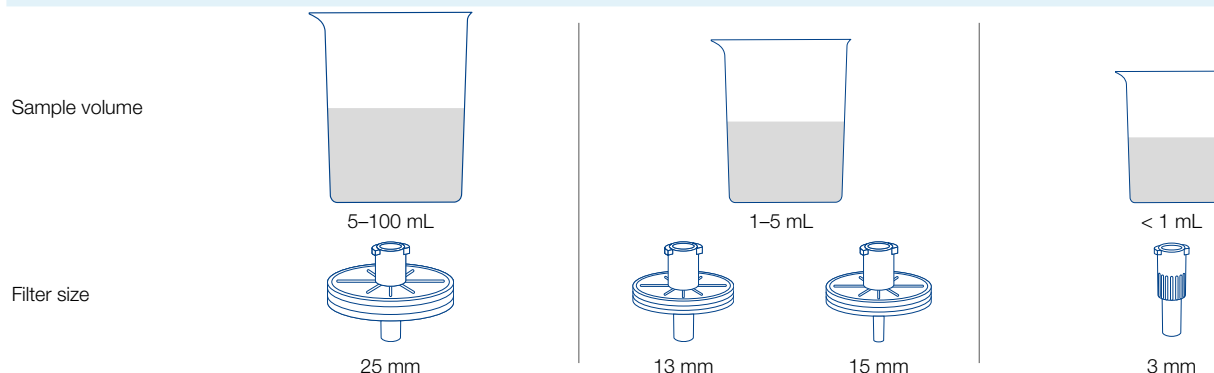


# Selection guide for syringe filters



How to select the optimal CHROMAFIL® syringe filter

## 1. Filter size



## 2. Pore size of filter membrane

For general purpose  
HPLC columns packed with particles  
≥ 3 µm, GC, SFC, ...

Sample size

Recommended for  
UHPLC-, core-shell and HPLC columns,  
packed with particles ≤ 3 µm, GC, SFC, ...



0.45 µm



0.20 µm

## 3. Membrane type

| Properties of sample                                | Recommended | Alternatives       |
|-----------------------------------------------------|-------------|--------------------|
| Aqueous, polar hydrophilic<br>low particle-load     | PET         | H-PTFE    MV    RC |
| high particle-load<br>prefiltration required        | GF/PET      | GF/RC    GF/PVDF   |
| Mid-polar e.g. HPLC eluents                         | PET         | PA    RC           |
| Proteins<br>low binding capacity of proteins        | CA          | PVDF    PES        |
| high binding capacity of proteins                   | GF          | GF/PET    GF/PVDF  |
| Strong acids and bases                              | H-PTFE      | PTFE               |
| Organic, nonpolar, hydrophobic<br>low particle-load | PTFE        | PET                |
| high particle-load<br>prefiltration required        | GF/PET      | GF/PVDF            |
| Aqueous, for ion chromatography determinations      | IC          |                    |



**MACHEREY-NAGEL**

**FilterFinder · easy switching to first-class filters**

### It is that simple

1. Choose previously used manufacturer
2. Choose previously used part number
3. Start searching
4. Suitable CHROMAFIL® syringe filter will be suggested

Use our FilterFinder online at [www.mn-net.com/filterfinder](http://www.mn-net.com/filterfinder)





## Polyester with glass fiber prefilter (GF/PET)



### ★ Key features

- Hydrophilic multipurpose membrane
- For polar as well as nonpolar samples
- The HPLC filter with glass fiber prefilter, especially suited for mixtures of water and organic solvents
- Recommended for solutions with a high load of particulate matter or for highly viscous samples. Glass fiber exhibits a high protein-binding capacity.

### Ordering information

| Type         | Pore size [μm] | Membrane diameter [mm] | Color code |        | Standard pack |        | BIGbox       |            |
|--------------|----------------|------------------------|------------|--------|---------------|--------|--------------|------------|
|              |                |                        | Top        | Bottom | Filters/Pack  | REF    | Filters/Pack | REF        |
| GF/PET-20/25 | 1.0/0.20       | 25                     | blue       | orange | 100           | 729032 | 400          | 729032.400 |
| GF/PET-45/25 | 1.0/0.45       | 25                     | black      | orange | 100           | 729033 | 400          | 729033.400 |

## Regenerated cellulose with glass fiber prefilter (GF/RC)



### ★ Key features

- Hydrophilic membrane
- For aqueous and organic-aqueous liquids, i.e. polar and medium polar sample solutions
- Recommended for solutions with a high load of particulate matter or for highly viscous aqueous solutions. Glass fiber exhibits a high protein-binding capacity.

