POSTNOVA

AF2000 MF

Supplies and Consumables Brochure

Channel Cartridges & Membranes for
AF4 - Asymmetrical Flow FFF
EAF4 - Electrical Asymmetrical Flow FFF
HF5 - Hollow Fiber Flow FFF

www.postnova.com

Postnova – The FFF Inventors

30 Years of Innovation and Excellence in FFF and Light Scattering

The Invention of Field-Flow Fractionation

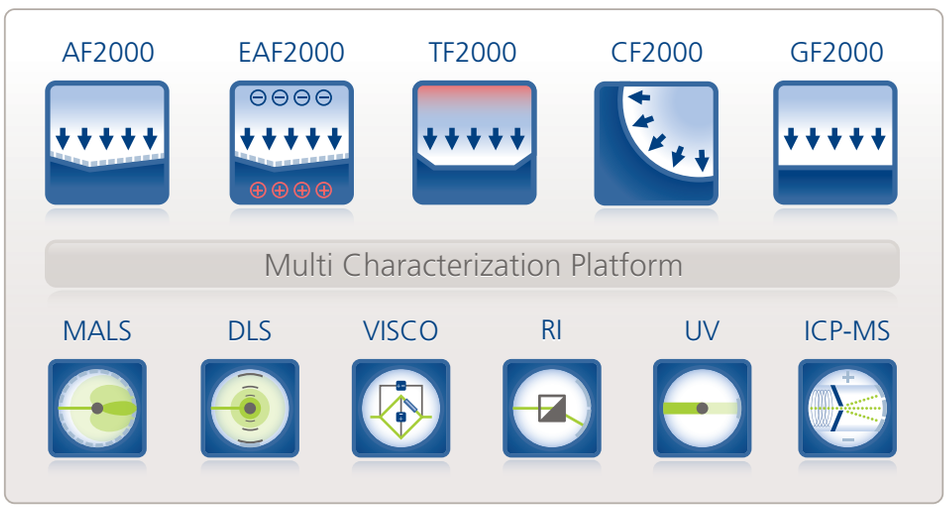
The story of Postnova FFF started when Prof. Calvin Giddings from University Utah, Salt Lake City, USA invented and patented Field-Flow Fractionation in 1966. Giddings was a passionate scientist in the area of separation science and a two-times Nobel Prize nominee. He and his co-workers laid the theoretical foundations for FFF and founded the world's first FFF company FFFractionation in 1986. Giddings and his group invented all major FFF versions which were commercialized first by FFFractionation (now Postnova USA) in the 1980s.

The New Era of Field-Flow Fractionation

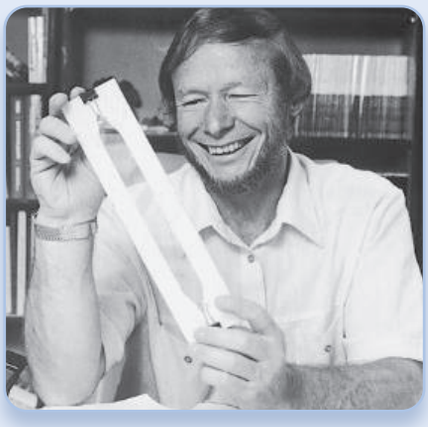
A complete new era in FFF started with the commercialization of the first automated Asymmetrical Flow FFF (AF4) which was developed at Technical University of Munich in 1995, followed up by the foundation of Postnova Analytics in 1997 in order to market this technology. In the 1990s Postnova was able to establish its new automated AF4 technology at leading chemical and pharmaceutical companies and research institutions worldwide.
Then in 2001 FFFractionation, the FFF inventor's company became part of the Postnova family and in the following years Postnova build up the most comprehensive and complete FFF product line based on the original work, know-how and patented technologies of Prof. Giddings. Since then Postnova has been clearly the leading innovator in the field of FFF, by continuously inventing new FFF Technologies which pushed FFF to new levels of performance, sensitivity, reliability and flexibility.

The Field-Flow Fractionation Platform

Today the unique Postnova FFF Platform contains Asymmetrical Flow FFF (AF4), Electrical Asymmetrical Flow FFF (EAF4), Hollow Fiber Flow FFF (HF5), Centrifugal FFF (CF3), Thermal FFF (TF3) and Gravitational FFF (GF3). All these FFF variants share the same modules and online detectors such as MALS, DLS, Visco and MS.



The flexibility of the Postnova FFF Platform is manifested by the fact that all mayor modules can be used at the same time for Flow FFF, Centrifugal FFF and Thermal FFF. Many modules, such as the pumps, degassers, auto injectors, fraction collectors and detectors can be shared between the FFF technologies. All is controlled by the single NovaFFF software and also detectors such as MALS, VISCO, DLS and ICP-MS are integrated making data analysis and evaluation a simple task.
The FFF Platform is the only complete solution on the market, which includes all modules provided by one manufacturer, single software control and integration of Flow, Centrifugal and Thermal FFF. This makes the Postnova FFF Platform the gold standard and the most flexible choice available without typical worries about service and support as this is all taken care by Postnova.



Milestones & Achievements

2022 AF4 Channel 700er Series
Launch of new 700er Series AF4 channel in different dimensions.

2021 PN3712 Online DLS
Launch of new Postnova PN3712 Online DLS plus Postnova DMax Software

2017 Electrical AF4
Launch of new EAF2000, an innovative simultaneous Electrical and Asymmetrical EAF4 System

2016 First Online Viscometer
Launch of first Postnova Online Viscometer for FFF, SEC and GPC

2012 First dedicated FFF-MALS
Postnova presents the world's first Multi Low Angle MALS with 21 angles

2011 First Hollow Fiber Flow FFF
Postnova presents its first own commercial Hollow Fiber Flow FFF (HF5)

2008 Thermostated Flow FFF
Postnova presents the new AF2000 thermostated Flow FFF

2006 First High Temp. Flow FFF
Postnova Analytics & Dow Chemical invent and develop the world's first High Temperature Flow FFF

2001 Foundation of Postnova USA
FFFractionation Inc. becomes part of the Postnova family

1997 Foundation of Postnova
Dr. Thorsten Klein founds Postnova Analytics in Munich, Germany

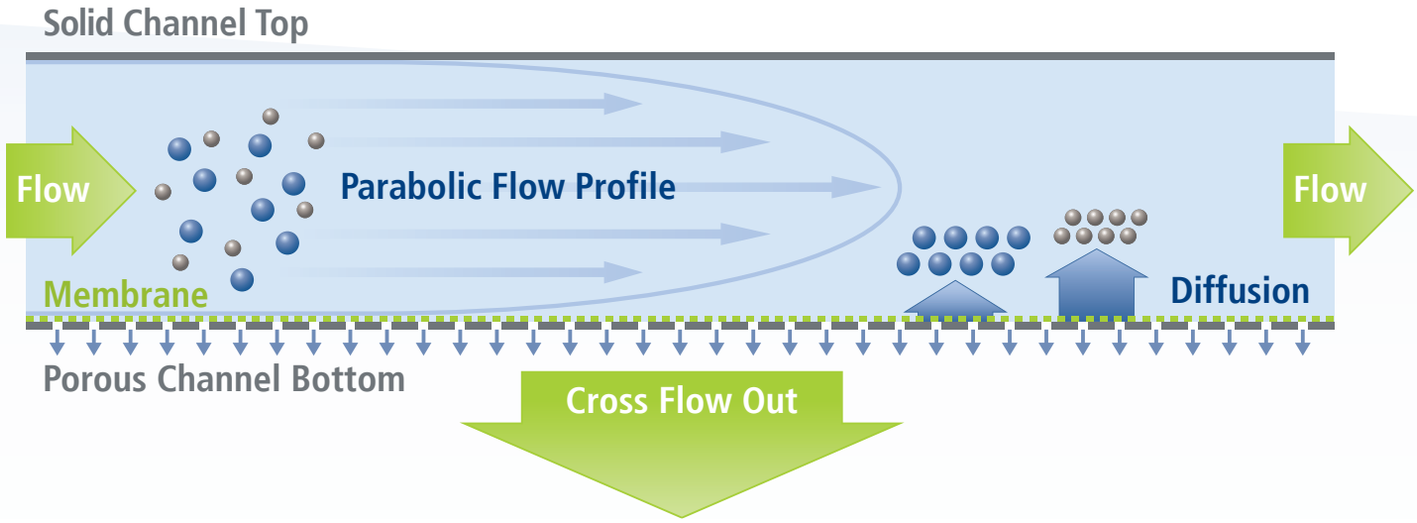
1995 Commercial Asym. Flow FFF
Development of first automated Asym. Flow FFF by Dr. Thorsten Klein at Technical University Munich, Germany

1986-1988 World's first FFFs
Introduction of first commercial FFF system by FFFractionation: F1000 Flow FFF, T100 Thermal FFF, S101 Sedi FFF

1966 Invention of FFF
Prof. Calvin Giddings invents Field-Flow Fractionation at University of Utah in Salt Lake City, USA

