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Filtration Devices:

Ensure that, across products and batches, every tablet contains precisely the correct amount of the drug. Every day, people put their trust in our solutions.

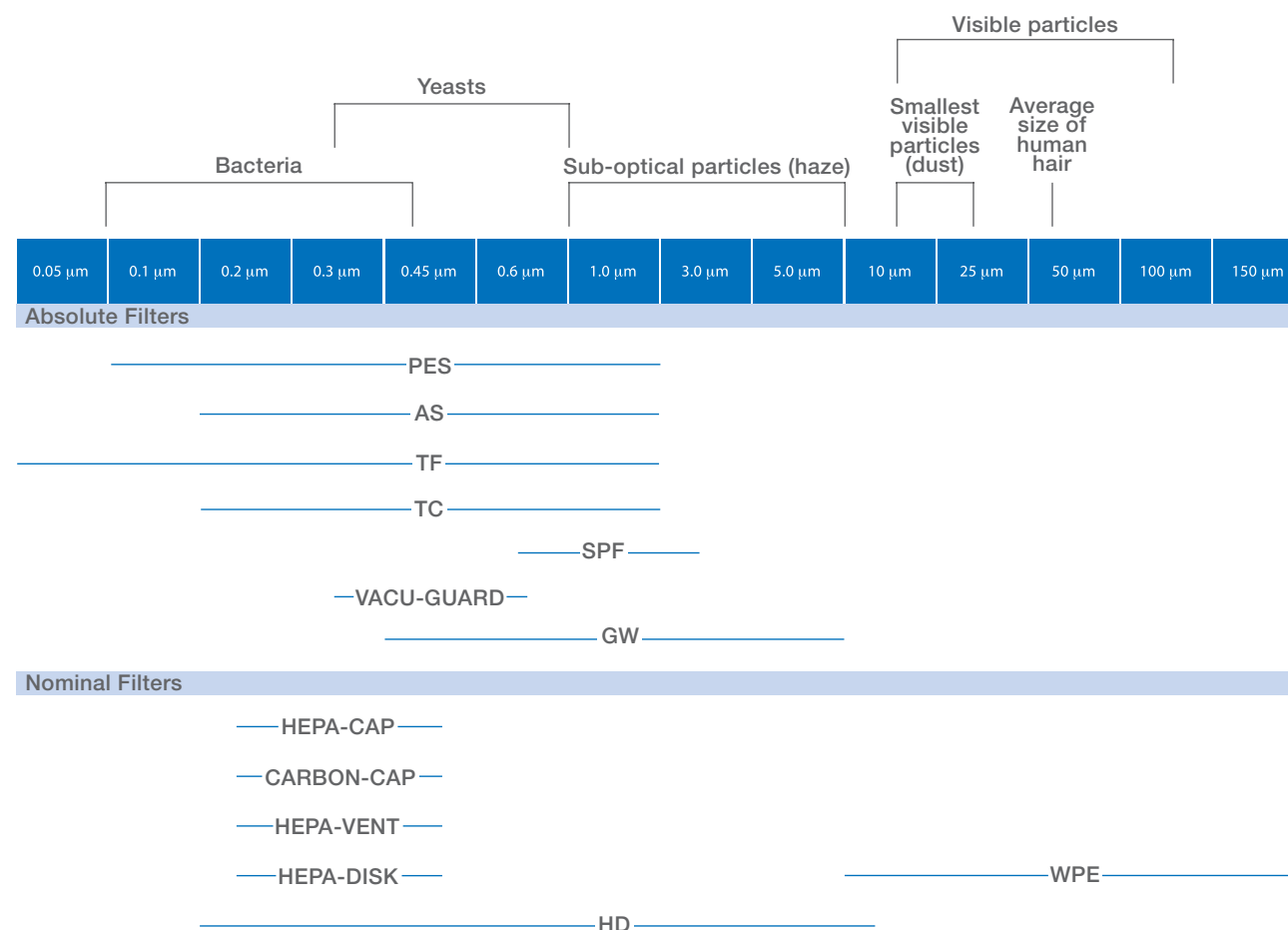
Filtration Devices

Whatman disposable filtration devices are designed to enable filtration of many types of samples. They are available in a wide variety of filter choices with a polypropylene housing and utilize the most advanced construction methods and design features. This level of engineering provides for the finest disposable filtration devices possible.

Capsule Filters

Whether you are conducting research, pilot manufacturing or full-scale production, filtering large volumes or hard-to-filter samples, Whatman has a filtration solution to fit your needs.

Product Overview - Capsule Filters



Whatman products are manufactured with the highest quality materials, under exacting clean room conditions using ISO-controlled manufacturing processes. We offer a variety of pore sizes and filter materials to choose from, and all our capsules are free of adhesives to ensure product purity. For the most reliable performance in any application trust the comprehensive line of Whatman capsule filtration devices.

Carbon Cap™

This filter capsule is suitable for adsorption of organics from air and removal of color, organics and chlorine from water.

Carbon Cap is a capsule filter that is filled with high-purity, high-efficiency, acid-washed, granular-activated carbon and a pleated HEPA filter. It is made specially to meet the requirements for continuous column percolation purification processes.

Features and Benefits

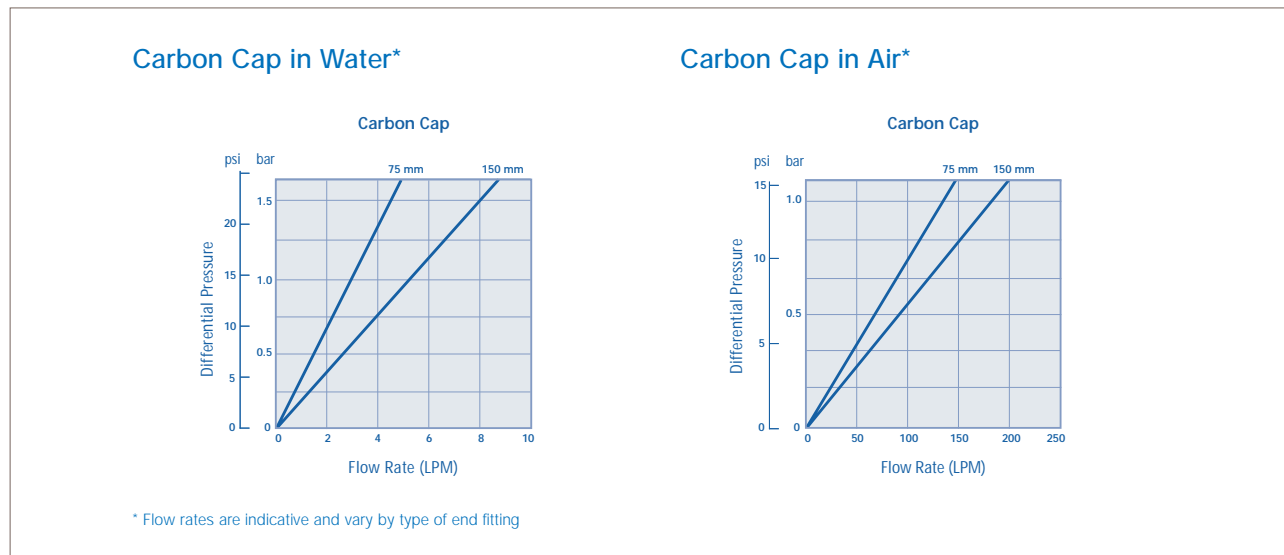
- Carbon acts as an adsorption media
- Pleated glass microfiber filter structure
- Retains 99.97% of particles greater than 0.3 µm
- Large surface area of activated carbon for effective operation
- Two sizes of capsules available to suit your specific application

Applications

- Water, chemical and reagent purification
- Removes noxious odors, oil mists and contaminants
- Compressed air lines and vacuum pumps
- Instrument outlet exhausts
- Eliminates a potential health hazard from the workplace



Carbon Cap



Technical Properties - Carbon Cap

Housing	Polypropylene
Filter Media	Activated Carbon with a Pleated HEPA Cartridge
Support System	Polypropylene
Sealing	Heat-fused
Maximum Pressure	60 psi (4.1 bar)
Surface Area (Activated Carbon)	Carbon Cap 75 Capsule: 26,000 m ² Carbon Cap 150 Capsule: 82,000 m ²

Ordering Information - Carbon Cap

Catalog Number	Description	Quantity/Pack
6704-7500	Carbon Cap 75	1
6704-1500	Carbon Cap 150	1
2022S	Carbon Cap 150 Sanitary TC	5

Polycap™ AS

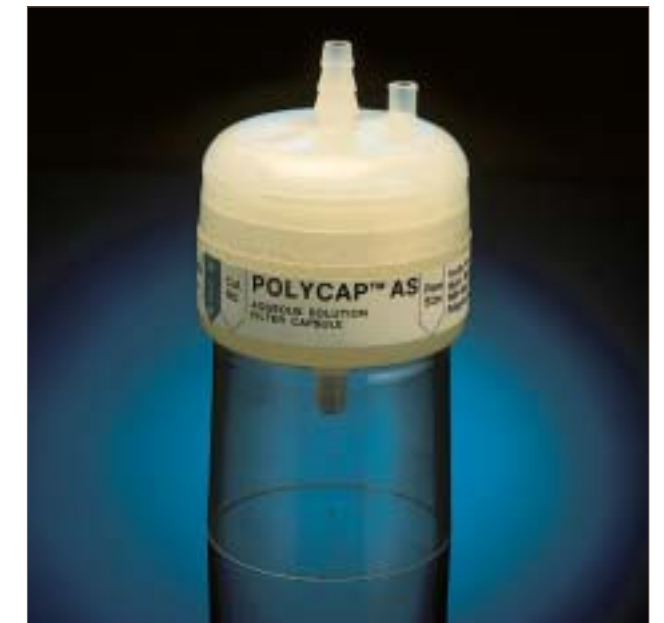
Polycap AS is a unique product recommended for filtering aqueous solutions. It combines a glass microfiber (GMF) prefilter and a nylon membrane, prolonging the life of the filter and allowing larger volumes and difficult samples to be filtered easily.