### Ordering information

| Type        | Pore size [μm] | Membrane diameter [mm] | Color code |        | Standard pack |        | BIGbox       |            |
|-------------|----------------|------------------------|------------|--------|---------------|--------|--------------|------------|
|             |                |                        | Top        | Bottom | Filters/Pack  | REF    | Filters/Pack | REF        |
| GF/RC-20/25 | 1.0/0.20       | 25                     | blue       | blue   | 100           | 729050 | 400          | 729050.400 |
| GF/RC-45/25 | 1.0/0.45       | 25                     | black      | blue   | 100           | 729051 | 400          | 729051.400 |

## Polyvinylidene difluoride with glass fiber prefilter (GF/PVDF)

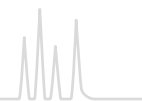


### ★ Key features

- Hydrophilic membrane
- Recommended for the filtration of biological samples with high particle loads. Glass fiber exhibits a high protein-binding capacity.
- Also suited for the filtration of aqueous samples

### Ordering information

| Type       | Pore size [μm] | Membrane diameter [mm] | Color code |        | Standard pack |        | BIGbox       |            |
|------------|----------------|------------------------|------------|--------|---------------|--------|--------------|------------|
|            |                |                        | Top        | Bottom | Filters/Pack  | REF    | Filters/Pack | REF        |
| GF/P-45/25 | 1.0/0.45       | 25                     | black      | white  | 100           | 729039 | 400          | 729039.400 |



## Polyester (PET)



### ★ Key features

- Hydrophilic multipurpose membrane
- For polar as well as nonpolar solvents
- The HPLC filter, especially suited for mixtures of water and organic solvents
- For TOC/DOC determination
- Not cytotoxic, does not inhibit the growth of microorganisms and higher cells

### Ordering information

| Type            | Pore size [µm] | Membrane diameter [mm] |            |        | Standard pack |        | BIGbox       |            |
|-----------------|----------------|------------------------|------------|--------|---------------|--------|--------------|------------|
|                 |                |                        |            |        | Filters/Pack  | REF    | Filters/Pack | REF        |
| CHROMAFIL® Xtra |                |                        |            |        |               |        |              |            |
| PET-20/13       | 0.20           | 13                     | labeled    |        | 100           | 729222 |              |            |
| PET-45/13       | 0.45           | 13                     | labeled    |        | 100           | 729223 |              |            |
| PET-20/25       | 0.20           | 25                     | labeled    |        | 100           | 729221 | 400          | 729221.400 |
| PET-45/25       | 0.45           | 25                     | labeled    |        | 100           | 729220 | 400          | 729220.400 |
| PET-120/25      | 1.2            | 25                     | labeled    |        | 100           | 729229 | 400          | 729229.400 |
| Type            | Pore size [µm] | Membrane diameter [mm] | Color code |        | Standard pack |        | BIGbox       |            |
|                 |                |                        | Top        | Bottom | Filters/Pack  | REF    | Filters/Pack | REF        |
| CHROMAFIL®      |                |                        |            |        |               |        |              |            |
| PET-20/15 MS    | 0.20           | 15                     | yellow     | orange | 100           | 729022 |              |            |
| PET-45/15 MS    | 0.45           | 15                     | colorless  | orange | 100           | 729023 |              |            |
| PET-20/25       | 0.20           | 25                     | yellow     | orange | 100           | 729021 | 400          | 729021.400 |
| PET-45/25       | 0.45           | 25                     | colorless  | orange | 100           | 729020 | 400          | 729020.400 |

MS = minispike on filter exit



## Regenerated cellulose (RC)



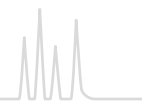
### ★ Key features

- Hydrophilic membrane with very low adsorption
- For aqueous and organic-aqueous liquids, i.e. polar and medium polar sample solutions
- Binding capacity for proteins 84 µg per 25 mm filter