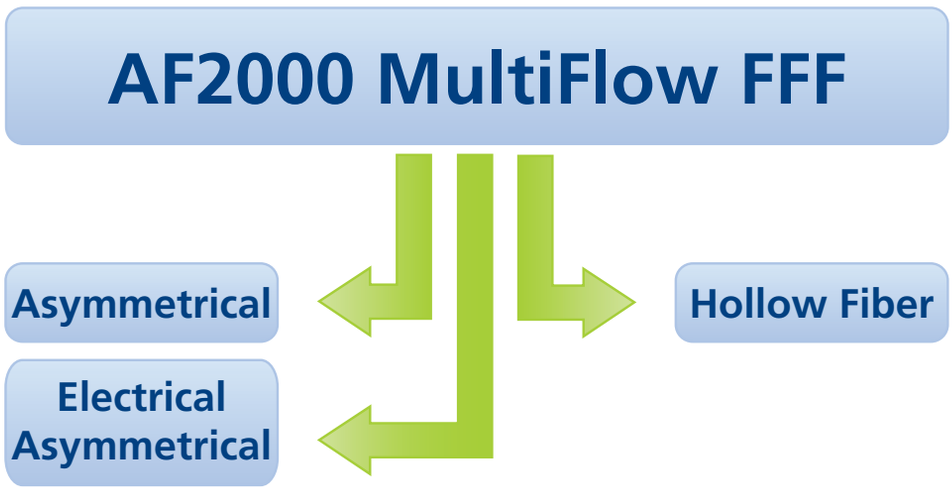
The Cartridge System

Unique patented Flow FFF Channels



Most flexible Cartridge Technology

To cover the broadest application range possible, Postnova developed the unique AF2000 MultiFlow FFF platform, which can use various Flow FFF techniques, such as Asymmetric or Hollow Fiber Flow FFF. To allow most flexible and efficient use of the different techniques, together with maintaining highest levels of resolution, recovery and reproducibility, Postnova invented and patented* an unparalleled set of Flow FFF



channel cartridges, which fit perfectly with the new AF2000 MultiFlow FFF Series. These cartridges incorporate either planar Asymmetrical Flow FFF (AF4), Electrical Asystemmtrical Flow FFF (EAF4) or tubular Hollow Fiber Flow FFF (HF5) channels. Although AF4, EAF4 and HF5 are not new techniques, the so far available home-made or commercial channels, showed significant drawbacks and inherently strong limitations. These problems have now been overcome with the Postnova cartridge technology. Additionally, the Postnova Flow FFF channels are available as re-usable and disposable cartridges.

Best Performance Cartridge Technology

- Easy Handling
- Highest Flexibility
- Widest Compatibility
- Unparalleled Reproducibility
- Superiour Recovery
- Increased Resolution
- Re-usable and Disposable

Re-Usable Cartridges (AF4)

The re-usable cartridges are made from different exchangeable parts, which are compatible with each other. These cartridges offer the greatest flexibility available on the market and are ideal for research applications with changing requirements and FFF systems which are shared by different users for various applications. They allow highly sophisticated method optimization, because many parameters can be changed independently by combining different cartridge components. Re-usable cartridges are especially well suited for applications requiring high temperatures, high sample loads, special membranes and organic solvents. They are long-lasting and can be used for years, as only the membrane inside has to be exchanged after a while.

Disposable Cartridges (HF5)

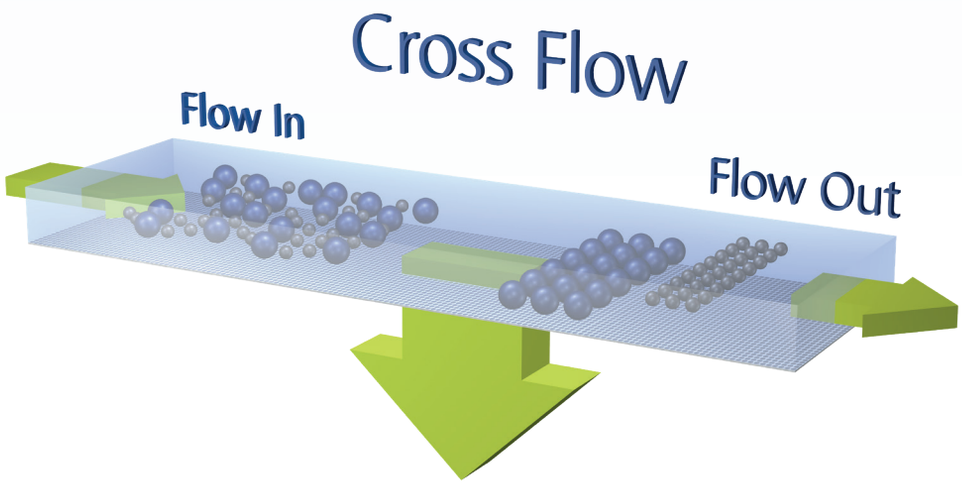
The disposable cartridges are designed to be true consumables. Although they can be temporarily regenerated to extend lifetime by flushing, these cartridges are typically disposed after use at the end of performance. They are made for easy use without time consuming technical preparations and are ideally suited for pharmaceutical applications as well as regulated and QC environments. Because of their monolithic design, they are easy to handle and effectively avoid user errors. They do not have the same flexibility as reusable cartridges, but they are ideal for high sample through-put, strictly controlled run conditions and routine measurements with established methods.

Re-Usable AF4 Cartridges

The most flexible Cartridge System

AF4 Separation Principle

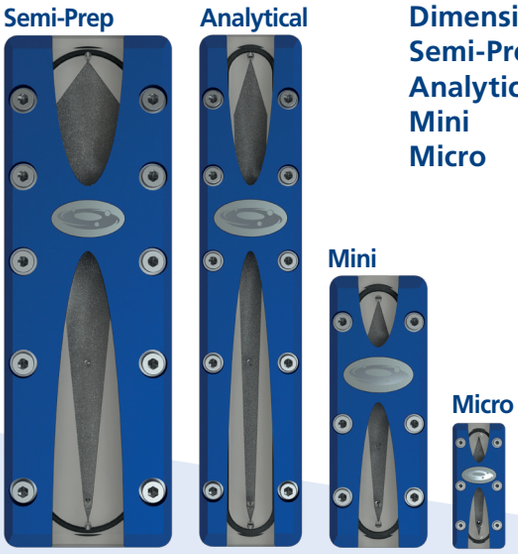
The Postnova planar channel cartridges are designed based on the Asymmetrical Flow FFF principle (AF4). Inside the narrow ribbon-like channel the samples are separated by means of a so-called cross flow. The main eluent flow carrying the sample is introduced via the inlet of the channel and leaves the outlet together with separated sample sizes to the detectors. The actual cross flow is generated inside the channel by removing a partial sub-flow from the main eluent stream through a membrane located at the channel bottom. The channel thickness has to be very thin in order to ensure a stable laminar flow, which is a basic requirement for FFF.



AF4 Cartridge Design

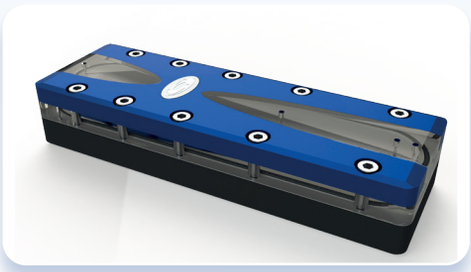
The patented* Postnova channel cartridge technology uses a channel holder with top and bottom plates and the channel cartridge itself, which is contained within that holder. One unique advantage of this design is that the channel cartridge can be compressed very homogeneously and stronger than with other designs. This always ensures seal-tight channels which maintain their form even under higher pressures and flow rates. At the same time all kind of different cartridges can be used providing a maximum of flexibility.

The Postnova AF4 cartridge system provides the highest number of variants and options to meet a broad number of applications. Because of its technical superior design the Postnova cartridge provides better resolution, reproducibility and recovery than other outdated designs which increasingly show leaks, deformation, bending and strong run-to-run variability, especially at changing flow and pressure rates.

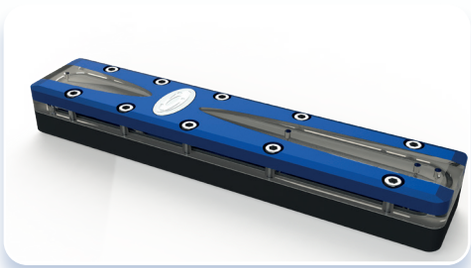


Dimensions:	
Semi-Prep	300x100x60 mm
Analytical	300x60x40 mm
Mini	170x60x40 mm
Micro	90x40x25 mm

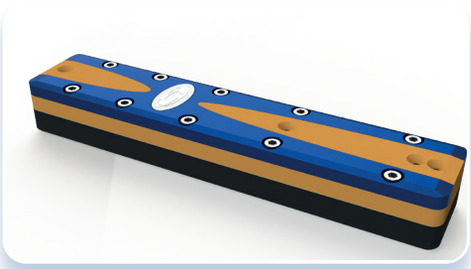
Patented AF4 Holder & Cartridge



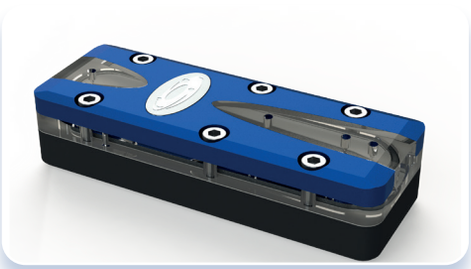
AF-30SP – Semi-Prep AF4 Cartridge
Aqueous, PEEK-PMMA



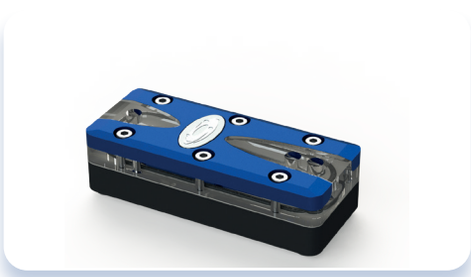
AF-30AN – Analytical AF4 Cartridge
Aqueous, PEEK-PMMA



