Acrodisc™ PSF syringe filters

Acrodisc™ PSF are high performance syringe filters provides consistent, reliable results that can be used for general clarification or application specific uses like dissolution, HPLC, IC, etc.

- Accurate pore size rating- Acrodisc PSF syringe filters have a larger membrane surface area, making them more retentive.
- Superior HPLC column protection – Better retention efficiency helps extend column life.
- Quick and easy filtration – GxF multi-layer prefilter provides two to four times the throughput of standard glass fiber prefilter devices.
- Safety feature – Filter housing designed to withstand high operating pressure and avoid filter burst during use.
- Versatile – Available with a water wettable wwPTFE membrane for maximum chemical compatibility, fast flow rates, low protein binding, and low levels of UV-absorbing extractables.
- Automation-certified – Designed to be fully compatible and reliable for use with automated test systems.



Fig 1. Acrodisc PSF syringe filters

Certifications

Automation certification

Acrodisc PSF syringe filters are certified to work in automated and semi-automated systems. This certification is granted to syringe filters that meet stringent requirements for automated dispensing and robotic handling. Acrodisc PSF syringe filters are fully compatible with automated workstations to facilitate smooth operation and worry-free performance.

HPLC-certified

Cytiva certifies Acrodisc PSF syringe filters with PTFE* Nylon, RC, PVDF and wwPTFE membranes are below 20mAU in UV-absorbing extractables and were tested for compatibility with common HPLC solvents (water, acetonitrile and Methanol) using established HPLC procedures. Filtrate from PSF syringe filters was collected and run under isocratic mobile phase conditions at three common wavelengths (214 nm, 254 nm and 280 nm), no extraneous peaks were detected.

* IPA, acetonitrile and methanol

Ion-chromatography-certified

Cytiva certifies that ion-chromatography (IC) Acrodisc PSF syringe filters (AP-4785) were tested using the highly sensitive ion-chromatography technique.

Syringe filters for ion-chromatography applications are certified for low levels of inorganic extractables. Actual background levels of filter extractables for the first 1.5 mL of filtrate are typically less than 50 ppb for nitrate and less than 20 ppb for chloride, phosphate, and sulfate.

Specifications

Materials of construction

Filter media

- Hydrophilic polytetrafluoroethylene (wwPTFE)
- Hydrophilic nylon
- Hydrophilic polyvinylidene fluoride (PVDF)
- Hydrophobic polytetrafluoroethylene (PTFE)
- IC hydrophilic polyethersulfone (PES) Supor™ membranes
- Regenerated cellulose (RC)
- Versapor™ membrane (hydrophilic acrylic copolymer on a non-woven support)
- GF55 and GF92 glass microfiber media

GxF prefilter
Borosilicate glass

Housings
Polypropylene (PP)

Effective filtration area
3.9 cm^2

Sample volume
< 150 mL

Inlet and outlet connections
Female threaded luer inlet, male slip luer outlet

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Table 1. Technical specifications