## Ordering information

| Type                           | Pore size [µm] | Membrane diameter [mm] |            |        | Standard pack |        | BIGbox       |            |
|--------------------------------|----------------|------------------------|------------|--------|---------------|--------|--------------|------------|
|                                |                |                        |            |        | Filters/Pack  | REF    | Filters/Pack | REF        |
| CHROMAFIL® Xtra                |                |                        |            |        |               |        |              |            |
| RC-20/13                       | 0.20           | 13                     | labeled    |        | 100           | 729236 |              |            |
| RC-45/13                       | 0.45           | 13                     | labeled    |        | 100           | 729237 |              |            |
| RC-20/25                       | 0.20           | 25                     | labeled    |        | 100           | 729230 | 400          | 729230.400 |
| RC-45/25                       | 0.45           | 25                     | labeled    |        | 100           | 729231 | 400          | 729231.400 |
| Type                           | Pore size [µm] | Membrane diameter [mm] | Color code |        | Standard pack |        | BIGbox       |            |
|                                |                |                        | Top        | Bottom | Filters/Pack  | REF    | Filters/Pack | REF        |
| CHROMAFIL®                     |                |                        |            |        |               |        |              |            |
| RC-20/15 MS                    | 0.20           | 15                     | yellow     | blue   | 100           | 729036 |              |            |
| RC-45/15 MS                    | 0.45           | 15                     | colorless  | blue   | 100           | 729037 |              |            |
| RC-20/25                       | 0.20           | 25                     | yellow     | blue   | 100           | 729030 | 400          | 729030.400 |
| RC-45/25                       | 0.45           | 25                     | colorless  | blue   | 100           | 729031 | 400          | 729031.400 |
| MS = minispikes on filter exit |                |                        |            |        |               |        |              |            |

MS = minispikes on filter exit



## Polytetrafluoroethylene (PTFE)



### ★ Key features

- Hydrophobic membrane
- For nonpolar liquids and gases
- Very resistant towards all kinds of solvents as well as acids and bases
- Flushing with alcohol, followed by water, makes the originally hydrophobic membrane more hydrophilic

### Ordering information

| Type            | Pore size [µm] | Membrane diameter [mm] |         | Standard pack |        | BIGbox       |            |
|-----------------|----------------|------------------------|---------|---------------|--------|--------------|------------|
|                 |                |                        |         | Filters/Pack  | REF    | Filters/Pack | REF        |
| CHROMAFIL® Xtra |                |                        |         |               |        |              |            |
| PTFE-20/13      | 0.20           | 13                     | labeled | 100           | 729208 |              |            |
| PTFE-45/13      | 0.45           | 13                     | labeled | 100           | 729209 |              |            |
| PTFE-20/25      | 0.20           | 25                     | labeled | 100           | 729207 | 400          | 729207.400 |
| PTFE-45/25      | 0.45           | 25                     | labeled | 100           | 729205 | 400          | 729205.400 |
| PTFE-100/25     | 1.0            | 25                     | labeled | 100           | 729247 |              |            |

| Type       | Pore size [µm] | Membrane diameter [mm] | Color code |           | Standard pack |        | BIGbox       |            |
|------------|----------------|------------------------|------------|-----------|---------------|--------|--------------|------------|
|            |                |                        | Top        | Bottom    | Filters/Pack  | REF    | Filters/Pack | REF        |
| CHROMAFIL® |                |                        |            |           |               |        |              |            |
| O-20/3     | 0.20           | 3                      | colorless  | colorless | 100           | 729014 |              |            |
| O-45/3     | 0.45           | 3                      | colorless  | colorless | 100           | 729015 |              |            |
| O-20/15 MS | 0.20           | 15                     | yellow     | colorless | 100           | 729008 |              |            |
| O-45/15 MS | 0.45           | 15                     | colorless  | colorless | 100           | 729009 |              |            |
| O-20/25    | 0.20           | 25                     | yellow     | colorless | 100           | 729007 | 400          | 729007.400 |

MS = minispikes on filter exit

## Hydrophilized polytetrafluoroethylene (H-PTFE)



### ★ Key features

- Hydrophobic membrane with additional hydrophilic characteristic
- For polar and nonpolar solutions
- Resistant towards all kinds of solvents as well as acids and bases

### Ordering information

| Type            | Pore size [µm] | Membrane diameter [mm] |         | Standard pack |        | BIGbox       |            |
|-----------------|----------------|------------------------|---------|---------------|--------|--------------|------------|
|                 |                |                        |         | Filters/Pack  | REF    | Filters/Pack | REF        |
| CHROMAFIL® Xtra |                |                        |         |               |        |              |            |
| H-PTFE-20/13    | 0.20           | 13                     | labeled | 100           | 729256 |              |            |
| H-PTFE-45/13    | 0.45           | 13                     | labeled | 100           | 729257 |              |            |
| H-PTFE-20/25    | 0.20           | 25                     | labeled | 100           | 729245 |              |            |
| H-PTFE-45/25    | 0.45           | 25                     | labeled | 100           | 729246 | 400          | 729246.400 |