Features and Benefits

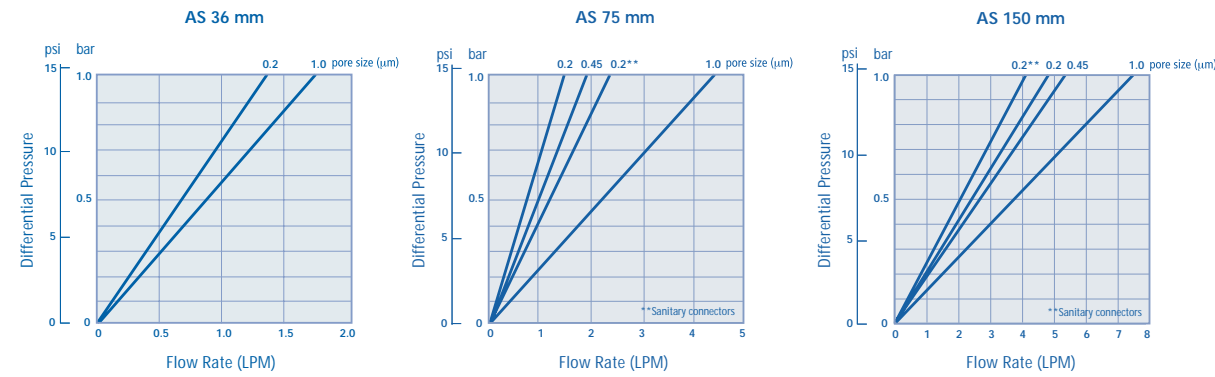
- First layer (GMF) acts as a prefilter to ensure longer membrane (0.2, 0.45 and 1.0 μm) life and higher filtration efficiency
- Nylon membrane layer is inherently hydrophilic, has low extractables, is bio-safe and has excellent flow rates
- Ultra-clean containing no surfactant or mold release agents
- Housing thermally fused (no glues, adhesives or extraneous materials)
- Integrity-testable by bubble point, pressure decay or forward flow methods
- Provides highly effective filtration area in a small size
- Autoclavable: some pre-sterilized with gamma irradiation
- Manufactured in clean room facilities under ISO Quality Systems

Applications

- Admixtures
- Biologicals
- Buffers
- Cleaning/rinsing solutions
- Enzymes
- Extemporaneous solutions
- Immunologicals
- Irrigation solutions
- Nutrients
- Ophthalmic solutions
- Pharmaceutical solutions
- Reagent preparation
- Salt solutions
- Therapy solutions
- Tissue culture media
- Viral suspensions



Water Flow Rates*



* Flow rates are indicative and vary by type of end fitting

Technical Properties - Polycap AS

Housing	Polypropylene
Vent	On inlet
Prefilter	Glass microfiber double laminated with polyolefin monofilament non-woven
Membrane	Nylon
Support System	Polypropylene
Sealing	Heat-fused
Maximum Pressure	60 psi (4.1 bar)
Non-Pyrogenic	LAL tested, non-reactive
Biosafety	Materials pass USP Class VI
Sterilization	Capsules are autoclavable at 121° C for 20 minutes (maximum temperature is 132° C). However, an integrity test should be performed after autoclaving.
Filtration Area	36 mm capsule: 400 cm ² (62 in ²) 75 mm capsule: 820 cm ² (127 in ²) 150 mm capsule: 1,650 cm ² (256 in ²)
Water Bubble Point (Typical)	0.2 μm membrane: 2.9 bar (42 psi) 0.45 μm membrane: 2.1 bar (30 psi) 1.0 μm membrane: 0.5 bar (8 psi)

Ordering Information - Polycap AS

Catalog Number	Membrane	Prefilter ¹	Pore Size (μm)	Connections*		Sterile	Quantity/Pack
				Inlet	Outlet		
Polycap 36 AS							
6705-3602	Nylon	GMF	0.2	SB	SB	Yes	1
6705-3604	Nylon	GMF	0.45	SB	SB	Yes	1
6705-3610	Nylon	GMF	1.0	SB	SB	Yes	1
6708-3602	Nylon	GMF	0.2	1/2" SB	1/2" SB	Yes	1
6708-3604	Nylon	GMF	0.45	1/2" SB	1/2" SB	Yes	1
6709-3602	Nylon	GMF	0.2	MNPT	SB	Yes	1
2606T	Nylon	GMF	0.2	3/8" FNPT	3/8" FNPT	No	5
2607NS	Nylon	GMF	0.45	SB	SB	No	5
2608NS	Nylon	GMF	1	SB	SB	No	5
Polycap 36 AS with Filling Bell							
6706-3602	Nylon	GMF	0.2	SB	SB	Yes	1
Polycap 75 AS							
6705-7502	Nylon	GMF	0.2	SB	SB	Yes	1
6705-7504	Nylon	GMF	0.45	SB	SB	Yes	1
6705-7510	Nylon	GMF	1.0	1/2" SB	1/2" SB	Yes	1
6708-7502	Nylon	GMF	0.2	1/2" SB	1/2" SB	Yes	1
6708-7504	Nylon	GMF	0.45	1/2" SB	1/2" SB	Yes	1
6709-7502	Nylon	GMF	0.2	1/4" MNPT	1/2" SB	Yes	1
6709-7504	Nylon	GMF	0.45	1/4" MNPT	1/2" SB	Yes	1
2706T	Nylon	GMF	0.2	3/8" FNPT	3/8" FNPT	No	5
2707NS	Nylon	GMF	0.45	SB	SB	No	5
Polycap 75 AS with Filling Bell							
6706-7502	Nylon	GMF	0.2	SB	SB	Yes	1
Polycap 150 AS							
2806T	Nylon	GMF	0.2	3/8" FNPT	3/8" FNPT	No	5
2806	Nylon	GMF	0.2	1/2" SB	1/2" HB	Yes	5
2807	Nylon	GMF	0.45	1/2" SB	1/2" HB	Yes	5
2805	Nylon	GMF	0.2	1 1/2" Sanitary	1 1/2" Sanitary	Yes	5
2808	Nylon	GMF	1	1/2" SB	1/2" HB	Yes	5

¹ GMF – Glass microfiber prefilter

* SB – Stepped Barb for 6–10 mm 1/4"–3/8" tubing

1/2 SB – Stepped Barb for 10–12 mm 3/8"–1/2" tubing

MNPT – Male National Pipe Thread

FNPT – Female National Pipe Thread

HB – Hose Barb

Polycap™ GW

The US Environmental Protection Agency (EPA) and local Departments for Environmental Protection protocols specify filtering ground water samples with a 0.45 µm filter when analyzing dissolved or suspended metals (EPA Method 3005). Specifically designed with field sampling in mind, the Whatman Polycap Ground Water sampling capsule can be used as a convenient in-line filter unit.

Features and Benefits

- Connects directly to outlet of a sampling pump
- Easy to use
- Filtration membrane is encapsulated in durable polypropylene housing
- Also available in 1.0 µm and 5.0 µm filters, as required by US and regional EPA test methods
- Large surface area optimized to provide at least 600 cm² of effective filtration area to ensure rapid sample collection
- Housing components thermally fused (no glues, adhesives, metals, epoxies or extraneous materials)
- Suitable for filtration procedure outlined in EPA Method 3005 for ground water analysis
- Stepped hose barb fittings allow for connection with various size tubings

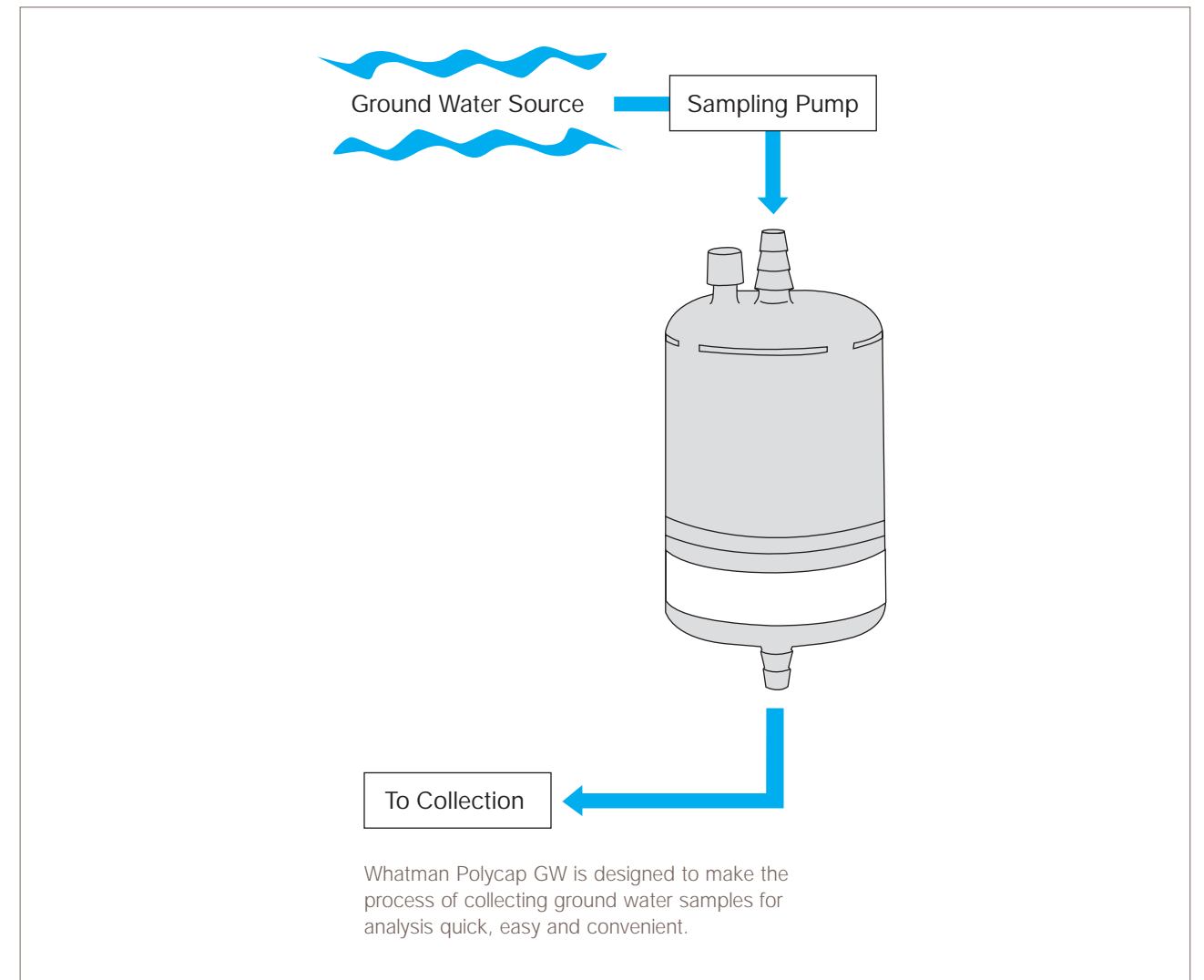


Applications

- Filter ground water samples before dissolved metal analysis

Technical Properties - Polycap GW

Housing	Polypropylene
Filter Media	0.45 µm: PES Filter 1.0 µm: Polypropylene Filter 5.0 µm: Polypropylene Filter
Inlet/Outlet	1/4 to 3/8 in (6-9 mm) Stepped Barb (SB)
Support System	Polypropylene
Vent	On inlet
Filtration Area	600 cm ² (93 in ²)
Wetting Characteristics	Hydrophilic
Maximum Pressure	60 psi (4.1 bar)
Water Flow Rate @ 1.0 bar (14.5 psi)	60 L/min
Flow Direction	Flow should follow arrows



Ordering Information - Polycap GW

Catalog Number	Membrane ¹	Pore Size (µm)	Connections*		Sterile	Quantity/Pack
			Inlet	Outlet		
6714-6004	PES	0.45	SB	SB	Yes	1
6724-6004	PES	0.45	SB	SB	Yes	100
6703-6010	PP	1.0	SB	SB	Yes	1
6703-6050	PP	5.0	SB	SB	Yes	1

¹ PES – Polyethersulfone

* SB – Stepped Barb for 6-10 mm 1/4"-3/8" tubing

PP – Polypropylene

Polycap™ HD

Polycap HD (Heavy Duty) is a well-engineered product that offers high filtration efficiency and excellent filtrate purity due to its materials and methods of manufacture.

Polycap HD provides a unique advantage in process applications as its performance characteristics fit between gross filters and microporous membrane filters used for final filtration.