Product code	Description	Pore size	Typical hold-up volume (w/air purge)	Maximum operating temperature	Maximum operating pressure	Water flow rate
AP-4527 AP-4523 AP-4529	GxF/Glass	1 µm	< 450 µL	55°C (131°F)	4.1 bar (410 kPa, 60 psi)	≥ 650 mL/min at 15 psi
AP-4787 AP-4788 AP-4787TC	GxF/nylon	0.2 µm	< 450 µL	55°C (131°F)	4.1 bar (410 kPa, 60 psi)	≥ 60 mL/min at 30 psi
AP-4548 AP-4549 AP-4528 AP-4549TC	GxF/nylon	0.45 µm	< 450 µL	55°C (131°F)	4.1 bar (410 kPa, 60 psi)	≥ 100 mL/min at 30 psi
AP-4790 AP-4791	GxF/PTFE	0.2 µm	< 450 µL	55°C (131°F)	4.1 bar (410 kPa, 60 psi)	≥ 12 mL/min at 15 psi with IPA
AP-4303 AP-4302 AP-4303TC	GxF/PTFE	0.45 µm	< 450 µL	55°C (131°F)	4.1 bar (410 kPa, 60 psi)	≥ 37 mL/min at 15 psi with IPA
AP-4793 AP-4793TC	GxF/PVDF	0.2 µm	< 450 µL	55°C (131°F)	4.1 bar (410 kPa, 60 psi)	≥ 35 mL/min at 30 psi
AP-4309 AP-4310 AP-4308 AP-4310TC	GxF/PVDF	0.45 µm	< 450 µL	55°C (131°F)	4.1 bar (410 kPa, 60 psi)	≥ 60 mL/min at 30 psi
AP-4798 AP-4799	GxF/Supor	0.2 µm	< 450 µL	55°C (131°F)	4.1 bar (410 kPa, 60 psi)	≥ 100 mL/min at 30 psi
AP-4425 AP-4426	GxF/Supor	0.45 µm	< 450 µL	55°C (131°F)	4.1 bar (410 kPa, 60 psi)	≥ 170 mL/min at 30 psi
AP-4913 AP-4915 AP-4913TC	GxF/wwPTFE	0.2 µm	< 450 µL	55°C (131°F)	6.2 bar (620 kPa, 90 psi)	≥ 60 mL/min at 30 psi
AP-4919 AP-4920 AP-4921 AP-4919TC	GxF/wwPTFE	0.45 µm	< 450 µL	55°C (131°F)	6.2 bar (620 kPa, 90 psi)	≥ 100 mL/min at 30 psi
AP-4585 AP-4785	IC (PES)	0.45 µm	< 250 µL	55°C (131°F)	4.1 bar (410 kPa, 60 psi)	≥ 170 mL/min at 30 psi
AP-4436 AP-4522 AP-4436TC	Nylon	0.2 µm	< 250 µL	55°C (131°F)	4.1 bar (410 kPa, 60 psi)	≥ 60 mL/min at 30 psi
AP-4517 AP-4438 AP-4502 AP-4438TC	Nylon	0.45 µm	< 250 µL	55°C (131°F)	4.1 bar (410 kPa, 60 psi)	≥ 100 mL/min at 30 psi
AP-4225 AP-4521 AP-4225TC	PTFE	0.2 µm	< 250 µL	55°C (131°F)	4.1 bar (410 kPa, 60 psi)	≥ 12 mL/min at 15 psi with IPA
AP-4518 AP-4219 AP-4501 AP-4219TC	PTFE	0.45 µm	< 250 µL	55°C (131°F)	4.1 bar (410 kPa, 60 psi)	≥ 37 mL/min at 15 psi with IPA
AP-4797 AP-4796TC	PVDF	0.2 µm	< 250 µL	55°C (131°F)	4.1 bar (410 kPa, 60 psi)	≥ 35 mL/min at 30 psi
AP-4519 AP-4408 AP-4500 AP-4408TC	PVDF	0.45 µm	< 250 µL	55°C (131°F)	4.1 bar (410 kPa, 60 psi)	≥ 60 mL/min at 30 psi
AP-4189	Versapor	0.8 µm	< 250 µL	55°C (131°F)	4.1 bar (410 kPa, 60 psi)	≥ 600 mL/min at 45 psi
AP-4000 AP-4001 AP-4002	Versapor	10 µm	< 250 µL	55°C (131°F)	4.1 bar (410 kPa, 60 psi)	≥ 2000 mL/min at 45 psi

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Product code	Description	Pore size	Typical hold-up volume (w/air purge)	Maximum operating temperature	Maximum operating pressure	Water flow rate
AP-4910 AP-4912 AP-4910TC	wwPTFE	0.2 µm	< 250 µL	55°C (131°F)	6.2 bar (620 kPa, 90 psi)	≥ 60 mL/min at 30 psi
AP-4916 AP-4917 AP-4918 AP-4916TC	wwPTFE	0.45 µm	< 250 µL	55°C (131°F)	6.2 bar (620 kPa, 90 psi)	≥ 100 mL/min at 30 psi
AP-4140 AP-4141	GF55	0.7 µm	< 450 µL	55°C (131°F)	5.0 bar (500 kPa, 72 psi)	
AP-4142 AP-4143	GF92	1.0 µm	< 450 µL	55°C (131°F)	5.0 bar (500 kPa, 72 psi)	
AP-4144 AP-4145	RC	0.45 µm	< 250 µL	55°C (131°F)	5.0 bar (500 kPa, 72 psi)	
AP-4146 AP-4147	RCGF	0.45 µm	< 450 µL	55°C (131°F)	5.0 bar (500 kPa, 72 psi)	