## Cellulose mixed esters (MV)



### ★ Key features

- Hydrophilic membrane with very low adsorption
- For aqueous or polar solutions

### Ordering information

| Type            | Pore size [µm] | Membrane diameter [mm] | Standard pack |        |               |              | BIGbox       |            |
|-----------------|----------------|------------------------|---------------|--------|---------------|--------------|--------------|------------|
|                 |                |                        | Filters/Pack  |        | REF           | Filters/Pack | REF          |            |
| CHROMAFIL® Xtra |                |                        |               |        |               |              |              |            |
| MV-20/25        | 0.20           | 25                     | labeled       |        | 100           | 729206       |              |            |
| MV-45/25        | 0.45           | 25                     | labeled       |        | 100           | 729204       | 400          | 729204.400 |
| Type            | Pore size [µm] | Membrane diameter [mm] | Color code    |        | Standard pack |              | BIGbox       |            |
|                 |                |                        | Top           | Bottom | Filters/Pack  | REF          | Filters/Pack | REF        |
| CHROMAFIL®      |                |                        |               |        |               |              |              |            |
| A-20/25         | 0.20           | 25                     | yellow        | yellow | 100           | 729006       | 400          | 729006.400 |
| A-45/25         | 0.45           | 25                     | colorless     | yellow | 100           | 729004       | 400          | 729004.400 |

## Cellulose acetate (CA)



### ★ Key features

- Hydrophilic membrane
- For the filtration of water-soluble oligomers and polymers, especially suited for biological macromolecules
- Very high shape stability in aqueous solutions
- Extremely low binding capacity for proteins (21 μg / 25 mm filter)
- Also available in a sterile package (S) for filtration under sterile conditions (each filter individually sealed)

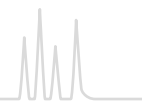
### Ordering information

| Type                                               | Pore size [μm] | Membrane diameter [mm] | Standard pack |        |               |        | BIGbox       |            |
|----------------------------------------------------|----------------|------------------------|---------------|--------|---------------|--------|--------------|------------|
|                                                    |                |                        | Filters/Pack  | REF    | Filters/Pack  | REF    |              |            |
| CHROMAFIL® Xtra                                    |                |                        |               |        |               |        |              |            |
| CA-20/13                                           | 0.20           | 13                     | labeled       | 100    | 729254        |        |              |            |
| CA-45/13                                           | 0.45           | 13                     | labeled       | 100    | 729255        |        |              |            |
| CA-20/25                                           | 0.20           | 25                     | labeled       | 100    | 729226        | 400    | 729226.400   |            |
| CA-45/25                                           | 0.45           | 25                     | labeled       | 100    | 729227        | 400    | 729227.400   |            |
| Type                                               | Pore size [μm] | Membrane diameter [mm] | Color code    |        | Standard pack |        | BIGbox       |            |
|                                                    |                |                        | Top           | Bottom | Filters/Pack  | REF    | Filters/Pack | REF        |
| CHROMAFIL®                                         |                |                        |               |        |               |        |              |            |
| CA-20/15 MS                                        | 0.20           | 15                     | yellow        | red    | 100           | 729054 |              |            |
| CA-45/15 MS                                        | 0.45           | 15                     | colorless     | red    | 100           | 729055 |              |            |
| CA-20/25                                           | 0.20           | 25                     | yellow        | red    | 100           | 729026 | 400          | 729026.400 |
| CA-45/25                                           | 0.45           | 25                     | colorless     | red    | 100           | 729027 | 400          | 729027.400 |
| Sterile filters                                    |                |                        |               |        |               |        |              |            |
| CA-20/25 (S)                                       | 0.20           | 25                     | yellow        | red    | 50            | 729024 |              |            |
| CA-45/25 (S)                                       | 0.45           | 25                     | colorless     | red    | 50            | 729025 |              |            |
| MS = minispike on filter exit; S = sterile filters |                |                        |               |        |               |        |              |            |

MS = minispikes on filter exit; S = sterile filters



# CHROMAFIL<sup>®</sup> syringe filters



## Polyamide (PA) = Nylon



### ★ Key features

- Rather hydrophilic membrane
- For aqueous and organic-aqueous medium polar liquids