Features and Benefits

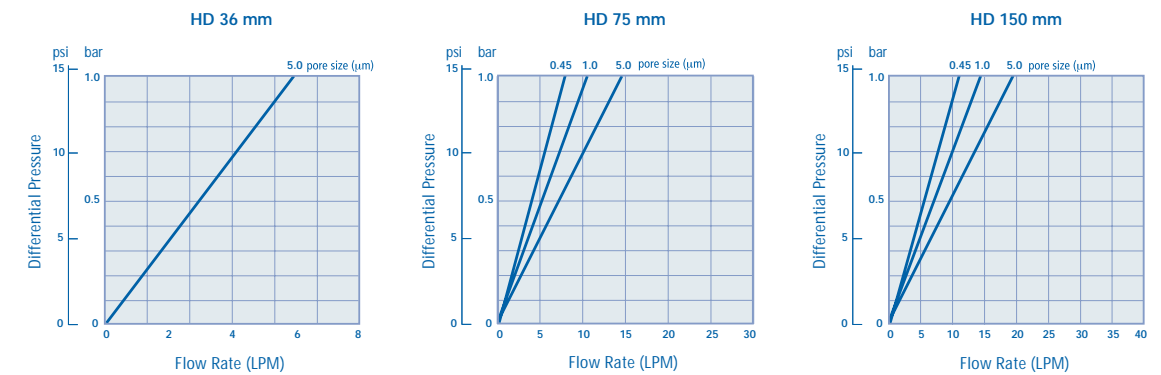
- 100% polypropylene filter media, support system and housing allows usage with broad range of solutions, pH and temperature
- High flow and high retention capacity
- Materials of construction are FDA approved for food contact
- Able to be sterilized by autoclaving with steam at 121° C for 20 minutes
- Manual vent with luer lock to bleed air from upstream or serve as an injection or sample port
- Available in 0.2, 0.45, 1.0, 5.0 and 10 µm pore sizes and a variety of end-fitting configurations
- Manufactured in a Class 10,000 clean room in an ISO certified manufacturing plant



Applications

- Clean air and gas equipment
- Cosmetics and personal care products
- Food and beverage
- General fine filtration
- Inks and pigments
- Pharmaceutical solutions
- Photographic emulsions and make-up water
- Prefiltration for RO/UF/MF membranes
- Sample preparations
- Semiconductor and magnetic media
- Solvents
- Buffers
- Reagents

Water Flow Rates*



* Flow rates are indicative and vary by type of end fitting, X-rated with 90% removal efficiency

Technical Properties - Polycap HD

Housing	Polypropylene
Vent	On inlet
Filter Media	Polypropylene
Support System	Polypropylene
Biosafety	Materials pass USP Class VI
Filtration Area	36 mm capsule: 400 cm ² (62 in ²) 75 mm capsule: 820 cm ² (127 in ²) 150 mm capsule: 1,650 cm ² (256 in ²)
Sterilization	Capsules autoclavable at 121° C for 20 minutes (maximum temperature is 132° C)
Non-Pyrogenic	LAL tested, non-reactive
Maximum Pressure	4.1 bar (60 psi)

Ordering Information - Polycap HD

Catalog Number	Membrane ¹	Prefilter	Pore Size (µm)	Connections*		Sterile	Quantity/ Pack
				Inlet	Outlet		
Polycap 36 HD							
2610T	PP	No	0.2	3/8" FNPT	3/8" FNPT	No	5
2611T	PP	No	0.45	3/8" FNPT	3/8" FNPT	No	5
6707-3612	PP	No	0.45	1/4" MNPT	1/2" HB	No	1
6703-3610	PP	No	1.0	SB	SB	No	1
6703-3650	PP	No	5.0	SB	SB	No	1
2612T	PP	No	5.0	3/8" FNPT	3/8" FNPT	No	5 contd>

Catalog Number	Membrane ¹	Prefilter	Pore Size (µm)	Connections*		Sterile	Quantity/ Pack
				Inlet	Outlet		
2613T	PP	No	5.0	3/8" FNPT	3/8" FNPT	No	5
6703-3611	PP	No	10.0	SB	SB	No	1
2614T	PP	No	10.0	3/8" FNPT	3/8" FNPT	No	5
6703-3621	PP	No	20.0	SB	SB	No	1
Polycap 75 HD							
2710	PP	No	0.2	1/2" HB	1/2" HB	No	5
2710T	PP	No	0.2	3/8" FNPT	3/8" FNPT	No	5
2711T	PP	No	0.45	3/8" FNPT	3/8" FNPT	No	5
6703-7510	PP	No	1.0	1/2" SB	1/2" SB	No	1
6703-7550	PP	No	5.0	1/2" SB	1/2" SB	No	1
2712	PP	No	5.0	1/2" HB	1/2" HB	No	5
2712M	PP	No	5.0	1/4" MNPT	1/4" MNPT	No	5
2712T	PP	No	5.0	3/8" FNPT	3/8" FNPT	No	5
2713	PP	No	5.0	1/2" HB	1/2" HB	No	5
2713T	PP	No	5.0	3/8" FNPT	3/8" FNPT	No	5
2714	PP	No	10.0	1/2" HB	1/2" HB	No	5
2714T	PP	No	10.0	3/8" FNPT	3/8" FNPT	No	5
6703-7511	PP	No	10.0	1/2" SB	1/2" SB	No	1
6703-7521	PP	No	20.0	1/2" SB	1/2" SB	No	1
Polycap 150 HD							
6703-9502	PP	No	0.2	1/2" HB	1/2" HB	No	1
2810T	PP	No	0.2	3/8" FNPT	3/8" FNPT	No	5
2811T	PP	No	0.45	3/8" FNPT	3/8" FNPT	No	5
6703-9504	PP	No	0.45	1/2" HB	1/2" HB	No	1
6703-9510	PP	No	1.0	1/2" HB	1/2" HB	No	1
2812T	PP	No	1.0	3/8" FNPT	3/8" FNPT	No	5
2813	PP	No	5.0	1/2" HB	1/2" HB	No	5
2813T	PP	No	5.0	3/8" FNPT	3/8" FNPT	No	5
2814	PP	No	10.0	1/2" HB	1/2" HB	No	5
2814T	PP	No	10.0	3/8" FNPT	3/8" FNPT	No	5

¹ PP – Polypropylene

* SB – Stepped Barb for 6–10 mm 1/4"–3/8" tubing

1/2" SB – Stepped Barb for 10–12 mm 3/8"–1/2" tubing

HB – Hose Barb

MNPT – Male National Pipe Thread

FNPT – Female National Pipe Thread

Polycap™ SPF

Polycap SPF (Serum Prefilter) is an exceptional product that is optimized for prefiltration applications and is typically used upstream of a Polycap AS or Polycap PES capsule.

Serum is difficult to filter because it contains a high degree of loading of complex particulates, lipids, triglycerides and lipoproteins that clog filters. When filtering serum without proper prefiltration, membrane filters clog rapidly.

Features and Benefits

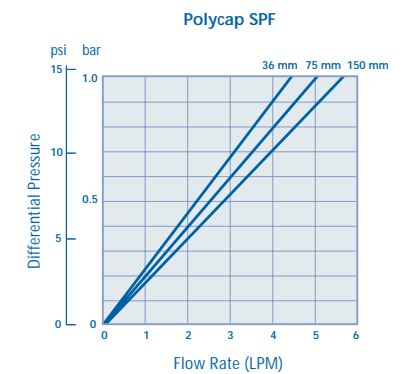
- Three layers of special media: fine and ultrafine glass microfiber (GMF) and polyethersulfone membrane
- Ideal for hard-to-filter solutions such as serums and protein solutions
- Able to be sterilized by autoclaving with steam
- Manufactured under ISO manufacturing system
- Suitable for filtering serums, viral suspensions, nutrients, biologicals, immunologicals, enzymes and buffers
- Prefilters help extend the life of the final filter

Applications

- Biologicals
- Buffers
- Diagnostics standards
- Enzymes
- Immunologicals
- Nutrients
- Serum prefiltration
- Tissue culture media
- Viral suspensions



Water Flow Rates



Technical Properties - PolyCap SPF

Housing	Polypropylene
Vent	On inlet
Pre-filter	Two layers of Glass Microfiber
Membrane	Polyethersulfone (PES)
Support System	Polypropylene
Sealing	Heat-fused
Maximum Pressure	60 psi (4.1 bar)
Sterilization	Autoclave at 121° C for 20 minutes (132° C max)
Filtration Area	36 mm Capsule: 260 cm ² (40 in ²) 75 mm Capsule: 535 cm ² (83 in ²) 150 mm Capsule: 1,100 cm ² (170 in ²)

Ordering Information - PolyCap SPF

Catalog Number	Membrane ¹	Prefilter ²	Pore Size (µm)	Connections*		Sterile	Quantity/Pack
				Inlet	Outlet		
PolyCap 36 SPF							
6705-3600	PES	GMF	1.0	SB	SB	No	1
PolyCap 75 SPF							
6705-7500	PES	GMF	1.0	SB	SB	No	1
PolyCap 150 SPF							
2820	PES	GMF	1.0	1/2" HB	1/2" HB	No	5

¹ PES – Polyethersulfone

² GMF – Glass microfiber prefilter

* SB – Stepped Barb for 6–10 mm 1/4"–3/8" tubing

HB – Hose Barb

PolyCap™ TC

PolyCap TC/PES, available with and without bell, are disposable, dual layer polyethersulfone (PES) membrane filtration capsules that provide efficient filtration for critical aqueous solutions.

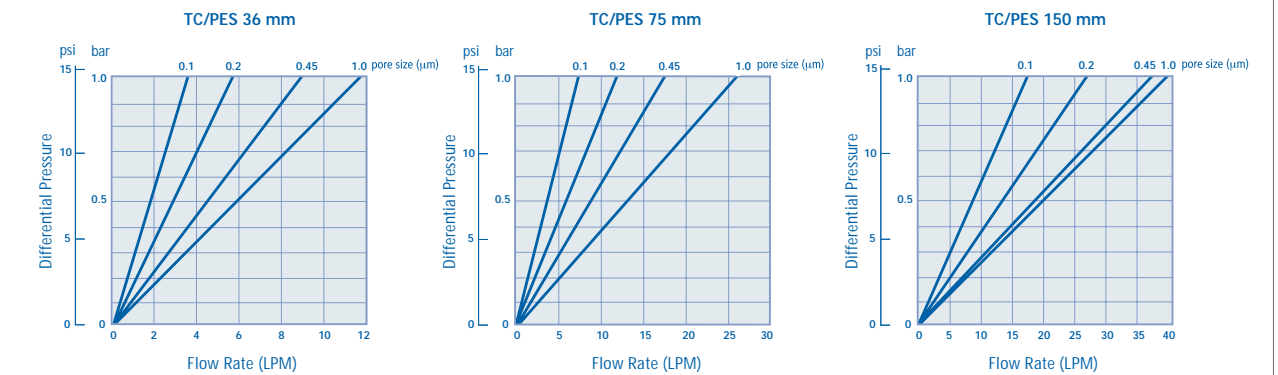
The PES membrane is inherently hydrophilic, has low extractables, is bio-safe, has excellent flow rates and exhibits low protein binding.