EAF-30AN – Electrical AF4 Cartridge
Aqueous, PEEK



AF-17MN – Mini AF4 Cartridge
Aqueous, PEEK-PMMA



AF-09MC – Micro AF4 Cartridge
Aqueous, PEEK-PMMA

AF4 Cartridge Advantages

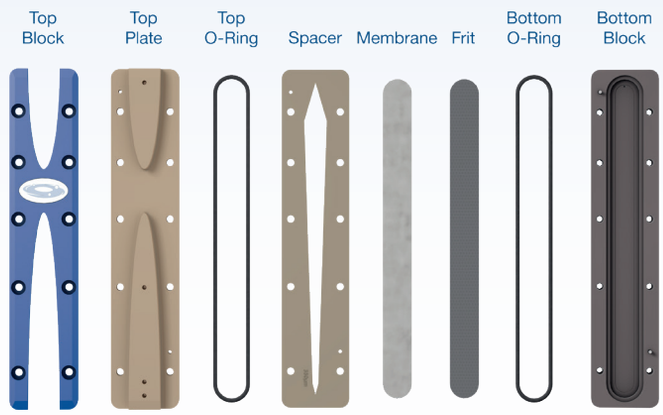
- **Better Resolution:** Mechanically more stable channels which can be used at higher pressures, flow rates and with smaller membrane pore sizes. No bending of channels due to superior technical cartridge-holder design.
- **Better Recovery:** Improved sealing technology inside allows use of higher pressures, flow rates and also smaller membrane pore sizes. No internal leaks between spacer and membrane due to advanced sealing principle.
- **Better Reproducibility:** Lowest channel tolerances and more stable channel volume at higher pressures, flow rates and after membrane exchange. No change of channel dimensions due to sophisticated cartridge construction keeps retention times stable.
- **Better Compatibility:** Broadest range of cartridge materials which can be employed for use at different temperatures, solvents and pressures. No corrosion, sample damage or contamination problems due to wrong channel materials.
- **Better Flexibility:** Highest number of cartridge variants which are optimized for use with the new AF2000 MultiFlow System. No system issues because of full downward compatibility with older AF2000 AT/MT, AF2000 Focus and AF1000 systems.
- **Better Handling:** Unique channel design with „Channel Holder" and „Channel Cartridge" allows fast and easy cleaning and exchange of complete cartridges, single components or just membranes within a few minutes.
- **Advanced Pressure Stability:** These channels can be used with aqueous and organic eluents, from 10°C up to 70°C and are tested at pressures of up to 50 bar.
- **Custom Cartridges:** Configure your own "custom made" cartridge by selecting the top/buttom blocks and o-rings which best suit your application.

AF2000 MF - AF4 Cartridge Versions

Application			Bottom Block			Spacer		Top Block			
Sample	Solvent	Temp.	Material	Frit	O-Ring	Length	Thickness [µm]	Material	Length	O-Ring	Frit-Inlet
Semiprep AF4 Cartridges 300 mm x 100 mm											
Proteins/Polymers/Nanos	Aqueous-Standard	10 - 70°C	PEEK	Steel	FKM	300 mm	350	PMMA	300 mm	FKM	Yes
Synthetic/Biological Polymers	Weak-Organic	10 - 70°C	PEEK	Steel	FFKM	300 mm	350	PEEK	300 mm	FFKM	No
Analytical AF4 Cartridges 300 mm x 60 mm											
Proteins/Polymers/Nanos	Aqueous-Standard	10 - 70°C	PEEK	Steel	FKM	300 mm	190/250/350/500	PMMA	300 mm	FKM	Yes
Proteins/Polymers/Nanos+Metal	Aqueous-Metal-free	10 - 40°C	PEEK	Ceramic	FKM	300 mm	190/250/350/500	PMMA	300 mm	FKM	Yes
Synthetic/Biological Polymers	Weak-Organic	10 - 70°C	PEEK	Steel	FFKM	300 mm	190/250/350/500	PEEK	300 mm	FFKM	Yes
Polymers/Nanos + Metal	Weak-Organic-Metal-free	10 - 40°C	PEEK	Ceramic	FFKM	300 mm	190/250/350/500	PEEK	300 mm	FFKM	Yes
Synthetic Polymers	Strong-Organic	10 - 70°C	Steel	Steel	FFKM	300 mm	190/250/350/500	Steel	300 mm	FFKM	No
Mini AF4 Cartridges 170 mm x 60 mm											
Proteins/Polymers/Nanos	Aqueous-Standard	10 - 70°C	PEEK	Steel	FKM	166,5 mm	250/350/500	PMMA	166,5 mm	FKM	Yes
Proteins/Polymers/Nanos+Metal	Aqueous-Metal-free	10 - 40°C	PEEK	Ceramic	FKM	166,5 mm	250/350/500	PMMA	166,5 mm	FKM	Yes
Synthetic/Biological Polymers	Weak-Organic	10 - 70°C	PEEK	Steel	FFKM	166,5 mm	250/350/500	PEEK	166,5 mm	FFKM	Yes
Polymers/Nanos + Metal	Weak-Organic-Metal-free	10 - 40°C	PEEK	Ceramic	FFKM	166,5 mm	250/350/500	PEEK	166,5 mm	FFKM	Yes
Synthetic Polymers	Strong-Organic	10 - 70°C	Steel	Steel	FFKM	166,5 mm	250/350/500	Steel	166,5 mm	FFKM	No
Micro AF4 Cartridges 90 mm x 40 mm											
Proteins/Polymers/Nanos	Aqueous-Standard	10 - 70°C	PEEK	Steel	FKM	87 mm	250/350/500	PMMA	87 mm	FKM	No
* Please inquire for other dimensions and materials for different applications.											

AF4 Cartridge Membranes

Postnova does not only offer a very flexible AF4 cartridge channel system, but also the broadest range of membranes which can be used inside the different cartridges. Membranes are the limiting parameter in AF4 and are absolutely crucial for the overall reproducibility, recovery and resolution of the system. Therefore, Postnova AF4 membranes are custom made high quality materials which have passed an elaborate testing to maintain a high and constant quality as well as performance level. The most optimized AF4 hardware will fail, if the right membrane is missing or membrane quality levels are low and inconsistent.



In order to be able to access various application areas and to perform AF4 separations under different eluent and temperature conditions, it is necessary to have the choice of a broad range of different membrane materials and molecular weight cut-off Postnova offers membranes made from Polyethersulfone (PES), Regenerated Cellulose (RC), Cellulose Triacetate (CTA), Polyacrylnitrile (PAN) and Teflon (TF) with pore sizes from 300 Da up to 150 kDa.

AF2000 MF - AF4 and EAF4 Membrane Versions

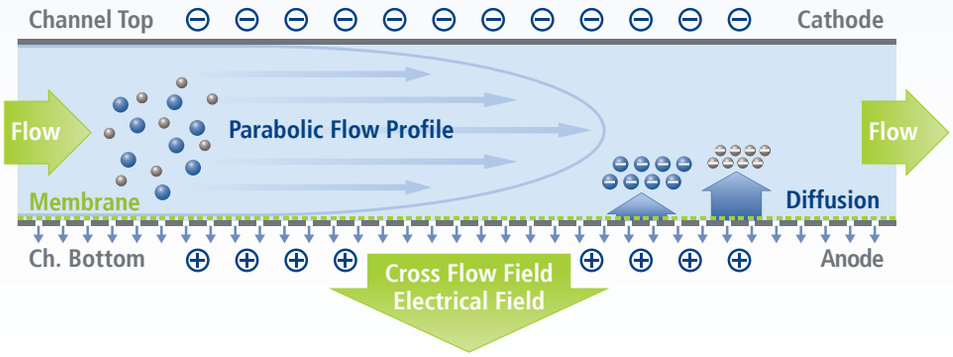
Application			Membrane		
Sample	**Solvent**	**Temperature**	**Material**	**Molecular Weight cut-off**	**pH Range**
Semiprep AF4 Membranes					
Peptides / Proteins / Antibodies / Virus	Aqueous	10-70°C (CTA 50°C)	RC / CTA	1 kDa / 10 kDa	2-11 (CTA 4-8)
Biopolymers / Polyelectrolytes	Aqueous	10-70°C	PES / RC	0.3 kDa / 1 kDa	2-11
Nanoparticles / Carbon Nanomaterials	Aqueous	10-70°C	TF / RC / PAN	50 kDa / 1 kDa / 30 kDa	2-11
Analytical AF4 Membranes					
Peptides / Proteins / Antibodies / Virus	Aqueous	10-70°C (CTA 50°C)	RC / CTA	1 kDa / 10 kDa	2-11 (CTA 4-8)
Biopolymers / Polyelectrolytes	Aqueous	10-70°C	PES / RC	0.3 kDa / 1 kDa	2-11
Nanoparticles / Carbon Nanomaterials	Aqueous / Organic	10-70°C	TF / RC / PAN	50 kDa / 1 kDa / 30 kDa	2-11
Synthetic Polymers / Rubbers	Organic	10-70°C	RC	10 kDa	2-11
Mini AF4 Membranes					
Peptides / Proteins / Antibodies / Virus	Aqueous	10-70°C (CTA 50°C)	RC / CTA	1 kDa / 10 kDa	2-11 (CTA 4-8)
Biopolymers / Polyelectrolytes	Aqueous	10-70°C	PES / RC	0.3 kDa / 1 kDa	2-11
Nanoparticles / Carbon Nanomaterials	Aqueous / Organic	10-70°C	TF / RC / PAN	50 kDa / 1 kDa / 30 kDa	2-11
Synthetic Polymers / Rubbers	Organic	10-70°C	RC	10 kDa	2-11
Micro AF4 Membranes					
Peptides / Proteins / Antibodies / Virus	Aqueous	10-70°C (CTA 50°C)	RC / CTA	1 kDa / 10 kDa	2-11 (CTA 4-8)
Biopolymers / Polyelectrolytes	Aqueous	10-70°C	PES / RC	0.3 kDa / 1 kDa	2-11
Nanoparticles / Carbon Nanomaterials	Aqueous	10-70°C	TF / RC / PAN	50 kDa / 1 kDa / 30 kDa	2-11
* Please inquire for other dimensions and materials for different applications.					