### Ordering information

| Type                           | Pore size [µm] | Membrane diameter [mm] | Standard pack |           | BIGbox        |        |              |            |
|--------------------------------|----------------|------------------------|---------------|-----------|---------------|--------|--------------|------------|
|                                |                |                        | Filters/Pack  | REF       | Filters/Pack  | REF    |              |            |
| CHROMAFIL® Xtra                |                |                        |               |           |               |        |              |            |
| PA-20/13                       | 0.20           | 13                     | labeled       | 100       | 729248        |        |              |            |
| PA-45/13                       | 0.45           | 13                     | labeled       | 100       | 729249        |        |              |            |
| PA-20/25                       | 0.20           | 25                     | labeled       | 100       | 729212        | 400    | 729212.400   |            |
| PA-45/25                       | 0.45           | 25                     | labeled       | 100       | 729213        | 400    | 729213.400   |            |
| Type                           | Pore size [µm] | Membrane diameter [mm] | Color code    |           | Standard pack |        | BIGbox       |            |
|                                |                |                        | Top           | Bottom    | Filters/Pack  | REF    | Filters/Pack | REF        |
| CHROMAFIL®                     |                |                        |               |           |               |        |              |            |
| AO-20/3                        | 0.20           | 3                      | colorless     | colorless | 100           | 729010 |              |            |
| AO-45/3                        | 0.45           | 3                      | colorless     | colorless | 100           | 729011 |              |            |
| AO-20/15 MS                    | 0.20           | 15                     | yellow        | green     | 100           | 729048 |              |            |
| AO-45/15 MS                    | 0.45           | 15                     | colorless     | green     | 100           | 729049 |              |            |
| AO-20/25                       | 0.20           | 25                     | yellow        | green     | 100           | 729012 | 400          | 729012.400 |
| AO-45/25                       | 0.45           | 25                     | colorless     | green     | 100           | 729013 | 400          | 729013.400 |
| MS = minispikes on filter exit |                |                        |               |           |               |        |              |            |

MS = minispike on filter exit

## Polyethersulfone (PES)



### ★ Key features

- Hydrophilic membrane
- For aqueous liquids and aqueous liquids with low organic contents
- Very low adsorption of pharmaceuticals and proteins
- Good stability against acids and bases
- Binding capacity for proteins 29 µg per 25 mm filter

### Ordering information

| Type            | Pore size [µm] | Membrane diameter [mm] |         | Standard pack |        | BIGbox       |            |
|-----------------|----------------|------------------------|---------|---------------|--------|--------------|------------|
|                 |                |                        |         | Filters/Pack  | REF    | Filters/Pack | REF        |
| CHROMAFIL® Xtra |                |                        |         |               |        |              |            |
| PES-20/25       | 0.20           | 25                     | labeled | 100           | 729240 |              |            |
| PES-45/25       | 0.45           | 25                     | labeled | 100           | 729241 | 400          | 729241.400 |
| PES-500/25      | 5.0            | 25                     | labeled | 100           | 729242 |              |            |



## Polyvinylidene difluoride (PVDF)



### ★ Key features

- Hydrophilic membrane
- For 100 % aqueous samples, water-soluble oligomers and polymers like proteins
- Binding capacity for proteins 20 µg per 25 mm filter

### Ordering information

| Type                           | Pore size [µm] | Membrane diameter [mm] |            |        | Standard pack |        | BIGbox       |            |
|--------------------------------|----------------|------------------------|------------|--------|---------------|--------|--------------|------------|
|                                |                |                        |            |        | Filters/Pack  | REF    | Filters/Pack | REF        |
| CHROMAFIL® Xtra                |                |                        |            |        |               |        |              |            |
| PVDF-20/13                     | 0.20           | 13                     | labeled    |        | 100           | 729243 |              |            |
| PVDF-45/13                     | 0.45           | 13                     | labeled    |        | 100           | 729244 |              |            |
| PVDF-20/25                     | 0.20           | 25                     | labeled    |        | 100           | 729218 | 400          | 729218.400 |
| PVDF-45/25                     | 0.45           | 25                     | labeled    |        | 100           | 729219 | 400          | 729219.400 |
| Type                           | Pore size [µm] | Membrane diameter [mm] | Color code |        | Standard pack |        |              |            |
|                                |                |                        | Top        | Bottom | Filters/Pack  | REF    |              |            |
| CHROMAFIL®                     |                |                        |            |        |               |        |              |            |
| PVDF-20/15 MS                  | 0.20           | 15                     | yellow     | white  | 100           | 729043 |              |            |
| PVDF-45/15 MS                  | 0.45           | 15                     | colorless  | white  | 100           | 729044 |              |            |
| MS = minispikes on filter exit |                |                        |            |        |               |        |              |            |

MS = minispikes on filter exit

## Glass fiber (GF)



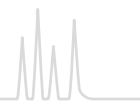
### ★ Key features

- Inert filter, nominal pore size 1 µm, allows higher flow rates than small pore filters
- For solutions with high loads of particulate matter or for highly viscous solutions (e.g., soil samples, fermentation broths). Glass fiber exhibits a high protein-binding capacity.
- As prefilters for other CHROMAFIL® filters, they prevent plugging of the membrane