Features and Benefits

- PolyCap TC/PES 0.1, 0.2 and 0.8/0.2 µm capsules pass the HIMA Challenge Test for Sterilizing Grade Filters
- 100% integrity-tested during manufacturing; results are correlated to microbial retention
- Housing thermally fused (no surfactants or mold releasing agents)
- Integrity-testable by bubble point, pressure decay or forward flow methods
- Available in sterile and non-sterile versions with a filling bell option
- Manufactured in clean room facilities under ISO Quality Systems
- PES membrane protein adsorption characteristics:
HSA 0.4 µg/cm²
Insulin 2.0 µg/cm²
Gammaglobulin 1.5 µg/cm²



Water Flow Rates*



* Flow rates are indicative and vary by type of end fitting

Applications

- Aqueous solutions
- Biologicals
- Buffers
- Cleaning/rinsing solutions
- Enzymes
- High-quality water
- Particle counting solutions
- Pharmaceutical solutions
- Reagent preparation
- Salt solutions
- Tissue culture media
- Virus suspensions

Technical Properties - Polycap TC

Housing	Polypropylene
Vent	On inlet
Membrane	Polyethersulfone (PES)
Support System	Polypropylene
Sealing	Heat-fused
Maximum Pressure	60 psi (4.1 bar)
Flow Direction	If there is a prefilter, it is located on the inlet side and flow should follow arrows
Non-Pyrogenic	LAL tested, non-reactive
Biosafety	Materials pass USP Class VI
Sterilization	Certain filter devices have been sterilized.* They may be autoclaved once at a minimum of 121° C for 20 minutes (maximum 132° C). However, an integrity test should be performed after autoclaving. (*sterile and non-sterile options offered)
Filtration Area	36 mm capsule: 440 cm ² (72 in ²) 75 mm capsule: 930 cm ² (144 in ²) 150 mm capsule: 1,900 cm ² (302 in ²)
Water Bubble Point	0.1 µm > 3.2 bar (46 psi) 0.2 µm > 2.7 bar (40 psi) 0.45 µm > 2.1 bar (30 psi)
Final Membrane	1.0 µm > 1.1 bar (16 psi)

Ordering Information - Polycap TC

Catalog Number	Membrane ¹	Pore Size (µm)	Connections*		Sterile	Quantity/Pack
			Inlet	Outlet		
Polycap 36 TC						
6714-3602	PES	0.2/0.2	SB	SB	Yes	1
6717-3602	PES	0.2/0.2	1/2" SB	1/2" SB	Yes	1
2622NS	PES	0.2/0.2	1/2" HB	SB	No	5
6714-3604	PES	0.65/0.45	SB	SB	Yes	1
Polycap 36 TC with Bell						
6715-3601	PES	0.2/0.1	SB	SB	Yes	1
6715-3602	PES	0.2/0.2	SB	SB	Yes	1
6716-3612	PES	0.2/0.2	1/4" MNPT	SB	Yes	1
6715-3682	PES	0.8/0.2	SB	SB	Yes	1
6716-3602	PES	0.2/0.2	MNPT	SB	Yes	1
6715-3604	PES	0.65/0.45	SB	SB	Yes	1 contd >

Catalog Number	Membrane ¹	Pore Size (µm)	Connections*		Sterile	Quantity/Pack
			Inlet	Outlet		
Polycap 75 TC						
6714-7501	PES	0.2/0.1	SB	SB	Yes	1
6714-7502	PES	0.2/0.2	SB	SB	Yes	1
2742C	PES	0.2/0.2	1/2" SB	1/2" SB	Yes	5
2742M	PES	0.2/0.2	1/4" MNPT	1/4" MNPT	No	5
6717-7504	PES	0.65/0.45	1/2" SB	1/2" SB	Yes	1
6714-7504	PES	0.65/0.45	SB	SB	Yes	1
6717-7510	PES	1.0/1.0	1/2" SB	1/2" SB	Yes	1
Polycap 75 TC with Bell						
6715-7501	PES	0.2/0.1	SB	SB	Yes	1
6715-7502	PES	0.2/0.2	SB	SB	Yes	1
6715-7582	PES	0.8/0.2	SB	SB	Yes	1
6718-7504	PES	0.65/0.45	1/2" SB	SB	Yes	1
Polycap 150 TC						
6717-9501	PES	0.2/0.1	1/2" SB	1/2" SB	Yes	1
6717-9502	PES	0.2/0.2	1/2" SB	1/2" SB	Yes	1
6704-9502	PES	0.2/0.2	1 1/2" Sanitary	1 1/2" Sanitary	No	5
6717-9504	PES	0.65/0.45	1/2" SB	1/2" SB	Yes	1
6717-9510	PES	1.0/1.0	1/2" SB	1/2" SB	Yes	1
Polycap 150 TC with Bell						
6718-9502	PES	0.2/0.2	1/2" SB	SB	Yes	1
6718-9582	PES	0.8/0.2	1/2" SB	SB	Yes	1

¹ PES – Polyethersulfone

* SB – Stepped Barb for 6–10 mm 1/4"–3/8" tubing

1/2" SB – Stepped Barb for 10–12 mm 3/8"–1/2" tubing

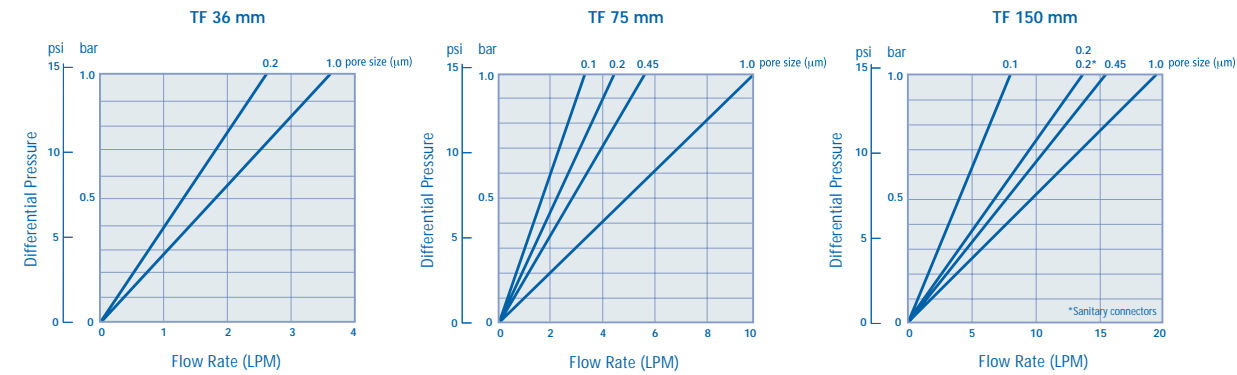
MNPT – Male National Pipe Thread

HB – Hose Barb

Polycap™ TF

Polycap TF filter devices are among the finest disposable encapsulated filters. These capsules are made with durable, hydrophobic polytetrafluoroethylene (PTFE) membranes in a polypropylene housing and are designed for use with organic solvents and chemically aggressive solutions.

Water Flow Rates



Features and Benefits

- Resistant to most solvents, autoclavable and integrity-testable
- Available in 0.05, 0.1, 0.2, 0.45 and 1.0 µm pore sizes
- 0.05 µm capsules designed for ultra-clean applications; 1.0 µm used for extended life and filtration of highly contaminated solutions
- Able to be sterilized by autoclaving with steam or EtO
- Manufactured under very clean conditions in a Class 10,000 clean room and under ISO Quality Systems

Applications

- Venting
- In-line filtration
- Isolation
- Electronics
- Pharmaceutical
- Biotech
- Laboratory
- Other uses

Technical Properties - Polycap TF

Housing	Polypropylene
Membrane	PTFE
Vent	On inlet
Support System	Polypropylene
Sealing	Heat-fused
Maximum Pressure	60 psi (4.1 bar)
Flow Direction	Supported bi-directionally. Certain applications may require orientation, i.e. vents. Reverse flow only for low-pressure applications.
Biosafety	Materials pass USP Class VI
Sterilization	May be autoclaved at 121° C for 20 minutes (maximum 132° C). Multiple autoclave cycles are possible. However, the responsibility for reuse is with the operator. The device should be protected from cross contamination. An integrity test should be performed after autoclaving. Compatible with EtO sterilization.
Filtration Area	36 mm capsule: 500 cm ² (77 in ²) 75 mm capsule: 1,000 cm ² (155 in ²) 150 mm capsule: 2,000 cm ² (310 in ²)
Methanol	0.1 µm membrane: 1.7 bar (25 psi) 0.2 µm membrane: 0.9 bar (13 psi)
Bubble Point	0.45 µm membrane: 0.5 bar (7 psi) 1.0 µm membrane: 0.2 bar (3 psi)

Ordering Information - Polycap TF

Catalog Number	Membrane ¹	Prefilter ²	Pore Size (µm)	Connections*		Sterile	Quantity/Pack
				Inlet	Outlet		
Polycap 36 TF							
6700-3602	PTFE	-	0.2	SB	SB	No	1
6700-3610	PTFE	PP	1.0	SB	SB	No	1
6710-3602	PTFE	-	0.2	1/2" SB	1/2" SB	No	1
6710-3604	PTFE	-	0.45	3/8" - 1/2" SB	1/2" SB	No	1
6711-3601	PTFE	-	0.1	1/4" MNPT	SB	No	1
6711-3602	PTFE	-	0.2	1/4" MNPT	SB	No	1
6711-3604	PTFE	-	0.45	1/4" MNPT	SB	No	1
2601T	PTFE	-	0.2	3/8" FNPT	3/8" FNPT	No	5
2602S	PTFE	-	0.45	1 1/2" Sanitary	1 1/2" Sanitary	No	5
2603T	PTFE	PP	1.0	3/8" FNPT	3/8" FNPT	No	5
Polycap 75 TF							
6700-7501	PTFE	-	0.1	SB	SB	No	1
6700-7502	PTFE	-	0.2	SB	SB	No	1
6700-7504	PTFE	-	0.45	SB	SB	No	1
6700-7510	PTFE	PP	1.0	SB	SB	No	1
6701-7510	PTFE	PP	1.0	1/2" SB	1/2" SB	No	1 contd >

Catalog Number	Membrane ¹	Prefilter ²	Pore Size (µm)	Connections*		Sterile	Quantity/Pack
				Inlet	Outlet		
6710-7502	PTFE	-	0.2	1/2" SB	1/2" SB	No	1
6710-7504	PTFE	-	0.45	1/2" SB	1/2" SB	No	1
6711-7502	PTFE	-	0.2	1/4" MNPT	SB	No	1
6711-7504	PTFE	-	0.45	1/4" MNPT	SB	No	1
6711-7505	PTFE	-	0.05	1/4" MNPT	SB	No	1
2700M	PTFE	-	0.1	1/4" MNPT	1/4" MNPT	No	5
2700T	PTFE	-	0.1	3/8" FNPT	3/8" FNPT	No	5
2702M	PTFE	-	0.2	1/4" MNPT	1/4" MNPT	No	5
2702T	PTFE	-	0.2	3/8" FNPT	3/8" FNPT	No	5
2703T	PTFE	-	0.45	3/8" FNPT	3/8" FNPT	No	5
Polycap 150 TF							
2800T	PTFE	-	0.1	3/8" FNPT	3/8" FNPT	No	5
2801	PTFE	-	0.2	1 1/2" Sanitary	1 1/2" Sanitary	No	5
2802	PTFE	-	0.2	1/2" HB	1/2" HB	No	5
2802T	PTFE	-	0.2	3/8" FNPT	3/8" FNPT	No	5
2803T	PTFE	-	0.45	3/8" FNPT	3/8" FNPT	No	5
2804T	PTFE	PP	1.0	3/8" FNPT	3/8" FNPT	No	5

¹ PTFE – Polytetrafluoroethylene

² PP – Polypropylene prefilter

* SB – Stepped Barb for 6 –10 mm 1/4"–3/8" tubing

1/2" SB – Stepped Barb for 10–12 mm 3/8"–1/2" tubing

MNPT – Male National Pipe Thread

FNPT – Female National Pipe Thread

Centrifuge Filters

Whatman centrifuge filters are ideal for the quick and easy preparation of a wide range of laboratory samples by centrifugation.

VectaSpin™ Centrifuge Filters

VectaSpin centrifuge filters are supplied with a range of filtration and separation media. The centrifuge filters are available in 400 µL, 3 mL and 20 mL sizes and are produced from pigment free polypropylene to eliminate sample contamination. A 10 µm mesh is available for the filtration of coarse particulates. VectaSpin Micro and VectaSpin 3 are also available with a range of ultrafiltration membranes which can separate macromolecules, such as proteins, based on differences in their molecular weights.



The centrifuge filters are compatible with all common centrifuge rotors and holders. Filtrate can be stored in the receiving tube after centrifugation eliminating the need for a separate storage tube.