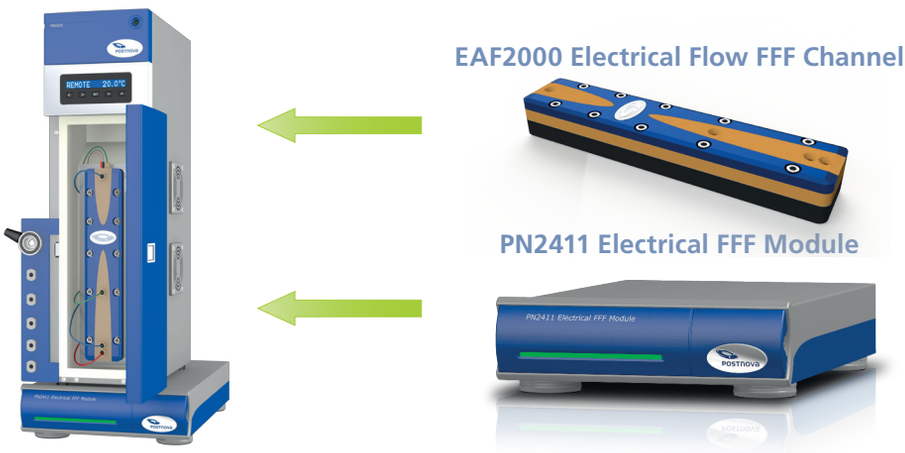
EAF4 Electrical AF4

Simultaneous Electrical and Asymmetrical Flow FFF

Principle of EAF4

The EAF4 technology combines the principle of Electrical and Asymmetrical Flow FFF in one system. Electrical and Cross Flow fields are applied simultaneously across the FFF channel. Separations by particle size and particle charge based on electrophoretic mobility can be achieved.

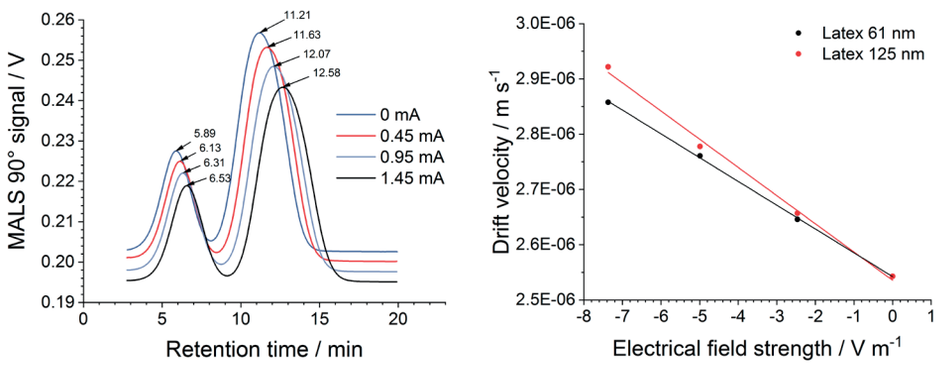




Hardware & Software

The EAF2000 System is based on the AF2000 Asymmetrical Flow FFF module, with additional Electrical FFF module, special EAF4 channel and software module:

- PN2411 Electrical FFF module for precise control of the Electric Field allowing constant and reproducible separation conditions
- EAF2000 Electrical Asymmetrical Flow FFF channel with special built-in pole-reversible electrodes and resistant membrane for cross flow
- Software module for constant current operation and data evaluation for electrophoretic mobility calculation



Applications of EAF2000

Biopharm : Proteins, Antibodies, Antibody Aggregates, Viruses, Liposomes and Drug Delivery
Environment : Environmental Nanoparticles such as Humics, Fulvics, Clay Particles, Silica, TiO_2
Nanomaterials : Polystyrene Latex Beads, any charged Nanoparticle or high-tech Nanomaterial

Smart Stream Splitting S3 for AF4

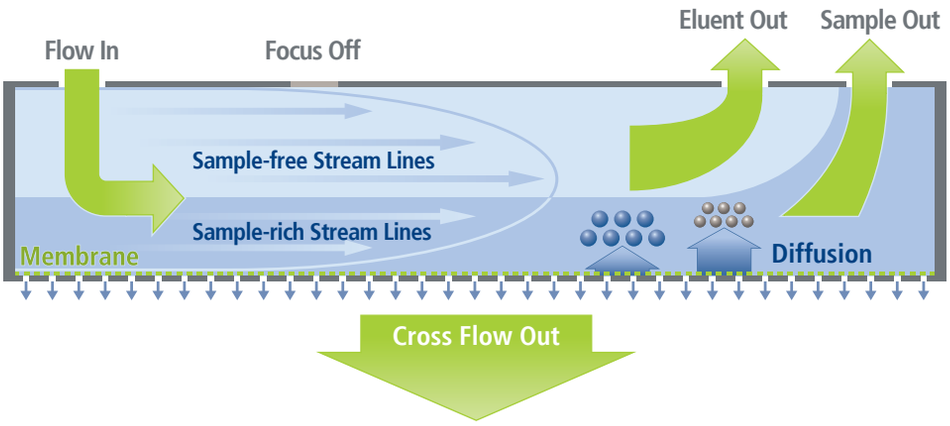
The most flexible Cartridge System

Working Principle

- Non-sample containing upper stream lines are removed by extra outlet.
- Only the sample-rich lower streamlines are directed towards detector.
- Dilution of the sample is reduced resulting in 6-8 times enhanced detector signals.

A typical FFF channel height is 350 µm from top to bottom but during the separation the sample is located only in the bottom 1-10 µm of the total channel. This means that the sample will be diluted when eluting from the channel to detector. This dilution in FFF occurs because the sample-enriched lower lamina is mixed with the sample-free upper streams as they elute into in the detector cell. The degree of dilution varies based on the run conditions, but it could be 10 to 100 fold.

To minimize this dilution, the sample-free substream (which primarily occupies the top space of the channel) must be removed before the channel eluent reaches the detector. One way to achieve this is to carefully extract the top channel substream (Eluent Out in the diagram) through a separate outlet before the main channel outlet to the detector (Sample Out in the diagram). As a result, the sample substream which primarily occupies the space very close to the membrane will be mixed with much less volume of eluent and therefore diluted less before reaching the detector. A concentration factor of up to 5 can be obtained without any band broadening by controlling the flow rate ratio of the two substreams.



Description

To create the additional Eluent Out stream the PN1650 Smart Stream Splitter module is used. It is a microprocessor controlled mass flow controller which allows precise and automated outlet splitting of the eluent stream leaving the FFF channel. This unique proprietary S3 technology has been exclusively developed to offer an advanced option for FFF researchers to increase sensitivity in FFF detection currently available for AF2000 Flow FFF systems. A separate data sheet for the PN1650 S3 module is available on request.

Frit Inlet

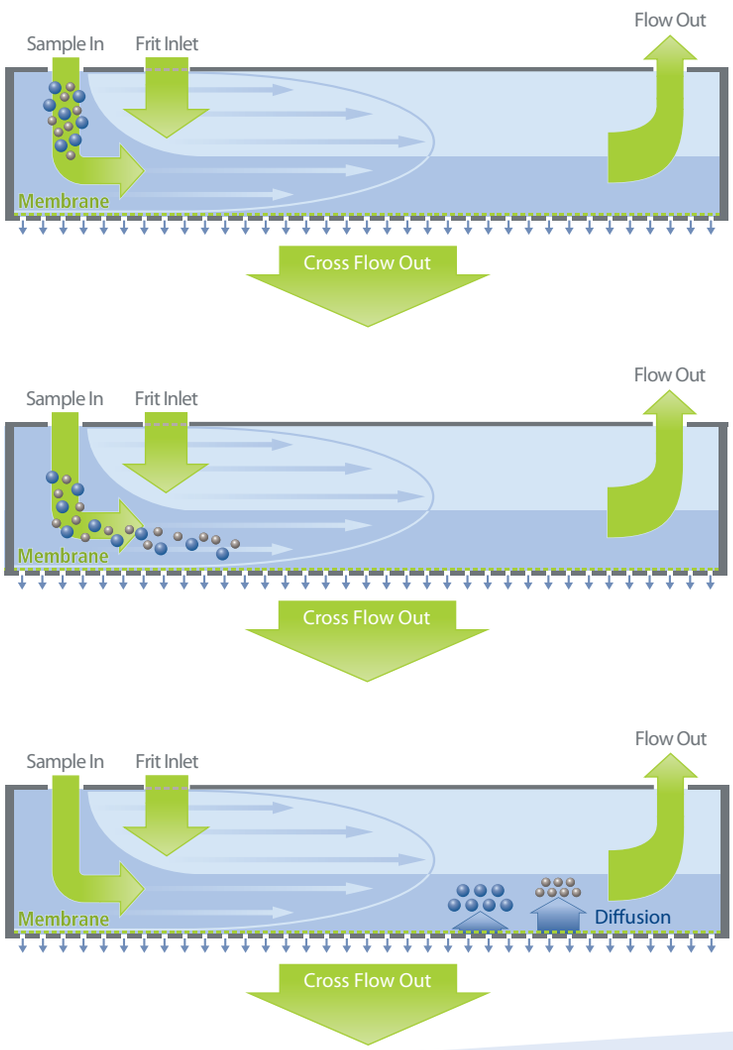
The most flexible Cartridge System

Features

Frit inlet, also known as hydrodynamic relaxation, is an important alternative sample injection mode for Asymmetrical Flow Field-Flow Fractionation systems (AF4). While the normal focus inlet injection process is highly effective, it is time-consuming and sensitive to sample-membrane interactions. So samples that are vulnerable to e.g. agglomeration or aggregation require a different injection process and Frit Inlet technology offers an excellent alternative that overcomes the problem. It was invented and first introduced to commercial instrumentation in 1992 by Postnova.

The figures below illustrate how hydrodynamic relaxation or Frit Inlet method works. The sample suspension is introduced into the tip port of the AF4 channel while a substream of carrier liquid is pumped to a second inlet through a porous frit element embedded in the top channel wall. The flow rate of the carrier liquid is much faster than the sample suspension stream, therefore the sample suspension is compressed into a thin lamina layer near the membrane when the two substreams merge. The relaxation process is mostly achieved by the flow streams and the final equilibrium state can then occur rapidly by the field-driven transport.