### Ordering information

| Type                           | Pore size [µm] | Membrane diameter [mm] | Standard pack |           |               |        | BIGbox       |            |
|--------------------------------|----------------|------------------------|---------------|-----------|---------------|--------|--------------|------------|
|                                |                |                        | Filters/Pack  | REF       | Filters/Pack  | REF    |              |            |
| CHROMAFIL® Xtra                |                |                        |               |           |               |        |              |            |
| GF-100/13                      | nominal 1.0    | 13                     | labeled       |           | 100           | 729234 |              |            |
| GF-100/25                      | nominal 1.0    | 25                     | labeled       |           | 100           | 729228 | 400          | 729228.400 |
| Type                           | Pore size [µm] | Membrane diameter [mm] | Color code    |           | Standard pack |        | BIGbox       |            |
|                                |                |                        | Top           | Bottom    | Filters/Pack  | REF    | Filters/Pack | REF        |
| CHROMAFIL®                     |                |                        |               |           |               |        |              |            |
| GF-100/15 MS                   | nominal 1.0    | 15                     | blue          | colorless | 100           | 729034 |              |            |
| GF-100/25                      | nominal 1.0    | 25                     | yellow        | black     | 100           | 729028 | 400          | 729028.400 |
| MS = minispikes on filter exit |                |                        |               |           |               |        |              |            |

MS = minispikes on filter exit



## Special filter for ion chromatography (IC)



### ★ Key features

- For the filtration of aqueous liquids
- For optimal results with blind values < 5 ppb we recommend to prewash the filter with deionized water

### Ordering information

| Type            | Pore size [µm] | Membrane diameter [mm] |         | Standard pack |        |
|-----------------|----------------|------------------------|---------|---------------|--------|
|                 |                |                        |         | Filters/Pack  | REF    |
| CHROMAFIL® Xtra |                |                        |         |               |        |
| IC-45/25        | 0.45           | 25                     | labeled | 100           | 729258 |

## Hints for using CHROMAFIL<sup>®</sup> syringe filters

For optimum filtration results we recommend to keep the following in mind:

- Either discard the first mL or rinse the filter unit with 1 mL of the solvent prior to filtration
- Before filling the syringe, draw about 1 mL air into the syringe in order to minimize the liquid remaining in the filter
- Start filtration with a slight pressure; this will optimize the throughput of the filter. As soon as particles accumulate on the filter, filtration will become more difficult and the pressure on the filter will increase.
- Change the filter whenever the resistance becomes too large in order to prevent rupture of the housing
- Do not apply CHROMAFIL<sup>®</sup> syringe filters on humans; they are only intended for lab use!
- Always use syringes ≥ 10 mL; smaller syringes can easily cause pressures above the 6 bar limit of the filters
- The temperature should not exceed 55 °C
- Do not re-use the filters

## Disposable syringes with Luer tip



### ★ Key features

- Body and piston made from polypropylene (non sterile)

### Ordering information

| Volume | Pack of | REF    |
|--------|---------|--------|
| 2 mL   | 100     | 729100 |
| 5 mL   | 100     | 729101 |
| 10 mL  | 100     | 729102 |



## Chemical compatibility of filter materials

The chemical compatibility depends on several parameters such as time, pressure, temperature and concentration. In most cases, CHROMAFIL® filters will have only short contact with a solvent. In these cases they may be used despite of limited compatibility.

For example, a PTFE filter with PP housing does not liberate any UV-detectable substances during filtration of 5 mL THF, although PP shows only limited resistance towards THF.

The following table lists the chemical compatibility of our CHROMAFIL® materials.