VectaSpin™ Micro

Features and Benefits

- Quick and easy-to-use. Supplied ready assembled saving time in the laboratory
- Prefilter versions available for difficult-to-filter samples
- Frosted area on tube for easy sample identification
- Capacity 400/600µL (insert vol/tube vol)

Applications

- Removal of cells from culture media
- Particle removal from solvents
- Liquid chromatography sample preparation
- Removal of bacteria from sample material
- Fractionation/purification of proteins



VectaSpin Micro

VectaSpin™ 3

Features and Benefits

- 3 mL sample capacity is ideal for many laboratory samples
- Store filtrate in receiving tube, reducing costs and saving time in the laboratory
- Frosted area on tube for easy sample identification

Applications

- HPLC sample preparation
- Biotechnology and life science
- Environmental research
- Removal of microspheres in aqueous solution
- Filtration of river waters
- Protein separation from sample matrices



VectaSpin 3

VectaSpin™ 20

Features and Benefits

- 20 mL sample capacity is ideal for large volume samples
- Screw top cap for easy sample storage

Applications

- Easy particle removal from large volume samples
- Environmental sample filtration
- Sample preparation and collection
- Ligand binding studies
- Buffer exchange



VectaSpin 20

Typical Data - VectaSpin Centrifuge Filters

	VectaSpin Micro	VectaSpin 3	VectaSpin 20
Housing (Pigment Free)	Polypropylene	Polypropylene	Polypropylene
Insert Capacity	400 µL	3 mL	20 mL
Receiving Tube Capacities			
With Insert	1.25 mL	5 mL	25 mL
Without Insert	2.0 mL	10 mL	50 mL
Maximum Force	10,000 G	5,000 G*	2,075 G*
Tube Dimensions	42 mm x 10.6 mm	87 mm x 16.4 mm	35 mm dia. x 117 mm (with cap) 31 mm dia. x 104 mm (without cap)
Cap Material	Polypropylene	Polypropylene	Polypropylene
Cap Closure	N/A	N/A	Screw-on
Minimum Force for RCF** (Polypropylene 0.45 µm)	N/A	2,000 G	N/A
Temperature Resistance in Use	+4° C to +40° C	+4° C to +40° C	+4° C to +40° C
For Sample Storage (Without Filter Insert)	-70° C to +50° C	-70° C to +50° C	-70° C to +50° C
Insert Material	Polypropylene	Polypropylene	Polypropylene
Overall Height	42 mm	86 mm	61 mm

* Do not use at centrifugal forces above the recommended maximum

** All other devices no minimum RCF

Other Considerations – Ultrafiltration

The cellulose acetate and polysulfone membranes contain glycerin as a wetting agent. This may be removed if necessary by prerinsing with distilled water or buffers. Transparent spots may appear on filters under higher levels of humidity. These are due to the glycerin and do not affect performance of the filter.

CENTREX® Centrifuge Filters

CENTREX centrifuge filters are supplied with a range of filtration and separation media. 5 mL (sterile and non-sterile) and 25 mL versions are available.

Features and Benefits

- Centrifugal filter units with various types of membrane filter
- Rapid and simple preparation of a large number of samples
- More than six samples can be processed at once
- Ideal for automated systems and high-speed batch filtration with robots
- Considerably reduced contamination risk when working with radioactive biologically hazardous material
- Cross contamination avoided

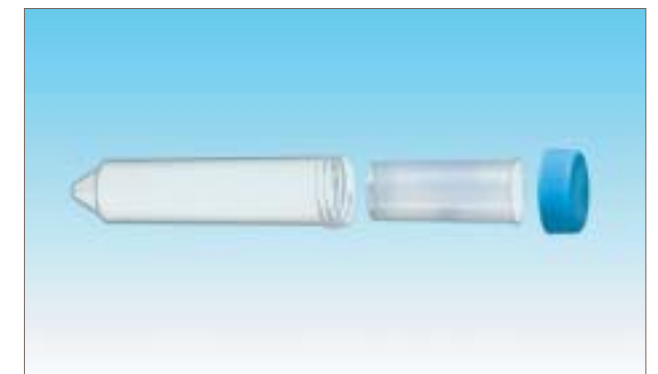


CENTREX Centrifuge Filters

CENTREX® 5 mL Centrifuge Filters

Applications

- 0.45 µm cellulose acetate membrane for the rapid elution of agarose gels
- Nylon, regenerated cellulose and cellulose acetate membranes for the removal of particles and microorganisms from HPLC samples
- Sample preparation for quality control
- Glass fiber for the filtration of very highly loaded samples or a prefilter before a further filtration step



CENTREX 5 mL Centrifuge Filter

CENTREX® 25 mL Centrifuge Filters

Applications

- Filtration of soil samples
- Clarification of antibody or other protein solutions
- Filtration of cell cultures

Ordering Information - VectaSpin Micro Centrifuge Filters

Catalog Number	Membrane	Pore Size (µm)	Quantity/Pack
Microfiltration			
6830-0021	Anopore	0.02	100
6830-0201	Anopore	0.2	100
6833-0201	Polysulfone	0.2	100
6833-0401	Polysulfone	0.45	100
Ultrafiltration			
6835-3001	Polysulfone	30 K	100
6835-1101	Polysulfone	100 K	100
6834-1001	Cellulose Acetate	12 K	100
6834-2001	Cellulose Acetate	20 K	100
Coarse Filtration			
6838-0002	Polypropylene Mesh	10	25

Ordering Information - VectaSpin 3 Centrifuge Filters

Catalog Number	Membrane	Pore Size (µm)	Quantity/Pack
Microfiltration			
6831-0405	PVDF	0.45	25
6832-0405	Polypropylene	0.45	25
Ultrafiltration			
6835-3005	Polysulfone	30 K	25
6835-1005	Polysulfone	10 K	25
Coarse Filtration			
6838-0005	Polypropylene Mesh	10	25

Ordering Information - VectaSpin 20 Centrifuge Filters

Catalog Number	Membrane	Pore Size (µm)	Quantity/Pack
Microfiltration			
6830-0218	Anopore Plus with Prefilter	0.2	10
6832-0408	Polypropylene	0.45	10
Coarse Filtration			
6838-0008	Polypropylene Mesh	10	10
6838-0009	Polypropylene Mesh	10	100

Ordering Information - CENTREX Centrifuge Filters

Pore Size (µm)	Membrane/Housing ¹	Color Code	Quantity/Pack	Catalog Number
Centrex 5 mL Sterile				
0.2	CA/PP	blue	50	10 467 013
0.2	NL/PP	brown	50	10 467 015
0.45	CA/PP	white	50	10 467 017
0.45	NL/PP	light brown	50	10 467 021
Centrex 5 mL Non-Sterile				
0.45	NL/PP	light brown	250	10 467 012
Centrex 25 mL Non-Sterile				
0.45	RC/PP	-	25	10 467 032

¹ CA – Cellulose acetate RC – Regenerated cellulose
 PP – Polypropylene Adapter – 17 mm x 12 mm
 NL – Nylon Centrex 25 mL maximum force – 4000 x G

In-line Filters

Whatman in-line filters feature a high-purity polypropylene housing to maintain sample purity and are available with a choice of filtration media to suit a range of aqueous and organic samples. They utilize the most advanced construction methods and design features. This level of engineering provides for the finest disposable in-line filter devices.

Aqueous IFD™ and Solvent IFD™

Whatman in-line filter/degassers (IFD) connect directly into an HPLC line to simultaneously filter and degas the mobile phase as it is being used. The Aqueous IFD provides pure filtration of aqueous based HPLC mobile phases while the Solvent IFD is used with organically based HPLC mobile phases. Specifically, the Aqueous IFD is designed to work with mobile phases containing at least 20% of the aqueous component.



In-line Filter Degasser

The Aqueous IFD has a 0.2 µm hydrophilic nylon membrane for use with aqueous-based mobile phases. Solvent IFD has a 0.2 µm high-flow polypropylene membrane for mobile phases containing organic solvents. Both devices have a polypropylene housing, the circumference of which is sealed by a security ring, fittings to accommodate 1/16"-1/8" tubing and an air vent on the inlet with luer lock cap to enable priming.

The in-line filters work on the principle of 'bubble point' - the point of pressure at which gases will pass through a wet membrane. If pressure is maintained below the bubble point, the gas will not pass through the membrane and is trapped by the particular filter device.

Features and Benefits

- Faster than traditional methods of mobile phase preparation – saving time in the laboratory
- Enhanced laboratory safety
- No need to purchase expensive degassing equipment
- Rugged, chemically resistant polypropylene construction
- Air vent on inlet with luer lock cap
- Integrity-testable (bubble point method)

Applications

- HPLC analysis
- Pharmaceutical research
- Analytical chemistry

Typical Data - In-line Filters

	Aqueous IFD	Solvent IFD
Bubble Point ¹		
bar	2.9 (a)	0.76 (b)
psi	42 (a)	11.0 (b)
Maximum Flow Rate ²	2.5 mL/min	2.5 mL/min
Filtration Area	16 cm ²	16 cm ²

¹ Typical values determined with (a) water and (b) isopropanol

² For effective gas bubble removal in HPLC

Ordering Information - In-line Filters

Catalog Number	Description	Pore Size (µm)	Diameter (mm)	Filter Media ¹	Quantity/Pack
6726-5002	Aqueous IFD*	0.2	50	Nylon	10
6725-5002	Solvent IFD*	0.2	50	PP	10
6726-5002A	Aqueous IFD**	0.2	50	Nylon	10
6725-5002A	Solvent IFD**	0.2	50	PP	10
6726-5000	IFD End Fitting Kit (10 rings and 10 caps)	-	-	-	10

¹ PP – Polypropylene

* O-rings included: 1/32" – 5/32"; accepts different diameter tubing 0.8 mm – 4 mm

** Non o-ring style – accepts 1/8" tubing only

Polydisc™ Filters

Whatman Polydisc 50 mm in-line disc filters are designed for larger volume sample filtration in the laboratory, at a pilot plant or in manufacturing.

They are extremely versatile and cost effective. Sample volumes up to 1 liter can be filtered with one device. Polydisc devices can be used in conjunction with a syringe or connected in-line via stepped hose barbs.

Polydisc filters feature a high-purity polypropylene housing to maintain sample purity and are available with a choice of filtration media to suit a range of aqueous and organic samples. The devices are autoclavable and sterile options are available.

Polydisc AS

The Polydisc AS (Aqueous Solution) family of 50 mm filter devices feature a high throughput polyethersulfone membrane, which has low protein binding and no surfactants, developed for use in the pharmaceutical industry. A glass microfiber prefilter extends the life of the membrane and effectively filters heavily contaminated samples. Each Polydisc AS device has a sterility cap on the outlet and is sealed in its own 'medical grade' clear blister pack, irradiation sterilized and secured in a protective shelf pack.

Features and Benefits

- Radiation sterilized. No EtO residuals.
- Barbed hose connections fit multiple tubing sizes
- Integrity-testable (bubble point method)
- Lightweight (11.5 grams); avoids the collapsing of tubing which can be caused by heavy filter devices

Applications

- Tissue culture media
- Reagent preparation
- Particle counting solutions
- Pharmaceutical preparations



Typical Data - Polydisc AS

Description	Pore Size (µm)	Air Flow Rate (SLPM)	Water Flow Rate* mL/min @
		1.0 bar (14.5 psi)	0.7 bar (10 psi)
Polydisc AS	0.2 (GMF/PES)	-	150
Polydisc AS	0.45 (GMF/PES)	-	225
Polydisc AS	1.0 (GMF/Nylon)	-	625

* Liquid rating. Retention efficiency in gas streams is significantly higher

GMF – Glass microfiber filter

PES – Polyethersulfone

SLPM – Standard liters per minute

Polydisc TF

This device features a PTFE membrane which is ideal for chemically aggressive solutions, reagents and organic solvents. This lightweight unit is particularly suitable for protective vents and for in-line filtration and isolation applications. The 1 µm device features a polypropylene prefilter for use with heavily contaminated samples.