Performance

Retention efficiency

The Acrodisc PSF filters retention efficiency can increase the life of your HPLC column. More retentive filters will remove smaller non-dissolved particles that may rest on the head of your HPLC column, and affect analytical results as they dissolve during an analysis. The graph in Figure 2 demonstrates that the life of an HPLC column can be extended up to 52 times by filtering samples prior to injection.

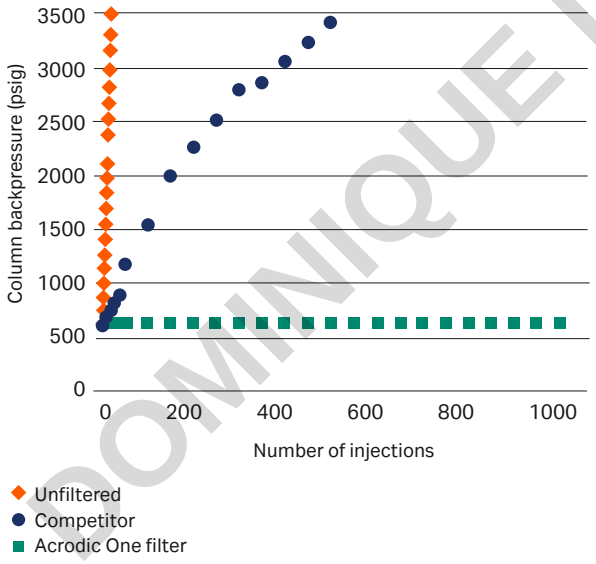


Fig 2. Effects of filters on HPLC column life following injections of unfiltered and filtered 0.05% latex sphere suspensions. With unfiltered samples, the column failed due to plugging after 19 injections. Samples passed through competitor filters plugged the columns after 500 injections. No increase in backpressure was observed after 1000 injections of samples filtered with Acrodisc One filters with wwPTFE membrane.

Prefiltration

The GxF Acrodisc PSF syringe filter has a serial glass fiber prefilter to allow for maximum throughput and faster flow rates than standard glass fiber prefilters. The multi-layered prefilter traps particulate rated from > 40 to 1 µm.

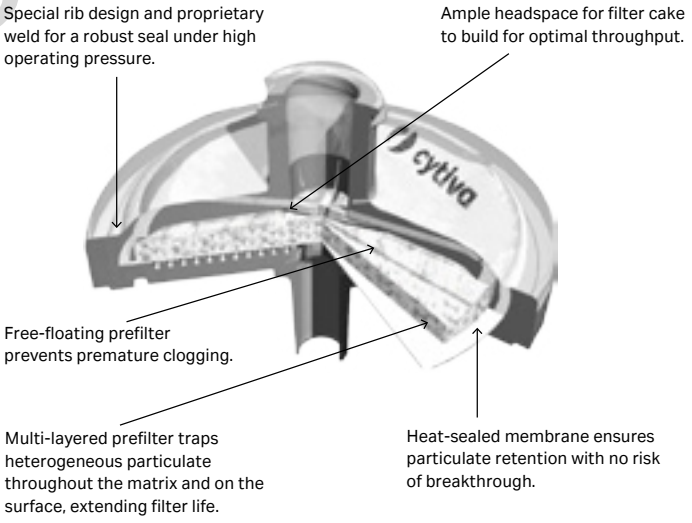


Fig 3. Acrodisc PSF syringe filter.

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Automation

Acrodisc PSF syringe filters are designed to meet exacting requirements of automation systems, and to demonstrate critical criteria including smooth filter-to-filter release, consistent turret advancement, robust housing strength, and a strict outside filter geometry to ensure proper alignment and consistent operation. Acrodisc PSF syringe filters are manufactured to ensure accurate and reliable performance. They are engineered to specific dimensions to provide uniform housing and optimized inlet and outlet designs. Stringent adherence to these dimensions is essential to maintain consistent filter delivery.