| Solvent                       | Material |    |    |    |      |        |      |     |     |    |    |    |
|-------------------------------|----------|----|----|----|------|--------|------|-----|-----|----|----|----|
|                               | MV       | CA | RC | PA | PTFE | H-PTFE | PVDF | PES | PET | GF | IC | PP |
| Acetaldehyde                  | -        | -  | +  | ○  | +    | +      | +    |     | +   | +  |    | ○  |
| Acetic acid, 100 %            | -        | -  | -  | -  | +    | +      | +    | +   | +   | +  |    | +  |
| Acetone                       | -        | -  | +  | +  | +    | +      | -    | -   | +   | +  |    | +  |
| Acetonitrile                  | -        | -  | +  | +  | +    | +      | +    | +   | +   | +  |    | +  |
| Ammonia, 25 %                 | -        | -  | ○  | -  | +    | +      | +    | +   | ○   | +  | -  | +  |
| Benzene                       | +        | +  | +  | +  | +    | +      | ○    | +   | +   | +  |    | ○  |
| n-Butanol                     | +        | +  | +  | ○  | +    | +      | +    | +   | +   | +  |    | +  |
| Cyclohexane                   | +        | +  | +  | ○  | +    | +      | +    | +   | +   | +  |    | +  |
| Dichloromethane               | +        | -  | +  | -  | +    | +      | +    | -   | +   | +  |    | -  |
| Diethyl ether                 | ○        | ○  | +  | +  | +    | +      | +    | +   | +   | +  |    | ○  |
| Dimethylformamide             | -        | -  | ○  | +  | +    | +      | -    | -   | +   | +  |    | +  |
| 1,4-Dioxane                   | -        | -  | +  | +  | +    | +      | ○    | -   | +   | +  |    | ○  |
| Ethanol                       | -        | +  | +  | +  | +    | +      | +    | +   | +   | +  |    | +  |
| Ethyl acetate                 | -        | -  | +  | +  | +    | +      | +    | +   | +   | +  |    | ○  |
| Ethylene glycol               | ○        | ○  | +  | +  | +    | +      | +    | +   | +   | +  |    | +  |
| Formic acid, 100 %            | +        | -  | ○  | -  | +    | +      | +    | +   | ○   | +  |    | +  |
| Hydrochloric acid, 30 %       | -        | -  | -  | -  | +    | +      | +    | +   | -   | +  | -  | +  |
| Methanol                      | -        | -  | +  | +  | +    | +      | +    | +   | +   | +  |    | +  |
| Nitric acid, 65 %             | -        | -  | -  | -  | ○    | +      | ○    |     | ○   | +  | -  | -  |
| Oxalic acid, 10 % aqueous     | +        | -  | +  | -  | +    | +      | +    |     | +   | +  |    | +  |
| Petroleum ether               | +        | +  | +  | +  | +    | +      | +    | +   | +   | +  |    | +  |
| Phosphoric acid, 80 %         | -        | -  | ○  | -  | +    | +      | ○    |     | +   | +  | -  | +  |
| Potassium hydroxide, 1 mol/L  | -        | -  | ○  | +  | +    | +      | ○    | ○   | ○   | +  | +  | +  |
| 2-Propanol                    | +        | +  | +  | +  | +    | +      | +    | +   | +   | +  |    | +  |
| Sodium hydroxide, 1 mol/L     | -        | -  | ○  | +  | +    | +      | ○    | ○   | ○   | ○  | +  | +  |
| Tetrachloromethane            | +        | -  | +  | +  | +    | +      | ○    |     | +   | +  |    | ○  |
| Tetrahydrofuran               | -        | -  | +  | ○  | +    | +      | +    | -   | +   | +  |    | ○  |
| Toluene                       | +        | -  | +  | +  | +    | +      | +    | +   | +   | +  |    | ○  |
| Trichloroethene               | +        | +  | +  | ○  | +    | +      | +    | ○   | +   | +  |    | ○  |
| Trichloromethane (chloroform) | +        | -  | +  | -  | +    | +      | +    | -   | +   | +  |    | -  |
| Urea                          | +        | +  | +  | +  | +    | +      | +    |     | +   | +  |    | +  |
| Water                         | +        | +  | +  | +  | +    | +      | +    | +   | +   | +  | +  | +  |
| Xylene                        | +        | +  | +  | +  | +    |        | ○    | ○   | +   | +  |    | ○  |

Data not guaranteed.

+ resistant, - not resistant, ○ limited resistance

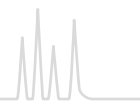
## Material

### Membranes

MV = cellulose mixed esters, CA = cellulose acetate, RC = regenerated cellulose, PA = polyamide, PTFE = polytetrafluoroethylene, H-PTFE = hydrophilized polytetrafluoroethylene, PVDF = polyvinylidene difluoride, PES = polyethersulfone, PET = polyester, GF = glass fiber, IC = special filter for ion chromatography

### Housing material

PP = polypropylene



## CHROMAFIL® filtration cartridges

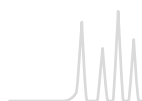


### ★ Key features

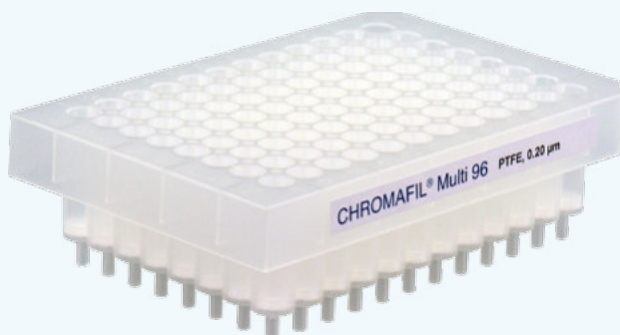
- Filtration cartridges for sample clarification under vacuum (e.g., using the CHROMABOND® vacuum manifold or SPE automation systems like Gilson ASPEC™, Rapidtrace®) or by gravity
- Cartridge sizes 3 mL and 6 mL
- Different membranes (PET, RC, PTFE, PVDF, GF) and pore sizes (0.2, 0.45 and 1.0 µm). Membrane materials correspond to the respective CHROMAFIL® syringe filters.