For the current Postnova AF2000 Multi Flow AF4 instrument series a new design of Frit Inlet option is available using the new NovaFlow cartridge system. In order to change from normal focus to Frit Inlet mode only the top plate of the channel cartridge needs to be replaced. The NovaFFF instrument control software allows running the channel in both options: normal focusing and Frit Inlet mode by just pre-selection in the method.



•Carrier Liquids:
Aqueous: any aqueous liquid, pH from 2 - 11, ionic strength from DI water to saline
Organic: THF, MeOH, etc.

• Wetted Materials:
Depending on solvent version.
Typical materials are:
Peek, stainless steel, PMMA, titanium, ceramic.

• Liquid Connections:
High pressure fittings (PEEK) for 1/16"OD tubes with a 10-32 UNF thread

• Temperature Range:
5°C cooling up to 70°C heating, depending on channel and frit material (with ceramic frit up to 40°C)

• Channel Dimensions:

Semi-Preparative: 300 x 100 x 60 mm

Analytical: 300 x 60 x 40 mm

Mini: 170 x 60 x 40 mm

Disposable HF5 Cartridges

The Best Routine Cartridge System

HF5 Separation Principle

The Postnova tubular channel cartridges are based on the Hollow Fiber Flow FFF principle (HF5). Separation takes place inside a narrow tubular channel by applying a circular acting cross flow. The main eluent flow carrying the sample is introduced at the beginning of the hollow fiber capillary and leaves at the end of the capillary together with separated sample sizes towards the detectors. The actual cross flow is generated inside the channel by removing a partial sub-flow from the main eluent stream radially through all pores of the outer wall of the circular hollow fiber membrane. The fiber diameter has to be very thin in order to ensure a stable laminar flow inside, which is a basic requirement for FFF.

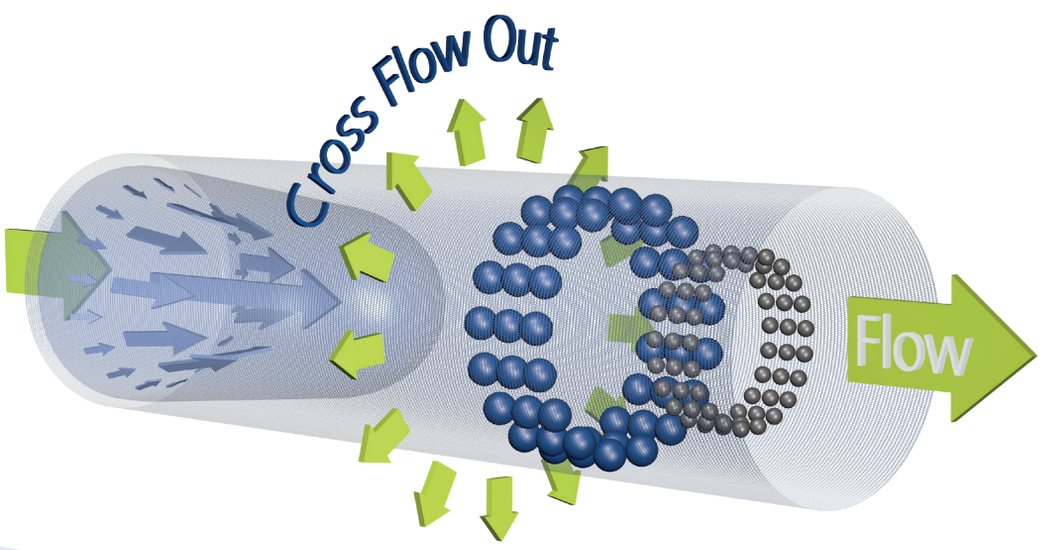
The Postnova hollow fiber cartridge can be sterilized and thus is ideal for applications where biological contamination can be a problem and where infectious samples have to be handled. All this assures highest reproducibility of the results and prohibits non-compliance issues, making the hollow fiber cartridges ideal to be used for pharmaceutical applications requiring large run sequences from R&D and also QC environments.

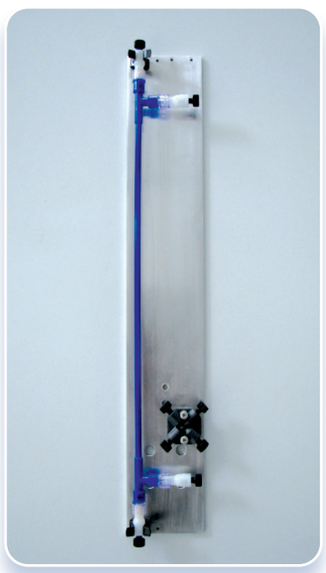
HF5 Cartridge Design

The unique Postnova hollow fiber cartridge consists of an HF5 adapter plate and the disposable hollow fiber channel cartridge itself, which is reversibly mounted onto the adapter plate. One advantage of this design is that the adapter plate can be equipped with different disposable HF5 cartridges, thus being compatible with various Postnova Flow FFF systems. The HF5 channel is a completely sealed cartridge and can be used with different aqueous solvents at elevated temperatures and with different detectors, such as UV, Light Scattering and ICP-MS. Although HF5 cartridges have a fixed and unalterable design, there are different types of HF5 cartridges available to cover as much applications as possible.

The HF5 hollow fiber cartridge is ideally suited for smaller sample amounts, lower flow rates and routine applications with limited or no changes required for the methods used. This cartridge was designed to be a true consumable channel which can be disposed after use, making it extremely user friendly. Compared to older outdated designs, no hollow fibers itself or fittings and ferrules have to be mounted or exchanged inside when using the Postnova hollow fiber cartridge. The complete cartridge has a monolitic design and is manufactured as one piece, therefore it is ready for use without any further preparations. Thus errors associated with "non-conforming" configurations and tightening or sealing problems when changing fibers and fittings, are avoided right from the beginning.

The Postnova hollow fiber cartridge is completely metal-free and therefore can be ideally used on-line coupled with ICP-MS when operated by a metal-free AF2000 MultiFlow System. It is the only system using the focusing technology for sample injection, relaxation and focusing and does not require any switching valves, needle valves and flow controllers which are prone to unreliable function, clogging and sometimes even corrosion. Furthermore, these metal-containing valves contaminate the entire FFF and do not allow sufficient ICP-MS detection levels which are needed for modern elemental speciation applications. The sophisticated flow control using only metal-free pumps and the possibility of precise temperature control, make the Postnova AF2000 MultiFlow series the solution of choice for any scientist who is searching for the most robust, reproducible and flexible Flow FFF solution.





HF-28AN - Analytical HF5 Cartridge with Adapter Plate

HF5 Cartridge Advantages

- **Better Resolution:** Advanced flow control allows stable and precise cross flows over a wide range of separation conditions. No flow and pressure fluctuations during the run due to the patented two-pump design.
- **Better Recovery:** Completely sealed and protected monolithic hollow fiber cartridge with no extra connections for hollow fiber inside. No internal sample loss due to wrong assembly or damaged hollow fiber during handling.
- **Better Reproducibility:** Very precise sample injection and focusing method using Postnova's focusing technology. No retention shift and stable injection and focusing procedure due to unique two-pump flow control.
- **Better Method Transfer:** Easily performed method transfer between different Flow FFF systems using the adapter plate. No need to purchase extra hardware, as the Postnova HF5 cartridge can be used with all Postnova AF1000 to AF2000 series systems.
- **Better Compatibility:** New hollow fiber cartridge is ideally suited for AF2000 MultiFlow and completely downward compatible with older AF4 systems such as AF2000 MT, AF2000 AT, AF2000 Focus and AF1000.
- **Better Handling:** Easy to access disposable HF5 cartridge connected to special adapter plate which allows fast exchange of cartridge by user. No time consuming hollow fiber handling and adjustments are necessary due to simple monolithic design.
- **Minimized Contamination:** Contamination-free working conditions as the HF5 can be easily sterilized. New cartridge for every application avoids any carry-over, cross-contamination or memory effects. Can be used with infectious samples under regulated conditions.

HF-28AN – Analytic HF5 Cartridge Aqueous, Metal-free, PES 10KD

AF2000 MF - HF5 Cartridge Versions

Application			Outside Tube			Inside Fiber				
Sample	Solvent	Temp.	Material	Diameter	Length	Length	Diameter [µm]	Material	Pore Size	O-Ring
Analytical HF5 Cartridges 330 mm x 5 mm										
Proteins / Polymers / Nanos	Aqu.-MetalFree	5 - 90°C	PolySulf.	5 mm	330 mm	280 mm	800	PES	5 kDa	-
Proteins / Polymers / Nanos	Aqu.-MetalFree	5 - 90°C	PolySulf.	5 mm	330 mm	280 mm	800	PES	10 kDa	-
Proteins / Polymers / Nanos	Aqu.-MetalFree	5 - 90°C	PolySulf.	5 mm	330 mm	280 mm	800	PES	50 kDa	-
* Please inquire for other dimensions and materials for different applications.										