Fig 4. Acrodisc PSF syringe filter

Strong filter housing

Filter flex or squeeze occurs when the workstation filter holder compresses soft or weak filter housings. The squeezing effect reduces the effective filtration area and can result in early clogging of the membrane. This clogging can potentially result in one of three situations:

1. Leak between the filter and the workstation filter holder seal.
2. Increase in back pressure resulting in operation shutdown.
3. Filter housing bursts.

Acrodisc PSF syringe filter is made with support ribbing. Thick walls and a proprietary housing weld ensure a robust seal and a filter housing that can withstand excessive force both internally and externally.

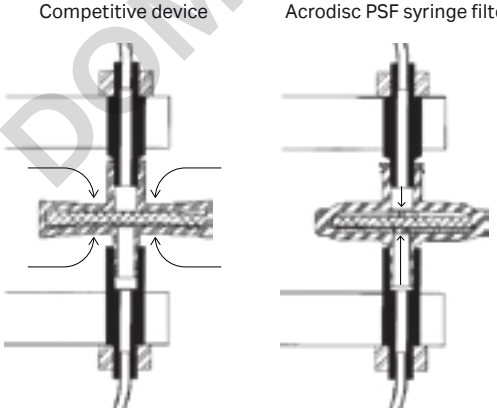


Fig 5. Filter squeeze, competitive device vs. Acrodisc PSF syringe filter.

Smooth filter-to-filter release

Filter sticking occurs when the filters do not easily release from the workstation filter holder luer at the filtration station or from the filter weight (the filter weight seats the filter in the dispenser hole). If the filter does not release from the weight or filter in the dispensing area, the turret will jam. The workstation sensor will indicate that a filter has not advanced into place and the system will error or shutdown.

The Acrodisc PSF syringe filter is designed so the filters cannot be forced too tightly together or to the automation components, allowing a smooth release while still meeting ANSI/ISO filter luer standards.

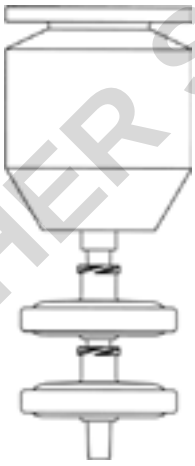


Fig 6. Smooth filter-to-filter release.

Strict "outside filter geometry"

Consistent filter dimensions are critical for smooth operation in automated equipment. The Acrodisc PSF syringe filter has strict dimensional specifications in height and width to ensure proper alignment and filter luer-to-instrument placement.

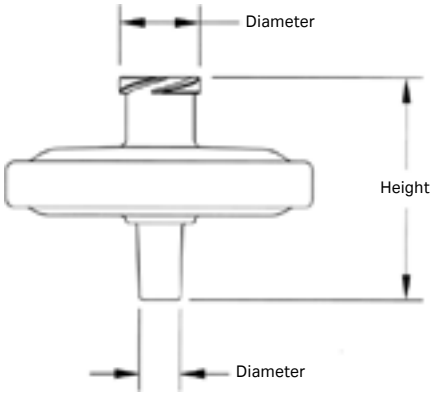


Fig 7. Specific filter dimensions provide proper turret advancement.

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As the turret or carousel turns to dispense a filter, the bottom filter on a stack drops into the filter separator area and a wedge mechanism separates the filter from the filter stack.

If the filters are pressed too tightly together, the turret does not exert enough force to pull the filters apart. Sometimes, when this happens, the filter stack will jump in the dispenser as the turret attempts to turn and the square-top shoulder on a syringe filter will snag on the edge of the separator wedge. When the turret freezes and a filter is not dispensed, the system errors and shuts down.

The Acrodisc PSF syringe filter quick-releasing filter luers separate easily. The slightly rounded upper shoulder on the syringe filter allows the filter to consistently slide under the wedge for trouble free separation from the filter stack and smooth filter advancement along the workstation track.