Features and Benefits

- Solvent resistant membrane
- Chemical resistant housing
- Hydrophobic PTFE membrane
- Autoclavable (multiple)
- Integrity-testable (bubble point or water breakthrough pressure 'in situ' methods)
- Biosafe
- Lightweight (11.5 grams); avoids the collapsing of tubing which can be caused by heavy filter devices

Applications

- Pharmaceutical: vents and in-line applications
- Biotech: sterile vents and exhausts for growth environments, in-line sterilization
- Laboratory: clean or sterile gases, solvents, reagents, drying gases
- Electronics: photoresists, solvents, gases for research



Typical Data - Polydisc TF

Description	Pore Size (µm)	Integrity Test Data*				Flow Rates*	
		Methanol		Water		Methanol	Air
		Bubble Point (bar)	Breakthrough (psi)	Bubble Point (bar)	Breakthrough (psi)	mL/min at 0.7 bar (10 psi)	SLPM at 0.2 bar (3 psi)
Polydisc TF	0.1	1.7	25	3.4	50	200	8
Polydisc TF	0.2	0.9	13	2.1	30	400	16
Polydisc TF	0.45	0.5	7	1.1	16	700	24
Polydisc TF	1.0	0.2	3	0.3	5	900	30

* Typical values

Polydisc HD

Excellent flow rate characteristics and ideal for filtering large volumes to 1 liter of aqueous and solvent samples. Polydisc HD is available in 5 and 10 µm retention ratings.

Features and Benefits

- All polypropylene unit for aqueous and solvent samples
- Broad solvent compatibility

Applications

- Large volume sample preparation

Polydisc SPF

Contains a unique stack of filter media ideal for prefiltration of serum and other hard-to-filter solutions. Contains a glass microfiber and polysulfone membrane filter stack that effectively filters the complex particulates found in serum samples.

Applications

- Virology, microbiology and tissue culture laboratories
- Immunoassay methods and diagnostic standards/controls

Typical Data - Polydisc HD/SPF

Description	Pore Size (µm)	Air Flow Rate (SLPM) 1.0 bar (14.5 psi)	Water Flow Rate* mL/min 1.0 bar (14.5 psi)
Polydisc HD	5.0	110	1500
Polydisc HD	10.0	140	2200
Polydisc SPF	1.0	-	500

* Liquid rating. Retention efficiency in gas streams is significantly higher

Polydisc GW

Polydisc GW is specifically designed for sample preparation of ground water samples for the analysis of dissolved heavy metals. It is an aqueous filter with low background values for the determination of trace elements.

It has everything that makes the preparation of aqueous solutions for the analysis of dissolved heavy metals easy: A large filter surface, quartz fiber prefilter and membrane filter in sandwich arrangement and a high soil absorption capacity. And, of course, it meets all the requirements of regulations such as NEN, EPA.



Typical Data - Polydisc GW

Housing	Polypropylene
Membrane Type	0.45 µm polyamide (nylon)
Prefilter	100% quartz fiber
Filtration Diameter	52 mm
Filtration Area	20.4 cm ²
Dead Volume	220 µL
Filling Volume	540 µL
Maximum Pressure	4.5 bar
Connections	Tubing nozzle 6-14 mm
Max. Operating Temperature	80° C

Ordering Information - Polydisc Filters

Catalog Number	Prefilter/Membrane	Pore Size (µm)	Quantity/Pack
Polydisc AS			
6724-5002	GMF/PES sterile	0.2	10
6724-5045	GMF/PES sterile	0.45	10
6724-5010	GMF/Nylon sterile	1.0	10
Polydisc TF			
6720-5001	NA/PTFE	0.1	10
6720-5002	NA/PTFE	0.2	10
6720-5045	NA/PTFE	0.45	10
6721-5010	PP/PTFE	1.0	10
Polydisc SPF			
6724-5000	GMF/GF/Polysulfone	1.0	10
Polydisc HD			
6728-5050	NA/Polypropylene	5.0	10
6728-5100	NA/Polypropylene	10.0	10
Polydisc GW			
10 463 400	Quartz fiber/Nylon	0.45	20
10 463 401	Quartz fiber/Nylon	0.45	50

In-line connection

- Polydisc AS, TF, SPF accepts 6-10 mm ID hose

- Polydisc GW accepts 6-14 mm ID hose

NA – Not available

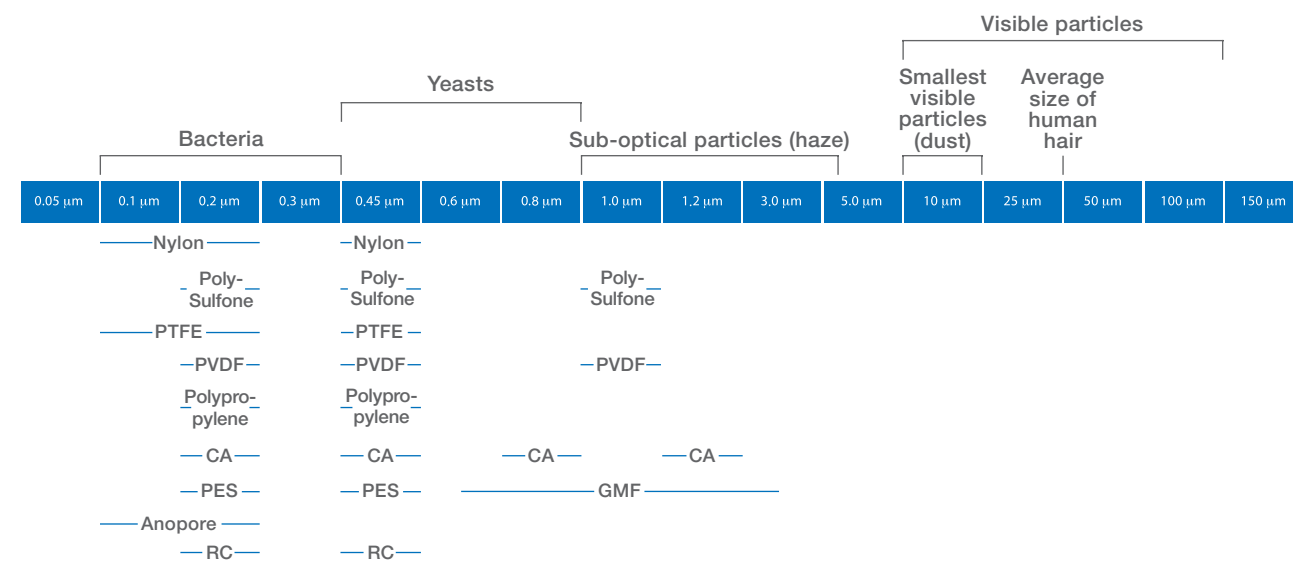
Syringe Filters

Whatman offers a complete line of disposable syringe filter devices designed to provide fast and efficient filtration of aqueous and organic solutions. They are made with a wide variety of different membrane filters with a polypropylene housing using the most advanced methods and design features available today. These syringe filters are ideal for numerous applications in pharmaceutical, environmental, biotechnology, food/beverage and agricultural testing laboratories.

Whatman syringe filters are composed of a pure polypropylene housing, heat sealed without the use of glues or sealants.

Product Overview - Syringe Filters

Filters	Diameter (mm)	Features	Media
Anotop	10, 25	• Made of Anopore membrane	Anopore
Anotop Plus	10, 25	• Made with glass microfiber prefilter • For difficult-to-filter solutions	Anopore
Anotop IC	10, 25	• Suitable for Ion Chromatography • Low levels of anion leaching	Anopore
ZC	13	• Designed to be Zymark compatible (ZC) for automated robotic systems	CA, GMF, PTFE, PP, PS, 934-AH
Puradisc	4, 13, 25, 30	• Designed for manual operation	PTFE, Nylon, PP, PS, CA, CN PVDF, glass microfiber
GD/X	13, 25	• Contains unique prefiltration stack of Whatman GMF 150 and Grade GF/F • 3x flow rates compared to unprotected membrane	CA, PTFE, Nylon, PP, PS, PVDF, glass microfiber
GD/XP	25	• Contains proprietary polypropylene prefiltration stack • Suitable for inorganic ion analysis	Nylon, PVDF, PP, PES, PTFE and Depth Polypropylene
Roby 25	25	• Designed to be compatible with the major dissolution test systems	CA, Nylon, RC and glass microfiber
SPARTAN	13, 30	• Optimized for HPLC sample prep HPLC certified, batch certificate can be downloaded. Compatible with organic and aqueous solvents	RC
ReZist	13, 30	• Inlet PTFE for HPLC sample prep	PTFE



Syringe filters are available in 4, 10, 13, 25 and 30 mm sizes – not all combinations may be available.

Anotop® Syringe Filters

Anotop disposable syringe filters are designed for use with most organic solvents and aqueous materials and are suitable for sample volumes up to 100 mL. The devices feature a distinctive hexagonal housing, produced from pigment-free polypropylene to eliminate sample contamination. No wetting agents or adhesives are used in the manufacturing process.



Anotop syringe filters contain the unique Anopore membrane and are supplied in three pore sizes. Glass microfiber prefilter versions are available for difficult-to-filter samples.

Anotop 10

Features and Benefits

- 10 mm diameter syringe filter
- Inorganic membrane
- Capillary pore structure
- Made from Gamma-Alumina 6 mm Al₂O₃
- Low protein binding
- Sample volume up to 10 mL
- Low hold up volume <20 µL ensures maximum sample recovery
- Sterile formats available for critical applications



Anotop 10

Anotop 10 Plus

The Anotop 10 Plus syringe filter offers the added benefit of an integral glass microfiber prefilter. This unit is designed to enable difficult and hard-to-filter solutions to be filtered without adversely affecting the filtration efficiency of the final membrane. This can eliminate the need for sample cleanup or expensive and time-consuming sequential filtration.

Anotop 25

Features and Benefits

- 25 mm diameter syringe filter
- Sample volume up to 100 mL

Applications

- Cold sterilization of growth media
- Phage and virus filtration
- Removal of high molecular weight proteins or polymers
- Liposome extrusion
- Filtration of solvents for spectroanalysis and analytical sample preparation



Anotop 25

Anotop 25 Plus

Contains a glass microfiber prefilter.

Applications

- Filtration of tissue culture media
- Cleanup of difficult samples
- Filtration of colloidal material
- Removal of mycoplasma
- HPLC sample preparation
- Biological sample preparation

Anotop IC

Whatman Anotop IC syringe filters are specifically designed for the preparation of samples for subsequent Ion Chromatography and HPLC analysis. These devices ensure very low levels of anion leaching for ion chromatography testing.

Features and Benefits

- 10 mm and 25 mm diameter syringe filters
- Better consistency of analytical results and extended column life
- Certified and guaranteed low levels of anion leaching mean better results



Anotop IC

Applications

- Ion chromatography sample preparation
- HPLC sample preparation

Safety

High pressures can be achieved when using syringes. The smaller the syringe the higher the pressure that can be generated. As a general guide, the following pressures can be achieved by hand with the syringes indicated: 20 mL – 30 psi; 10 mL - 50 psi; 5 mL - 75 psi; 3 mL - 100 psi; 1 mL - 150 psi. Each user should determine the pressure they can generate by hand with a specific size syringe and take appropriate safety precautions not to exceed the recommended rating for the device used. If these limitations are exceeded, bursting of the device may occur.