### Ordering information

| Description                                            | Pore size [µm] | Pack of [cartridges] | Column volume |             |
|--------------------------------------------------------|----------------|----------------------|---------------|-------------|
|                                                        |                |                      | 3 mL          | 6 mL        |
| CHROMAFIL® filtration cartridges                       |                |                      |               |             |
| Filtration cartridges PET (polyester)                  | 0.20           | 100                  | 730578.320    | 730578.620  |
| Filtration cartridges PET (polyester)                  | 0.45           | 100                  | 730578.345    | 730578.645  |
| Filtration cartridges RC (regenerated cellulose)       | 0.20           | 100                  | 730068.320    | 730068.620  |
| Filtration cartridges RC (regenerated cellulose)       | 0.45           | 100                  | 730068.345    | 730068.645  |
| Filtration cartridges PTFE (polytetrafluoroethylene)   | 0.20           | 100                  | 730570.320    | 730570.620  |
| Filtration cartridges PTFE (polytetrafluoroethylene)   | 0.45           | 100                  | 730570.345    | 730570.645  |
| Filtration cartridges PVDF (polyvinylidene difluoride) | 0.20           | 100                  | 730579.320    | 730579.620  |
| Filtration cartridges PVDF (polyvinylidene difluoride) | 0.45           | 100                  | 730579.345    | 730579.645  |
| Filtration cartridges GF (glass fiber)                 | nom. 1.0       | 100                  | 730517.3100   | 730517.6100 |



## CHROMAFIL<sup>®</sup> MULTI 96 filter plates



### ★ Key features

- 96-well polypropylene plates for the simultaneous filtration of 96 samples
- Advantages of this high-throughput system are:
  - Economical by saving time and solvent
  - The use of multi-channel pipettors facilitates liquid transfer steps
  - Readily adaptable to all common automated and robotic handling systems
  - Minimized dead volume ( $\leq 40 \mu\text{L}$ )
- Membrane materials correspond to the respective CHROMAFIL<sup>®</sup> syringe filters

### Ordering information

| Description                                                                                                                                                     | Pack of | REF       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------|
| <b>CHROMAFIL<sup>®</sup> MULTI 96 Filter plates</b>                                                                                                             |         |           |
| Filter plates with cellulose mixed ester filter elements (0.20 $\mu\text{m}$ )                                                                                  | 1       | 738770.M  |
| Filter plates with cellulose mixed ester filter elements (0.45 $\mu\text{m}$ )                                                                                  | 1       | 738771.M  |
| Filter plates with RC filter elements (regenerated cellulose 0.2 $\mu\text{m}$ )                                                                                | 1       | 738656.M  |
| Filter plates with RC filter elements (regenerated cellulose 0.45 $\mu\text{m}$ )                                                                               | 1       | 738657.M  |
| Filter plates with PTFE filter elements (0.2 $\mu\text{m}$ )                                                                                                    | 1       | 738660.M  |
| Filter plates with PTFE filter elements (0.45 $\mu\text{m}$ )                                                                                                   | 1       | 738661.M  |
| Filter plates with PTFE filter elements (1.0 $\mu\text{m}$ )                                                                                                    | 1       | 738662.M  |
| Filter plates with PTFE filter elements (3.0 $\mu\text{m}$ )                                                                                                    | 1       | 738663.M  |
| Filter plates with PE filter elements (20 $\mu\text{m}$ )                                                                                                       | 1       | 738655.M  |
| Filter plates with PE filter elements (50 $\mu\text{m}$ )                                                                                                       | 1       | 738659.M  |
| Filter plates with glass fiber filter elements (nominal 1 $\mu\text{m}$ )                                                                                       | 1       | 738655.2M |
| Filter plates with glass fiber filter elements (nominal 3 $\mu\text{m}$ )                                                                                       | 1       | 738658.M  |
| CHROMABOND <sup>®</sup> MULTI 96 vacuum manifold for monoblocks, with reservoir tank, vacuum gauge and control valve, for filtration with 96-well filter plates | 1       | 738630.M  |