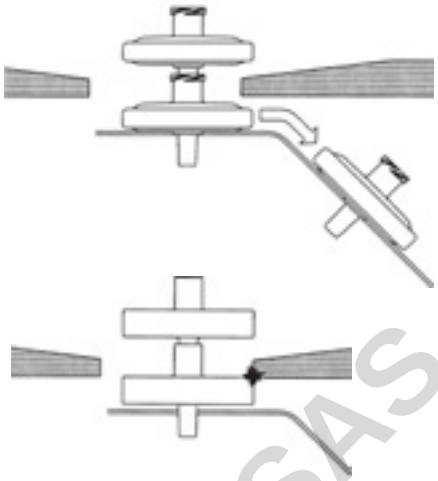


Fig 8. Consistent turret advancement.

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Chemical compatibility guide for Acrodisc PSF syringe filters

Solvent	wwPTFE	PTFE	Glass	Versapor	Nylon	IC PES (Supor)	PVDF	RC
Acetone	R	R	R	NR	R	NR	NR	R
Acetonitrile	R	R	R	NR	R	R	R	R
Acetic acid, glacial	R	R	R	NR	NR	R	R	NR
n-butanol	R	R	R	R	R	R	R	R
Chloroform	R	R	R	NR	R	NR	NR	R
Dimethyl formamide	R	R	R	NR	R	NR	NR	LR
Dimethyl sulfoxide	R	R	R	NR	R	NR	R	*
Ethanol	R	R	R	R	R	R	R	R
Acetate ethyl	R	R	R	R	R	NR	R	R
Ethel ether	R	R	R	–	NR	R	R	R
Hydrochloric acid (1N)	R	R	R	R	R	LR	R	NR
Hexane, dry	R	R	R	R	R	R	R	R
Methanol	R	R	R	NR	R	NR	R	R
Methylene chloride	R	R	R	NR	R	NR	NR	R
Methyl ethyl ketone	R	R	R	–	NR	NR	R	R
N-methyl pyrrolidone	R	R	R	R	R	R	R	R
Isopropanol	R	R	R	R	R	R	NR	R
Sodium hydroxide (3 N)	R	R	R	NR	R	NR	NR	NR
Tetrahydrofuran	R	R	R	–	R	–	R	R
Tetrahydrofuran/water (50/50)	R	R	R	R	R	R	R	R
Toluene	R	R	R	R	R	R	–	R
Water	R	R	R	–	–	–	–	R

R RESISTANT. No significant change was observed in flow rate or bubble point of the membrane.

LR LIMITED RESISTANCE. Moderate changes in physical properties or dimension of the membrane were observed. The filter may be suitable for short term, non-critical use at room temperature.

NR NOT RESISTANT. The membrane is basically unstable. In most cases, extensive shrinkage or swelling occurs. The filter may gradually weaken or partially dissolve after extended exposure.

– Insufficient data. Trial testing is recommended.

* Test methods: The data presented in this chart is a compilation of testing by Cytiva with certain chemicals, manufacturer's data, or compatibility recommendations from the Compass Corrosion Guide, by Kenneth M. Pruett. This data is intended to provide expected results when filtration devices are exposed to chemicals under static conditions for 48 h at 25°C (77°F), unless otherwise noted. This chart is intended only as a guide. Accuracy cannot be guaranteed. Users should verify chemical compatibility with a specific filter under actual use conditions. Chemical compatibility with a specific filter, under actual use conditions, is affected by many variables including temperature, pressure, concentration, and purity. Various chemical combinations prevent complete accuracy.