Ordering Information

AF2000 MF - AF4 and EAF4 Channels		
Part #	**Description**	**Details**
Semiprep AF4 Channels		
S-AF4-CHA-701	AF2000 MF - AF4 Semiprep Channel	AF-30SP Aqueous-Standard; PEEK-SS-FKM-350-PMMA
S-AF4-CHA-701-FI	AF2000 MF - AF4 Semiprep Channel	AF-30SP Aqueous-Standard; PEEK-SS-FKM-350-PMMA, with Frit-Inlet Option
S-AF4-CHA-704	AF2000 MF - AF4 Semiprep Channel	AF-30SP Organic Weak; PEEK-SS-FFKM-350-PEEK
Analytical AF4 Channels		
S-AF4-CHA-711	AF2000 MF - AF4 Analytical Channel	AF-30AN Aqueous-Standard; PEEK-SS-FKM-350-PMMA
S-AF4-CHA-711-FI	AF2000 MF - AF4 Analytical Channel	AF-30AN Aqueous-Standard; PEEK-SS-FKM-350-PMMA, with Frit-Inlet Option
S-AF4-CHA-712	AF2000 MF - AF4 Analytical Channel	AF-30AN Aqueous-Metal-Free; PEEK-CE-FKM-350-PMMA
S-AF4-CHA-712-FI	AF2000 MF - AF4 Analytical Channel	AF-30AN Aqueous-Metal-Free; PEEK-CE-FKM-350-PMMA, with Frit-Inlet Option
S-AF4-CHA-714	AF2000 MF - AF4 Analytical Channel	AF-30AN Organic-Weak; PEEK-SS-FFKM-350-PEEK
S-AF4-CHA-714-FI	AF2000 MF - AF4 Analytical Channel	AF-30AN Organic-Weak; PEEK-SS-FFKM-350-PEEK, with Frit-Inlet Option
S-AF4-CHA-715	AF2000 MF - AF4 Analytical Channel	AF-30AN Organic-Weak-Metal-Free; PEEK-CE-FFKM-350-PEEK
S-AF4-CHA-715-FI	AF2000 MF - AF4 Analytical Channel	AF-30AN Organic-Weak-Metal-Free; PEEK-CE-FFKM-350-PEEK, with Frit-Inlet Option
S-AF4-CHA-716	AF2000 MF - AF4 Analytical Channel	AF-30AN Organic-Strong; SS-SS-FFKM-350-SS
Electrical Analytical EAF4 Channels		
S-AF4-CHA-713-EF	AF2000 MF - EAF4 Analytical Channel	EAF-30AN Aqueous-Biocompatible/Organic; PEEK-TI-FFKM-350-TI-PEEK
S-AF4-CHA-713-EF-PT	AF2000 MF - EAF4 Analytical Channel	EAF-30AN Aqueous-Biocompatible/Organic; PEEK-PT-FFKM-350-PT-PEEK
Mini AF4 Channels		
S-AF4-CHA-721	AF2000 MF - AF4 Mini Channel	AF-17MN Aqueous-Standard; PEEK-SS-FKM-350-PMMA
S-AF4-CHA-721-FI	AF2000 MF - AF4 Mini Channel	AF-17MN Aqueous-Standard; PEEK-SS-FKM-350-PMMA, with Frit-Inlet Option
S-AF4-CHA-722	AF2000 MF - AF4 Mini Channel	AF-17MN Aqueous-Metal-Free; PEEK-CE-FKM-350-PMMA
S-AF4-CHA-722-FI	AF2000 MF - AF4 Mini Channel	AF-17MN Aqueous-Metal-Free; PEEK-CE-FKM-350-PMMA, with Frit-Inlet Option
S-AF4-CHA-724	AF2000 MF - AF4 Mini Channel	AF-17MN Organic-Weak, PEEK-SS-FFKM-350-PEEK
S-AF4-CHA-724-FI	AF2000 MF - AF4 Mini Channel	AF-17MN Organic-Weak, PEEK-SS-FFKM-350-PEEK with Frit-Inlet Option
S-AF4-CHA-725	AF2000 MF - AF4 Mini Channel	AF-17MN Organic-Weak Metal-Free; PEEK-CE-FFKM-350-PEEK
S-AF4-CHA-725-FI	AF2000 MF - AF4 Mini Channel	AF-17MN Organic-Weak Metal-Free; PEEK-CE-FFKM-350-PEEK with Frit-Inlet Option
S-AF4-CHA-726	AF2000 MF - AF4 Mini Channel	AF-17MN Organic-Strong; SS-SS-FFKM-350-SS
Micro AF4 Channels		
S-AF4-CHA-731	AF2000 MF - AF4 Micro Channel	AF-09MC Aqueous-Standard; PEEK-SS-FKM-350-PMMA

AF2000 MF - AF4 and EAF4 Channel Components		
Part #	**Description**	**Details**
Semiprep AF4 Components		
Z-AF4-CHA-702-PE	AF-30SP Channel Bottom PEEK	AF2000 MF - AF4 Semiprep Channel Bottom Block made from PEEK
Z-AF4-CHA-703-SS	AF-30SP Frit SS	AF2000 MF - AF4 Semiprep Channel Frit made from Stainless Steel
Z-AF4-CHA-704-NB	AF-30SP FKM O-Ring	AF2000 MF - AF4 Semiprep Channel O-Ring made from FKM for Aqueous Eluents
Z-AF4-CHA-705-350	AF-30SP Spacer 350 µm	AF2000 MF - AF4 Semiprep Channel Spacer 350 µm
Z-AF4-CHA-706-PM	AF-30SP Top Block PMMA	AF2000 MF - AF4 Semiprep Channel Top Block made from PMMA
Z-AF4-CHA-706-PM-FI	AF-30SP Top Block Frit Inlet PMMA	AF2000 MF - AF4 Semiprep Channel Top Block Frit Inlet made from PMMA
Z-AF4-CHA-708	AF-30SP Channel Top Holder	AF2000 MF - AF4 Semiprep Channel Top Holder
Analytical AF4 Components		
Z-AF4-CHA-712-PE	AF-30AN Bottom Block PEEK	AF2000 MF - AF4 Analytical Channel Bottom Block made from PEEK
Z-AF4-CHA-712-SS	AF-30AN Bottom Block SS	AF2000 MF - AF4 Analytical Channel Bottom Block made from Stainless Steel
Z-AF4-CHA-713-CE	AF-30AN Frit Ceramics	AF2000 MF - AF4 Analytical Channel Frit made from Ceramics
Z-AF4-CHA-713-SS	AF-30AN Frit SS	AF2000 MF - AF4 Analytical Channel Frit made from Stainless Steel
Z-AF4-CHA-714-KA184	AF-30AN FFKM O-Ring	AF2000 MF - AF4 Analytical Channel O-Ring made from FFKM for Organic Eluents
Z-AF4-CHA-714-NB	AF-30AN FKM O-Ring	AF2000 MF - AF4 Analytical Channel O-Ring made from FKM for Aqueous Eluents
Z-AF4-CHA-715-190	AF-30AN Spacer 190 µm	AF2000 MF - AF4 Analytical Channel Spacer 190 µm
Z-AF4-CHA-715-250	AF-30AN Spacer 250 µm	AF2000 MF - AF4 Analytical Channel Spacer 250 µm
Z-AF4-CHA-715-350	AF-30AN Spacer 350 µm	AF2000 MF - AF4 Analytical Channel Spacer 350 µm
Z-AF4-CHA-715-500	AF-30AN Spacer 500 µm	AF2000 MF - AF4 Analytical Channel Spacer 500 µm
Z-AF4-CHA-716-PE	AF-30AN Top Block PEEK	AF2000 MF - AF4 Analytical Channel Top Block made from PEEK
Z-AF4-CHA-716-PE-FI	AF-30AN Top Block Frit Inlet PEEK	AF2000 MF - AF4 Analytical Channel Top Block Frit Inlet made from PEEK
Z-AF4-CHA-716-PM	AF-30AN Top Block PMMA	AF2000 MF - AF4 Analytical Channel Top Block made from PMMA
Z-AF4-CHA-716-PM-FI	AF-30AN Top Block Frit Inlet PMMA	AF2000 MF - AF4 Analytical Channel Top Block Frit Inlet made from PMMA
Z-AF4-CHA-716-SS	AF-30AN Top Block SS	AF2000 MF - AF4 Analytical Channel Top Block made from Stainless Steel
Z-AF4-CHA-718	AF-30AN Channel Top Holder	AF2000 MF - AF4 Analytical Channel Top Holder
Electrical Analytical EAF4 Components		
Z-EF3-CHA-712-PE	EAF-30AN Bottom Block PEEK	AF2000 MF - EAF4 Electrical Analytical Channel Bottom Block made from PEEK
Z-EF3-CHA-713-TI	EAF-30AN Frit Titan	AF2000 MF - EAF4 Electrical Analytical Channel Frit made from Titan