Typical Data - Auotop Syringe Filters

	Anotop 10	Anotop 10 Plus	Anotop 25	Anotop 25 Plus
Housing	Polypropylene	Polypropylene	Polypropylene	Polypropylene
Filtration Area	0.78 cm ²	0.78 cm ²	4.78 cm ²	4.78 cm ²
Maximum Pressure	100 psi	100 psi	100 psi	100 psi
Volume 'Hold Up'	<20 µL	<30 µL	<150 µL	<200 µL
Prefilter Type	N/A	Glass microfiber (binderless)	N/A	Glass microfiber (binderless)
Membrane Diameter	10 mm	10 mm	25 mm	25 mm
Membrane Type	Anopore	Anopore	Anopore	Anopore
Average Membrane Thickness	60 µm	60 µm	60 µm	60 µm
Device width	14 mm	14 mm	31 mm	31 mm
Device Length	18 mm	18 mm	25 mm	25 mm
Device Shape	Hexagonal	Hexagonal	Hexagonal	Hexagonal
Construction Process	Thermal weld	Thermal weld	Thermal weld	Thermal weld
Inlet Connection	Female luer lock	Female luer lock	Female luer lock	Female luer lock
Outlet Connection	Male slip luer	Male slip luer	Male slip luer	Male slip luer
Protein Adsorption	Low	Medium/high	Low	Medium/high
Extractable Materials	Low	Low	Low	Low
Cytotoxicity	Non-cytotoxic	Non-cytotoxic	Non-cytotoxic	Non-cytotoxic contd >

	Anotop 10 IC	Anotop 25 IC
Housing	Polypropylene	Polypropylene
Filtration Area	0.78 cm ²	4.78 cm ²
Maximum Pressure	100 psi	100 psi
Volume 'Hold Up' with Air Purge	<20 µL	<150 µL
Membrane Diameter	10 mm	25 mm
Construction Process	Thermal weld	Thermal weld
Extractable Materials	Negligible	Negligible
Average Membrane Thickness	60 µm	60 µm
Device Width	14 mm	31 mm
Device Length	18 mm	25 mm
Inlet Connection	Female luer lock	Female luer lock
Outlet Connection	Male slip luer	Male slip luer
Membrane Type	Anopore	Anopore

Typical Data - Anotop Syringe Filters

Anion	Level (ppb)
Fluoride	<10
Chloride	<15
Bromide	<20
Sulfate	<30
Phosphate	<75
Nitrite	<30
Nitrate	<30

Typical average anion leaching levels in 18 M W-cm (Meg Ohm-cm). Water at 20° C.

Ordering Information - Anotop Syringe Filters

Catalog Number	Membrane	Pore Size (µm)	Hydrophilic	Protein Binding	Solvent Resistance	Quantity/Pack
Anotop 10						
6809-1002	Anopore	0.02	Yes	Low	Very Good	50
6809-1012	Anopore	0.1	Yes	Low	Very Good	50
6809-1022	Anopore	0.2	Yes	Low	Very Good	50
6809-1102	Anopore Sterile	0.02	Yes	Low	Very Good	50
6809-1112	Anopore Sterile	0.1	Yes	Low	Very Good	50
6809-1122	Anopore Sterile	0.2	Yes	Low	Very Good	50 contd>

Catalog Number	Membrane	Pore Size (µm)	Hydrophilic	Protein Binding	Solvent Resistance	Quantity/Pack
Anotop 10 Plus						
6809-3002	Anopore with Prefilter	0.02	Yes	Medium	Very Good	50
6809-3012	Anopore with Prefilter	0.1	Yes	Medium	Very Good	50
6809-3022	Anopore with Prefilter	0.2	Yes	Medium	Very Good	50
6809-3102	Anopore with Prefilter Sterile	0.02	Yes	Medium	Very Good	50
6809-3112	Anopore with Prefilter Sterile	0.1	Yes	Medium	Very Good	50
6809-3122	Anopore with Prefilter Sterile	0.2	Yes	Medium	Very Good	50
Anotop 25						
6809-2002	Anopore	0.02	Yes	Low	Very Good	50
6809-2012	Anopore	0.1	Yes	Low	Very Good	50
6809-2022	Anopore	0.2	Yes	Low	Very Good	50
6809-2024	Anopore	0.2	Yes	Low	Very Good	200
6809-2102	Anopore Sterile	0.02	Yes	Low	Very Good	50
6809-2112	Anopore Sterile	0.1	Yes	Low	Very Good	50
6809-2122	Anopore Sterile	0.2	Yes	Low	Very Good	50
Anotop 25 Plus						
6809-4002	Anopore with Prefilter	0.02	Yes	Medium	Very Good	50
6809-4012	Anopore with Prefilter	0.1	Yes	Medium	Very Good	50
6809-4022	Anopore with Prefilter	0.2	Yes	Medium	Very Good	50
6809-4024	Anopore with Prefilter	0.2	Yes	Medium	Very Good	200
6809-4102	Anopore with Prefilter Sterile	0.02	Yes	Medium	Very Good	50
6809-4112	Anopore with Prefilter Sterile	0.1	Yes	Medium	Very Good	50
6809-4122	Anopore with Prefilter Sterile	0.2	Yes	Medium	Very Good	50
Anotop 10 IC						
6809-9233	Anopore	0.2	Yes	Low	Very Good	100
6809-9234	Anopore	0.2	Yes	Low	Very Good	200
Anotop 10 IC Blister						
6809-9232	Anopore	0.2	Yes	Low	Very Good	50
6809-9235	Anopore	0.2	Yes	Low	Very Good	250
Anotop 25 IC						
6809-9244	Anopore	0.2	Yes	Low	Very Good	200

GD/X® Syringe Filters

Whatman GD/X disposable syringe filters are the ideal choice for the preparation of hard-to-filter samples. The syringe filters have a pigment-free polypropylene housing to eliminate sample contamination and contain a unique prefiltration stack of Whatman GMF 150 (graded density) and GF/F glass microfiber media, which allows you to filter even the most difficult samples with less hand pressure. Compared to an unprotected membrane, GD/X syringe filters can process three to seven times more sample volume.

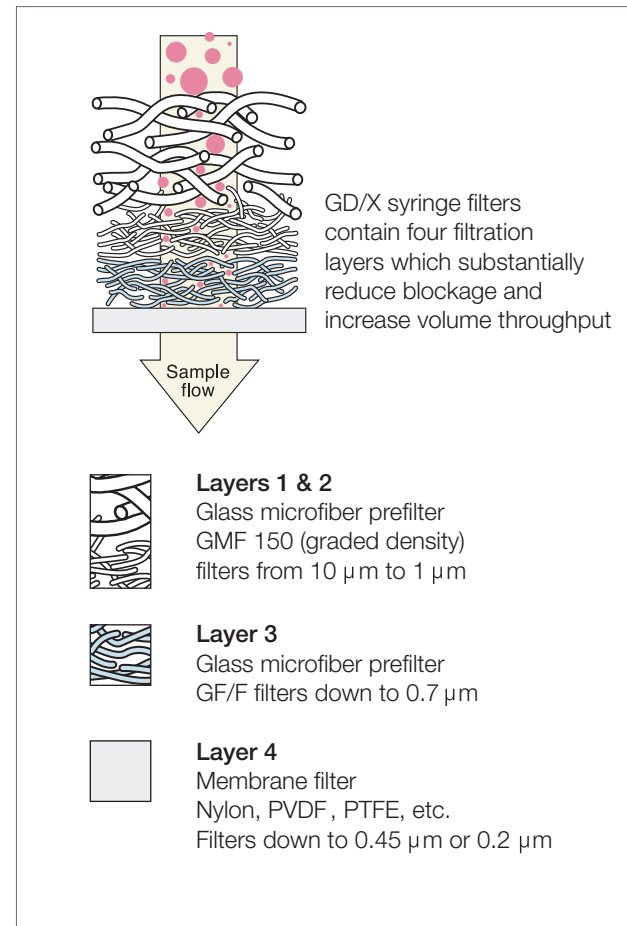
GMF 150 (graded density) and GF/F are produced from 100% borosilicate glass microfiber. The unique, graded density GMF 150 medium has a coarse top layer meshed with a fine layer beneath that retains particles to 1.0 µm. A GF/F filter then retains particles down to 0.7 µm. Below the prefilter stack is the final membrane. This provides exceptionally good loading capacity with fast flow rates and avoids the build up of back pressure often experienced through 'blocking' of an unprotected membrane.

Features and Benefits

- 13 mm and 25 mm diameter syringe filters
- 13 mm device for samples up to 10 mL and 25 mm device for samples larger than 10 mL
- Sterile options available

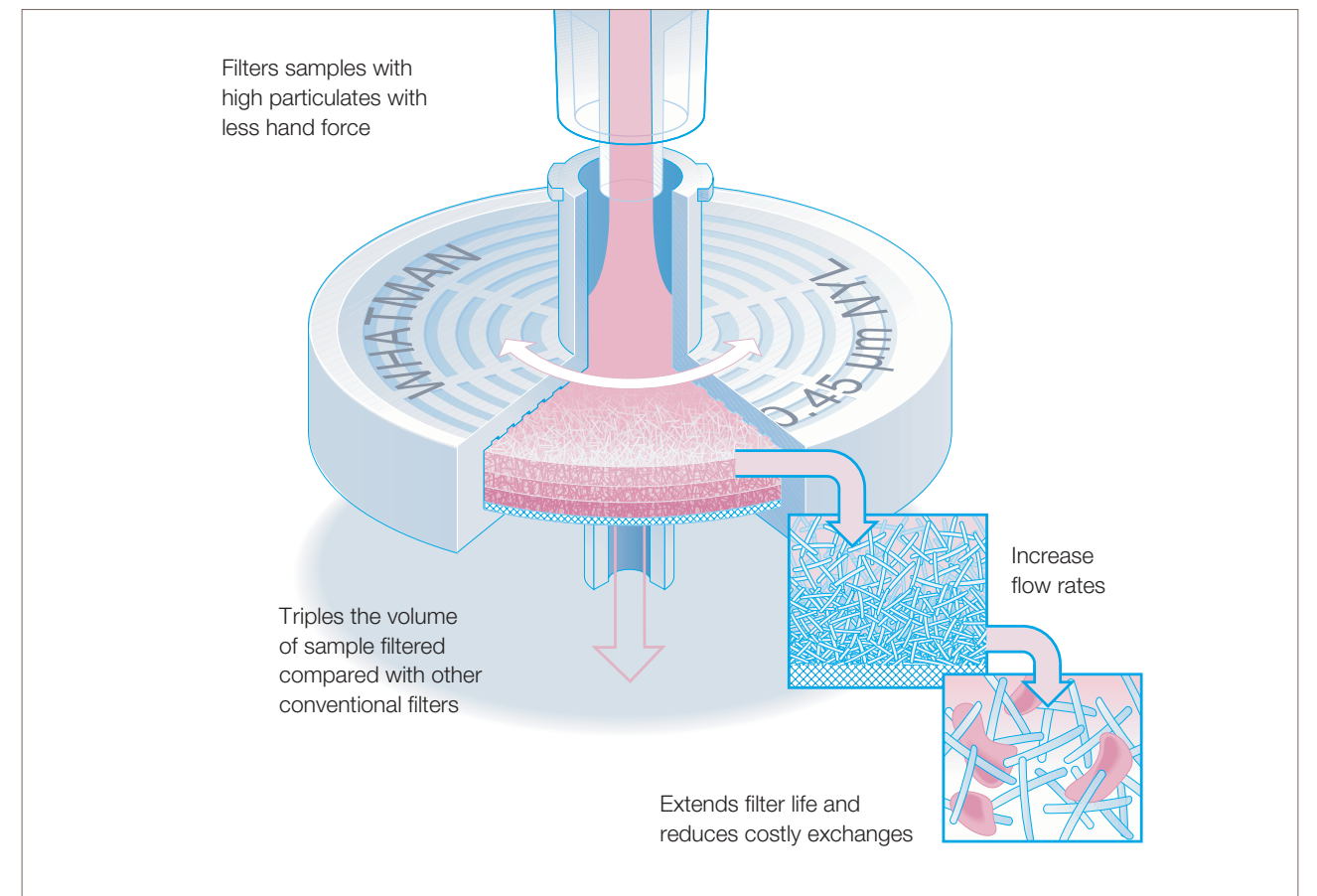
Applications

- Hard-to-filter heavily particulate laden samples
- Dissolution testing
- Content uniformity
- Concentration analysis
- Routine sample preparation
- Food analysis
- Environmental samples
- Composite assay



Safety

High pressures can be obtained when using syringes. The smaller the syringe the higher the pressure that can be generated. As a general guide, the following pressures can be achieved by hand with the syringes indicated: 20 mL - 30 psi; 10 mL - 50 psi; 5 mL - 75 psi; 3 mL - 100 psi; 1 mL - 150 psi. Each user should determine the pressure they can generate by hand with a specific size syringe and take appropriate safety precautions not to exceed the recommended rating for the device used. If these limitations are exceeded, bursting of the device may occur.