Ordering information

Acrodisc PSF syringe filters, 25 mm

Description	Size	Product code
0.2 µm wwPTFE	200/pk	AP-4910
0.2 µm wwPTFE	1000/pk	AP-4912
0.2 µm GXF/wwPTFE	200/pk	AP-4913
0.2 µm GXF/wwPTFE	1000/pk	AP-4915
0.45 µm wwPTFE	200/pk	AP-4916
0.45 µm wwPTFE, AutoPack tubes	200/pk	AP-4917
0.45 µm wwPTFE	1000/pk	AP-4918
0.45 µm GXF/wwPTFE	200/pk	AP-4919
0.45 µm GXF/wwPTFE, AutoPack tubes	200/pk	AP-4920
0.45 µm GXF/wwPTFE	1000/pk	AP-4921
GxF/Glass Fiber, AutoPack tubes	25/pk, 200/cs	AP-4527
GxF/Glass Fiber	50/pk, 200/cs	AP-4523
GxF/Glass Fiber	1000/pk	AP-4529
GxF/0.2 µm with nylon membrane	50/pk, 200/cs	AP-4787
GxF/0.2 µm with nylon membrane	1000/pk	AP-4788
GxF/0.45 µm with nylon membrane, AutoPack tubes	25/pk, 200/cs	AP-4548
GxF/0.45 µm with nylon membrane	50/pk, 200/cs	AP-4549
GxF/0.45 µm with nylon membrane	1000/pk	AP-4528
GxF/0.2 µm with PTFE membrane, AutoPack tubes	25/pk, 200/cs	AP-4789
GxF/0.2 µm with PTFE membrane	50/pk, 200/cs	AP-4790
GxF/0.2 µm with PTFE membrane	1000/pk	AP-4791
GxF/0.45 µm with PTFE membrane	50/pk, 200/cs	AP-4303
GxF/0.45 µm with PTFE membrane	1000/pk	AP-4302
GxF/0.2 µm with PVDF membrane	50/pk, 200/cs	AP-4793
GxF/0.45 µm with PVDF membrane, AutoPack tubes	25/pk, 200/cs	AP-4309
GxF/0.45 µm with PVDF membrane	50/pk, 200/cs	AP-4310
GxF/0.45 µm with PVDF membrane	1000/pk	AP-4308
GxF/0.2 µm with Supor membrane, AutoPack tubes	25/pk, 200/cs	AP-4798
GxF/0.2 µm with Supor membrane	50/pk, 200/cs	AP-4799
GxF/0.45 µm with Supor membrane	50/pk, 200/cs	AP-4425
GxF/0.45 µm with Supor membrane	1000/pk	AP-4426
0.45 µm with IC (PES) membrane, AutoPack tubes	25/pk, 200/cs	AP-4587
0.45 µm with IC (PES) membrane	50/pk, 200/cs	AP-4585
0.45 µm with IC (PES) membrane	1000/pk	AP-4785
0.2 µm with nylon membrane	50/pk, 200/cs	AP-4436
0.2 µm with nylon membrane	1000/pk	AP-4522
0.45 µm with nylon membrane, AutoPack tubes	25/pk, 200/cs	AP-4517
0.45 µm with nylon membrane	50/pk, 200/cs	AP-4438
0.45 µm with nylon membrane	1000/pk	AP-4502
0.2 µm with PTFE membrane	50/pk, 200/cs	AP-4225
0.2 µm with PTFE membrane	1000/pk	AP-4521
0.45 µm with PTFE membrane, AutoPack tubes	25/pk, 200/cs	AP-4518
0.45 µm with PTFE membrane	50/pk, 200/cs	AP-4219
0.45 µm with PTFE membrane	1000/pk	AP-4501
0.2 µm with PVDF membrane	1000/pk	AP-4797
0.45 µm with PVDF membrane, AutoPack tubes	25/pk, 200/cs	AP-4519
0.45 µm with PVDF membrane	50/pk, 200/cs	AP-4408
0.45 µm with PVDF membrane	1000/pk	AP-4500
0.8 µm with Versapor membrane, AutoPack tubes	25/pk, 200/cs	AP-4190
0.8 µm with Versapor membrane	50/pk, 200/cs	AP-4189
10 µm with Versapor membrane, AutoPack tubes	25/pk, 200/cs	AP-4000
10 µm with Versapor membrane	50/pk, 200/cs	AP-4001
10 µm with Versapor membrane	1000/pk	AP-4002
Acrodisc PSF GF55	1000/pk	AP-4140
Acrodisc PSF GF55 Autopack tubes	25/pk, 200/cs	AP-4141
Acrodisc PSF GF92	1000/pk	AP-4142
Acrodisc PSF GF92 Autopack tubes	25/pk, 200/cs	AP-4143
Acrodisc PSF RC 0.45µm	1000/pk	AP-4144
Acrodisc PSF RC 0.45µm Autopack tubes	25/pk, 200/cs	AP-4145
Acrodisc PSF RCGF 0.45µm	1000/pk	AP-4146
Acrodisc PSF RCGF 0.45µm Autopack tubes	25/pk, 200/cs	AP-4147

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CY40643-05Mar26-DF