Z-EF3-CHA-713-TI-PT	EAF-30AN Frit Titan, Platinum Coating	AF2000 MF - EAF4 Electrical Analytical Channel Frit made from Titan with Platinum Coating
Z-EF3-CHA-714-KA3	EAF-30AN FFKM O-Ring	AF2000 MF - EAF4 Electrical Analytical Channel O-Ring made from FFKM
Z-EF3-CHA-716-PE	EAF-30AN Top Block PEEK	AF2000 MF - EAF4 Electrical Analytical Channel Top Block made from PEEK incl. Electrodes
Z-EF3-CHA-716-TI-PT	EAF-30AN Top Block PEEK	AF2000 MF - EAF4 Electrical Analytical Channel Top Block made from PEEK with Pt coated Electrodes
Mini AF4 Components		
Z-AF4-CHA-722-PE	AF-17MN Bottom Block PEEK	AF2000 MF - AF4 Mini Channel Bottom Block made from PEEK
Z-AF4-CHA-722-SS	AF-17MN Bottom Block SS	AF2000 MF - AF4 Mini Channel Bottom Block made from Stainless Steel
Z-AF4-CHA-723-CE	AF-17MN Frit Ceramics	AF2000 MF - AF4 Mini Channel Frit made from Ceramics
Z-AF4-CHA-723-SS	AF-17MN Frit SS	AF2000 MF - AF4 Mini Channel Frit made from Stainless Steel
Z-AF4-CHA-724-KA104	AF-17MN FFKM O-Ring	AF2000 MF - AF4 Mini Channel O-Ring made from FFKM for Organic Eluents
Z-AF4-CHA-724-NB	AF-17MN FKM O-Ring	AF2000 MF - AF4 Mini Channel O-Ring made from FKM for Aqueous Eluents
Z-AF4-CHA-725-250	AF-17MN Spacer 250 µm	AF2000 MF - AF4 Mini Channel Spacer 250 µm
Z-AF4-CHA-725-350	AF-17MN Spacer 350 µm	AF2000 MF - AF4 Mini Channel Spacer 350 µm
Z-AF4-CHA-725-500	AF-17MN Spacer 500 µm	AF2000 MF - AF4 Mini Channel Spacer 500 µm
Z-AF4-CHA-726-PE	AF-17MN Top Block PEEK	AF2000 MF - AF4 Mini Channel Top Block made from PEEK
Z-AF4-CHA-726-PE-FI	AF-17MN Top Block PEEK Frit Inlet	AF2000 MF - AF4 Mini Channel Top Block Frit Inlet made from PEEK
Z-AF4-CHA-726-PM	AF-17MN Top Block PMMA	AF2000 MF - AF4 Mini Channel Top Block made from PMMA
Z-AF4-CHA-726-PM-FI	AF-17MN Top Block PMMA Frit Inlet	AF2000 MF - AF4 Mini Channel Top Block Frit Inlet made from PMMA
Z-AF4-CHA-726-SS	AF-17MN Top Block SS	AF2000 MF - AF4 Mini Channel Top Block made from Stainless Steel
Z-AF4-CHA-728	AF-17MN Channel Top Holder	AF2000 MF - AF4 Mini Channel Top Holder
Micro AF4 Components		
Z-AF4-CHA-732-PE	AF-09MC Bottom Block PEEK	AF2000 MF - AF4 Micro Channel Bottom Block made from PEEK
Z-AF4-CHA-733-SS	AF-09MC Frit SS	AF2000 MF - AF4 Micro Channel Frit made from Stainless Steel
Z-AF4-CHA-734-NB	AF-09MC FKM O-Ring	AF2000 MF - AF4 Micro Channel O-Ring made from FKM for Aqueous Eluents
Z-AF4-CHA-735-250	AF-09MC Spacer 250 µm	AF2000 MF - AF4 Micro Channel Spacer 250 µm
Z-AF4-CHA-735-350	AF-09MC Spacer 350 µm	AF2000 MF - AF4 Micro Channel Spacer 350 µm
Z-AF4-CHA-735-500	AF-09MC Spacer 500 µm	AF2000 MF - AF4 Micro Channel Spacer 500 µm
Z-AF4-CHA-736-PM	AF-09MC Top Block PMMA	AF2000 MF - AF4 Micro Channel Top Block made from PMMA
Z-AF4-CHA-738	AF-09MC Channel Top Holder	AF2000 MF - AF4 Micro Channel Top Holder

AF2000 MF - AF4 and EAF4 Membranes

Part #	Description	Details
Semiprep AF4 Membranes		
Z-AF4-MEM-741-300D	AF2000 MF - AF4 Semiprep PES Membrane	300 Da Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 55 x 282 mm; 1 Pcs.
Z-AF4-MEM-741-1KD	AF2000 MF - AF4 Semiprep PES Membrane	1 kDa Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 55 x 282 mm;1 Pcs.
Z-AF4-MEM-741-4KD	AF2000 MF - AF4 Semiprep PES Membrane	4 kDa Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 55 x 282 mm; 1 Pcs.
Z-AF4-MEM-741-5KD	AF2000 MF - AF4 Semiprep PES Membrane	5 kDa Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 55 x 282 mm; 1 Pcs.
Z-AF4-MEM-741-10KD	AF2000 MF - AF4 Semiprep PES Membrane	10 kDa Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 55 x 282 mm; 1 Pcs.
Z-AF4-MEM-741-20KD	AF2000 MF - AF4 Semiprep PES Membrane	20 kDa Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 55 x 282 mm; 1 Pcs.
Z-AF4-MEM-741-150KD	AF2000 MF - AF4 Semiprep PES Membrane	150 kDa Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 55 x 282 mm; 1 Pcs.
Z-AF4-MEM-742-1KD	AF2000 MF - AF4 Semiprep RC Membrane	1 kDa Regenerated Cellulose Membrane; Aqueous; 10-70°C; Size: 55 x 282 mm; 1 Pcs.
Z-AF4-MEM-742-5KD	AF2000 MF - AF4 Semiprep RC Membrane	5 kDa Regenerated Cellulose Membrane; Aqueous; 10-70°C; Size: 55 x 282 mm; 1 Pcs.
Z-AF4-MEM-742-10KD	AF2000 MF - AF4 Semiprep RC Membrane	10 kDa Regenerated Cellulose Membrane; Aqueous/Organic; 10-70°C; Size: 55 x 282 mm; 1 Pcs.
Z-AF4-MEM-742-30KD	AF2000 MF - AF4 Semiprep RC Membrane	30 kDa Regenerated Cellulose Membrane; Aqueous; 10-70°C; Size: 55 x 282 mm; 1 Pcs.
Z-AF4-MEM-742-100KD	AF2000 MF - AF4 Semiprep RC Membrane	100 kDa Regenerated Cellulose Membrane; Aqueous; 10-70°C; Size: 55 x 282 mm; 1 Pcs.
Z-AF4-MEM-743-10KD	AF2000 MF - AF4 Semiprep CTA Membrane	10 kDa Cellulose Triacetate Membrane; Aqueous; 10-500°C; Size: 55 x 282 mm;1Pcs.
Z-AF4-MEM-743-20KD	AF2000 MF - AF4 Semiprep CTA Membrane	20 kDa Cellulose Triacetate Membrane; Aqueous; 10-500°C; Size: 55 x 282 mm; 1 Pcs.
Z-AF4-MEM-744-50KD	AF2000 MF - AF4 Semiprep TF Membrane	50 kDa PVDF Membrane; Aqueous; 10-90°C; Size: 55 x 282 mm; 1 Pcs.
Z-AF4-MEM-744-150KD	AF2000 MF - AF4 Semiprep TF Membrane	150 kDa PVDF Membrane; Aqueous; 10-90°C; Size: 55 x 282 mm; 1 Pcs.
Z-AF4-MEM-747-30KD	AF2000 MF - AF4 Semiprep PAN Membrane	30 kDa Polyacrylnitrile (PAN) Membrane, Organic; 10-90°C; Size 55 x 282 mm; 1 Pcs.
Z-AF4-MEM-748-10KD	AF2000 MF - AF4 Semiprep RC Membrane	10 kDa modified Regenerated Cellulose Membrane; Aqueous/Organic; 10-70°C; Size: 55 x 282 mm, 1 Pcs.
Analytical AF4 and EAF4 Membranes		
Z-AF4-MEM-711-300D	AF2000 MF - AF4 Analytical PES Membrane	300 Da Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 25 mm x 282 mm; 10 Pcs.
Z-AF4-MEM-711-1KD	AF2000 MF - AF4 Analytical PES Membrane	1 kDa Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 25 mm x 282 mm; 10 Pcs.
Z-AF4-MEM-711-4KD	AF2000 MF - AF4 Analytical PES Membrane	4 kDa Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 25 mm x 282 mm; 10 Pcs.
Z-AF4-MEM-711-5KD	AF2000 MF - AF4 Analytical PES Membrane	5 kDa Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 25 mm x 282 mm; 10 Pcs.
Z-AF4-MEM-711-10KD	AF2000 MF - AF4 Analytical PES Membrane	10 kDa Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 25 mm x 282 mm; 10 Pcs.
Z-AF4-MEM-711-20KD	AF2000 MF - AF4 Analytical PES Membrane	20 kDa Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 25 mm x 282 mm; 10 Pcs..
Z-AF4-MEM-711-150KD	AF2000 MF - AF4 Analytical PES Membrane	150 kDa Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 25 mm x 282 mm; 10 Pcs.
Z-AF4-MEM-712-1KD	AF2000 MF - AF4 Analytical RC Membrane	1 kDa Regenerated Cellulose Membrane; Aqueous; 10-70°C; Size: 25 mm x 282 mm; 10 Pcs.
Z-AF4-MEM-712-5KD	AF2000 MF - AF4 Analytical RC Membrane	5 kDa Regenerated Cellulose Membrane; Aqueous; 10-70°C; Size: 25 mm x 282 mm; 10 Pcs.
Z-AF4-MEM-712-10KD	AF2000 MF - AF4 Analytical RC Membrane	10 kDa Regenerated Cellulose Membrane; Aqueous/Organic; 10-70°C; Size: 25 mm x 282 mm; 10 Pcs.

Z-AF4-MEM-712-30KD	AF2000 MF - AF4 Analytical RC Membrane	30 kDa Regenerated Cellulose Membrane; Aqueous; 10-70°C; Size: 25 mm x 282 mm; 10 Pcs.
Z-AF4-MEM-712-100KD	AF2000 MF - AF4 Analytical RC Membrane	100 kDa Regenerated Cellulose Membrane; Aqueous; 10-70°C; Size: 25 mm x 282 mm; 10 Pcs.
Z-AF4-MEM-713-10KD	AF2000 MF - AF4 Analytical CTA Membrane	10 kDa Cellulose Triacetate Membrane; Aqueous; 10-50°C; Size: 25 mm x 282 mm; 10 Pcs.
Z-AF4-MEM-713-20KD	AF2000 MF - AF4 Analytical CTA Membrane	20 kDa Cellulose Triacetate Membrane; Aqueous; 10-50°C; Size: 25 mm x 282 mm; 10 Pcs.
Z-AF4-MEM-714-50KD	AF2000 MF - AF4 Analytical TF Membrane	50 kDa PVDF Membrane; Aqueous; 10-90°C; Size: 25 mm x 282 mm; 10 Pcs.
Z-AF4-MEM-714-150KD	AF2000 MF - AF4 Analytical TF Membrane	150 kDa PVDF Membrane; Aqueous; 10-90°C; Size: 25 mm x 282 mm; 10 Pcs.
Z-AF4-MEM-717-30KD	AF2000 MF - AF4 Analytical PAN Membrane	30 kDa Polyacrylnitrile (PAN) Membrane; Organic; 10-70°C; 25 mm x 282 mm; 10 Pcs.
Z-AF4-MEM-718-10KD	AF2000 MF - AF4 Analytical RC Membrane	10 kDa modified Regenerated Cellulose Membrane; Aqueous/Organic; 10-70°C; 25 mm x 282 mm; 10 Pcs.
Mini AF4 Membranes		
Z-AF4-MEM-721-300D	AF2000 MF - AF4 Mini PES Membrane	300 Da Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 25 mm x 149 mm; 10 Pcs.
Z-AF4-MEM-721-1KD	AF2000 MF - AF4 Mini PES Membrane	1 kDa Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 25 mm x 149 mm; 10 Pcs.
Z-AF4-MEM-721-4KD	AF2000 MF - AF4 Mini PES Membrane	4 kDa Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 25 mm x 149 mm; 10 Pcs.
Z-AF4-MEM-721-5KD	AF2000 MF - AF4 Mini PES Membrane	5 kDa Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 25 mm x 149 mm; 10 Pcs.
Z-AF4-MEM-721-10KD	AF2000 MF - AF4 Mini PES Membrane	10 kDa Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 25 mm x 149 mm; 10 Pcs.
Z-AF4-MEM-721-20KD	AF2000 MF - AF4 Mini PES Membrane	20 kDa Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 25 mm x 149 mm; 10 Pcs.
Z-AF4-MEM-721-150KD	AF2000 MF - AF4 Mini PES Membrane	150 kDa Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 25 mm x 149 mm; 10 Pcs.
Z-AF4-MEM-722-1KD	AF2000 MF - AF4 Mini RC Membrane	1 kDa Regenerated Cellulose Membrane; Aqueous; 10-70°C; Size: 25 mm x 149 mm; 10 Pcs.
Z-AF4-MEM-722-5KD	AF2000 MF - AF4 Mini RC Membrane	5 kDa Regenerated Cellulose Membrane; Aqu/Org; 10-70°C; Size: 25 mm x 149 mm; 10 Pcs.
Z-AF4-MEM-722-10KD	AF2000 MF - AF4 Mini RC Membrane	10 kDa Regenerated Cellulose Membrane; Aqueous/Organic; 10-70°C; Size: 25 mm x 149 mm; 10 Pcs.
Z-AF4-MEM-722-30KD	AF2000 MF - AF4 Mini RC Membrane	30 kDa Regenerated Cellulose Membrane; Aqueous; 10-70°C; Size: 25 mm x 149 mm; 10 Pcs.
Z-AF4-MEM-722-100KD	AF2000 MF - AF4 Mini RC Membrane	100 kDa Regenerated Cellulose Membrane; Aqueous; 10-70°C; Size: 25 mm x 149 mm; 10 Pcs.
Z-AF4-MEM-723-10KD	AF2000 MF - AF4 Mini CTA Membrane	10 kDa Cellulose Triacetate Membrane; Aqueous; 10-90°C; Size: 25 mm x 149 mm; 10 Pcs.
Z-AF4-MEM-723-20KD	AF2000 MF - AF4 Mini CTA Membrane	20 kDa Cellulose Triacetate Membrane; Aqueous; 10-90°C; Size: 25 mm x 149 mm; 10 Pcs.
Z-AF4-MEM-724-50KD	AF2000 MF - AF4 Mini TF Membrane	50 kDa PVDF Membrane; Aqueous; 10-90°C; Size: 25 mm x 149 mm; 10 Pcs.
Z-AF4-MEM-724-150KD	AF2000 MF - AF4 Mini TF Membrane	150 kDa PVDF Membrane; Aqueous; 10-90°C; Size: 25 mm x 149 mm; 10 Pcs.
Z-AF4-MEM-727-30KD	AF2000 MF - AF4 Mini PAN Membrane	30 kDa Polyacrylnitrile (PAN) Membrane; Organic; 10-70°C; 25 mm x 149 mm; 10 Pcs.
Z-AF4-MEM-728-10KD	AF2000 MF - AF4 Mini RC Membrane	10 kDa modified Regenerated Cellulose Membrane; Aqueous/Organic; 10-70°C; 25 mm x 149 mm; 10 Pcs.
Micro AF4 Membranes		
Z-AF4-MEM-731-10KD	AF2000 MF - AF4 Micro PES Membrane	10 kDa Polyethersulfone Membrane; Aqueous; 10-90°C; Size: 14 mm x 74 mm; 10 Pcs.
Z-AF4-MEM-732-10KD	AF2000 MF - AF4 Micro RC Membrane	10 kDa Regenerated Cellulose Membrane; Aqueous/Organic; 10-70°C; 14 mm x 74 mm; 10 Pcs.
Z-AF4-MEM-738-10KD	AF2000 MF - AF4 Micro RC Membrane	10 kDa modified Regenerated Cellulose Membrane; Aqueous/Organic; 10-70°C; 14 mm x 74 mm; 10 Pcs.

AF2000 MF - HF5 Cartridges

Part #	Description	Details
Analytical HF5 Cartridges		
S-AF4-CHA-651	HF-28AN Adapter Plate	AF2000 MF - HF5 Analytic Channel Adapter Plate for HF-28AN Cartridges
Z-AF4-CHA-652-5KD	HF-28AN PES Cartridge	AF2000 MF - HF5 Analytic Channel Cartridge; Aqu; PES; 5 kDa; 800µm; 5-90°C
Z-AF4-CHA-652-10KD	HF-28AN PES Cartridge	AF2000 MF - HF5 Analytic Channel Cartridge; Aqu; PES; 10 kDa; 800µm; 5-90°C
Z-AF4-CHA-652-50KD	HF-28AN PES Cartridge	AF2000 MF - HF5 Analytic Channel Cartridge; Aqu; PES; 50 kDa; 800µm; 5-90°C

Postnova Product Portfolio

Tel: +49 8191 985688 0, info@postnova.com

Analytical Systems: Flow FFF – Centri FFF – Thermo FFF – Grav FFF – MALS – DLS – ICP-MS

Field-Flow Fractionation (FFF) for advanced Separation, Characterization, Speciation and Fractionation of Proteins, Viruses, Liposomes, Biomacromolecules, Synthetic Polymers, Nano and Micro Particles

- ☐ AF2000: Asymmetric Flow Field-Flow Fractionation for Protein, Polymer, Particle Separation
- ☐ EAF2000: Electrical Asymmetrical Flow Field-Flow Fractionation for Charged Molecule Separation
- ☐ CF2000: Centrifugal Field-Flow Fractionation for Particle Separation
- ☐ TF2000: Thermal Field-Flow Fractionation for Polymer Separation
- ☐ GF2000: Gravitational Split Field-Flow Fractionation for Micro Particle Fractionation

Multi-Angle Light Scattering (MALS), Dynamic Light Scattering (DLS) and Inductively-Coupled-Plasma Mass-Spectrometry (ICP-MS) for Molar Mass and Size Determination of Proteins, Viruses, Liposomes, Bio/Polymers and Nano and Micro Particles

- ☐ PN3100: Refractive Index Detectors optimized for FFF with High Sensitivity and Baseline Stability
- ☐ PN3200: Ultraviolet Absorbance Detectors for FFF with Variable Wavelengths
- ☐ PN3400: Fluorescence and Raman Detectors for FFF with Ultra-High Sensitivity and Spectra
- ☐ PN3500: Evaporative Light Scattering Detectors for FFF
- ☐ PN3600: Multi Angle Light Scattering for Molar Mass and Gyration Radius (Rg) Determination
- ☐ PN3700: Dynamic Light Scattering for Hydrodynamic Radius (Rh) Determination
- ☐ PN3900: Inductively-Coupled-Plasma Mass-Spectrometry (ICP-MS) for FFF

Analytical Supplies: GC – CE – LC – SEC – FFF – UVis – FLD – ICP-MS – AAS

Leading Quality Brand Chromatography Consumables and Analytical Supplies from a Single Source

- ☐ Agilent: Consumables and Columns for GC, CE, LC, SEC, ICP-MS and Sample Prep
- ☐ IDEX: Tubing, Fittings, Unions and Valves for CE, LC, SEC, FFF and Micro Fluidics
- ☐ Hamilton: Micro Syringes for GC, LC and FFF; Lab Sensors and Polymeric LC Columns
- ☐ Fused Silica: Various Sizes of Fused Silica Capillaries for Nano/Micro Fluidics and GC, CE, LC
- ☐ Lamps: Deuterium, Tungsten, Xenon, Hollow Cathode Lamps for CE, LC, FFF, UVis, FLD, AAS
- ☐ Millipore: Analytical Sample Prep, Syringe Filters and Water Purification for CE, LC, SEC, FFF
- ☐ Vials: Vials for GC, LC and FFF
- ☐ Particles: Various Sizes of Nano and Micro Particle Standards with different Surfaces and Materials
- ☐ Polymers: Various Molar Mass Polymer Standards with different Polydispersities and Materials

Analytical Services: Flow FFF – Centri FFF – Thermo FFF – Grav FFF – MALS – DLS – ICP-MS

Application Method Development using Flow, Centrifugal, Thermal and Grav Field-Flow Fractionation hyphenated online to RI, UV, FLD, MALS, DLS and ICP-MS for Molar Mass and Size Characterization of Biomacromolecules, Polymers, Proteins and Particles.

Sample Analysis with Flow, Centrifugal, Thermal and Grav Field-Flow Fractionation hyphenated online to RI, UV, FLD, MALS, DLS and ICP-MS for Biomacromolecules, Polymers, Proteins and Particles.

Trainings, Workshops and Seminars about Flow, Centrifugal, Thermal and Grav Field-Flow Fractionation hyphenated online to RI, UV, FLD, MALS, DLS and ICP-MS for Biopolymers, Proteins and Particles.

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