Typical Data - GD/X Syringe Filters

	GD/X 13 mm	GD/X 25 mm
Housing	Polypropylene (pigment free)	Polypropylene (pigment free)
Filtration Area	1.3 cm ²	4.6 cm ²
Maximum Pressure	100 psi	75 psi
Volume 'Hold Up' Full Housing	0.5 mL	1.4 mL
with Air Purge	50 µL (approx)	250 µL (approx)
Dimensions	21.7 mm x 29.7 mm	21.7 mm x 29.7 mm
Weight	3 g (approx)	3 g (approx)
Flow Direction	Flow should enter from the inlet	Flow should enter from the inlet
Inlet Connection	Female luer lock	Female luer lock
Outlet Connection	Male slip luer	Male slip luer
Sterilization	Autoclave at 121° C (131° C max) at 15 psi for 20 minutes*	Autoclave at 121° C (131° C max) at 15 psi for 20 minutes*
Biosafe	All materials pass USP Class VI	All materials pass USP Class VI
Glass Microfiber	100% borosilicate	100% borosilicate
Prefiltration Media	GMF 150 10 µm : 1 µm GF/F 0.7 µm	GMF 150 10 µm : 1 µm GF/F 0.7 µm

* Not recommended for nylon

Ordering Information - GD/X Syringe Filters

Catalog Number	Description	Quantity/Pack
13 mm		
6871-1302	13GD/X 0.2 µm NYL	1500
6871-1304	13GD/X 0.45 µm NYL	1500
6873-1304	13GD/X 0.45 µm PVDF	1500
6875-1302	13GD/X 0.2 µm PTFE	1500
6875-1304	13GD/X 0.45 µm PTFE	1500
6876-1304	13GD/X 0.45 µm PSU	150
6880-1302	13GD/X 0.2 µm CA	150
6882-1316	13GD/X 1.6 µm GF/A	150
6884-1310	13GD/X 1.0 µm GF/B	150
6886-1312	13GD/X 1.2 µm GF/C	150
6888-1327	13GD/X 2.7 µm GF/D	150
25 mm Non-Sterile		
6869-2502	25GD/X 0.2 µm NYL-S*	150
6869-2504	25GD/X 0.45 µm NYL-S*	150
6871-2550	25GD/X 5.0 µm NYL	1500
6873-2502	25GD/X 0.2 µm PVDF	1500
6875-2502	25GD/X 0.2 µm PTFE	1500
6882-2516	25GD/X 1.6 µm GF/A	150

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Catalog Number	Description	Quantity/Pack
6883-2516	25GD/X 1.6 µm GF/A	1500
6884-2510	25GD/X 1.0 µm GF/B	150
6886-2512	25GD/X 1.2 µm GF/C	150
6892-2515	25GD/X 1.5 µm 934AH	150
6904-2502	25GD/X 0.2 µm PES	150
6904-2504	25GD/X 0.45 µm PES	150
6905-2502	25GD/X 0.2 µm PES	1500
6905-2504	25GD/X 0.45 µm PES	1500
25 mm Sterile		
6897-2502	25GD/XS 0.2 µm PES	500
6902-2504	25GD/XS 0.45 µm GMF	50

* Membrane – nylon/borosilicate

GD/XP Syringe Filters

Whatman GD/XP disposable syringe filters are ideal for use with samples that require inorganic ion analysis, as levels of ion extractables are minimized. They are also an alternative choice for users requiring a filter that exhibits extremely low protein binding characteristics.

GD/XP syringe filters contain a two layer prefilter stack comprised of 20 µm and 5 µm polypropylene filters. The last stage of filtration is a choice of membrane, which is positioned below the prefilter stack.

Applications

- HPLC sample preparation
- Trace metal analysis

Safety

High pressures can be achieved when using syringes. The smaller the syringe the higher the pressure that can be generated. As a general guide, the following pressures can be achieved by hand with the syringes indicated: 20 mL - 30 psi; 10 mL - 50 psi; 5 mL - 75 psi; 3 mL - 100 psi; 1 mL - 150 psi. Each user should determine the pressure they can generate by hand with a specific size syringe and take appropriate safety precautions not to exceed the recommended rating for the device used. If these limitations are exceeded, bursting of the device may occur.



Typical Data - GD/XP Syringe Filters

GD/XP 25 mm	
Housing	Polypropylene (pigment free)
Filtration Area	4.6 cm ²
Maximum Pressure	75 psi
Volume 'Hold Up' Full Housing	1.4 mL with air purge 250 µL (approx)
Dimensions	21.7 mm x 29.7 mm
Weight	3 g (approx)
Flow Direction	Flow should enter from the inlet
Inlet Connection	Female luer lock
Outlet Connection	Male slip luer
Sterilization	Autoclave at 121° C (131° C max) at 15 psi for 20 minutes*
Biosafe	All materials pass USP Class VI
Prefiltration Media	PP 20 µm: 5 µm

* Not recommended for nylon

Ordering Information - GD/XP Syringe Filters

Catalog Number	Membrane	Pore Size (µm)	Diameter (mm)	Hydrophilic	Solvent Resistance	Quantity/Pack
6970-2504	Nylon	0.45	25	Yes	Good	150
6971-2504	Nylon	0.45	25	Yes	Good	1500
6972-2504	PVDF	0.45	25	Yes	Good	150
6973-2504	PVDF	0.45	25	Yes	Good	1500
6974-2504	PTFE	0.45	25	No	Very Good	150
6978-2504	Polypropylene	0.45	25	No	Good	150
6993-2504	DpPP	0.45	25	No	Good	1500
6994-2504	PES	0.45	25	Yes	Poor	150
6995-2504	PES	0.45	25	Yes	Poor	1500

Puradisc™ Syringe Filters

Puradisc syringe filters are designed for the quick and efficient filtration of samples up to 100 mL volume. The syringe filters are produced from pigment free polypropylene and have standard inlet luer and outlet connectors. Puradisc 4 and Puradisc 13 are available with a special tube tip outlet that allows the sample to be accurately dispensed into a micro-vial, eliminating air lock. Sterile options are supplied in a medical-grade blister pack for critical applications.

Devices are available with a choice of membrane or glass microfiber filter media for wide sample compatibility. The media are sealed into the unit without the use of adhesives to eliminate potential sample contamination.

Puradisc™ 4

Applications

- Small volume sample preparation
- High value sample preparation

Features and Benefits

- 4 mm diameter syringe filter
- Sample volume up to 2 mL
- Low hold up volume <10 µL ensures maximum sample recovery

Puradisc™ 13

Applications

- HPLC sample preparation
- Biological sample preparation

Features and Benefits

- 13 mm diameter syringe filter
- Sample volume up to 10 mL
- Low hold up volume <25 µL ensures maximum sample recovery
- Glass microfiber options available



Puradisc 4 Syringe Filters



Puradisc 13 Syringe Filters with Tube Tip

Puradisc™ 25

Applications

- HPLC aqueous sample preparation
- Biological sample preparation
- Buffer solutions
- Salt solutions
- Tissue culture media
- Ophthalmic solutions
- Irrigation solutions
- Sterile isolation

Features and Benefits

- 25 mm diameter syringe filter
- Sample volume up to 100 mL
- Low hold up volumes for maximum sample recovery
- Glass microfiber options available



Puradisc 25 Syringe Filters

Puradisc™ GW

The ready-to-use Puradisc GW filter holder with its prerinsed, hydrophilic cellulose acetate membrane has been specially developed for sample filtration and the determination of COD, TOC, DOC.

Puradisc™ FP 30

Syringe filter for aqueous solutions.

FP Membrane Types

Cellulose Acetate Membranes have an extremely low binding capacity for proteins. They are mainly used for the filtration of aqueous solutions.

Regenerated Cellulose Membranes have an excellent chemical resistance to organic solvents and can be used for the purification of both aqueous and organic solutions.



Puradisc FP 30

Polyamide membranes are suitable for the sterile filtration or purification of alkaline solutions.

Cellulose nitrate membranes are versatile membrane filters for the filtration of aqueous solutions.

Puradisc FP Applications

Pore size	Application	Sterile	Non-Sterile
0.2 µm	Sterile filtration of aqueous solutions	x	
	Filtration of protein-containing solutions with minimal protein loss (CA)	x	x
	Sterile filtration of tissue culture solutions	x	
	Filtration of biological buffers before pH adjustment		x
0.45 µm	Ultrapurification of solutions		x
	Filtration of protein-containing solutions with minimal protein loss (CA)	x	x
	Filtration of biological solutions	x	x
	Filtration of water samples		x
0.8 µm	Clarification of samples		x
	Clarification under sterile conditions	x	
	Removal of cellular constituents from solutions		x
	Purification of dye and indicator liquids		x
1.2 µm	Purification of viscous solutions		x
	Purification of viscous solutions		x
5.0 µm	Purification of viscous solutions		x
	Purification of viscous solutions		x

Safety

High pressures can be achieved when using syringes. The smaller the syringe the higher the pressure that can be generated. As a general guide, the following pressures can be achieved by hand with the syringes indicated: 20 mL - 30 psi; 10 mL - 50 psi; 5 mL - 75 psi; 3 mL - 100 psi; 7 mL - 150 psi. Each user should determine the pressure they can generate by hand with a specific size syringe and take appropriate safety precautions not to exceed the recommended rating for the device used. If these limitations are exceeded, bursting of the device may occur.

Typical Data - Puradisc Syringe Filters

	Puradisc 4	Puradisc 13	Puradisc 25
Housing	Polypropylene	Polypropylene	Polypropylene
Filtration Area	0.2 cm ²	1.3 cm ²	4.2 cm ²
Maximum Pressure	75 psi	75 psi	75 psi
Volume 'Hold Up' with Air Purge	<10 µL	<25 µL	<100 µL
Dimensions	6.2 x 20 mm	16 x 20 mm	28 x 23 mm
Weight	0.55 g (approx)	0.95 g	2.7 g

Filtration Devices

	Puradisc 4	Puradisc 13	Puradisc 25
Volume Throughput	up to 2 mL	up to 10 mL	up to 100 mL
Inlet Connection	Female luer lock	Female luer lock	Female luer lock
Outlet Connection	Male slip luer/male tube tip	Male slip luer/male tube tip	Male slip luer
Sterilization	Autoclave at 121° C (131° C max)	Autoclave at 121° C (131° C max)	Autoclave at 121° C (131° C max)

Typical Data - Puradisc FP 30

Housing	Polycarbonate
Filtration Area	5.7 cm ²
Volume 'Hold Up' with Air Purge	<50 µL
Dimensions	34 x 26 mm
Volume Throughput	up to 100 mL
Inlet Connection	Female luer lock
Outlet Connection	Male slip luer

Ordering Information - Puradisc 4 mm Syringe Filters

Quantity/ Pack	Pore Size (µm)	Non-Sterile Without Tube Tip Membranes:				Sterile Without Tube Tip Membranes:			Sterile With Tube Tip Membranes:
		Nylon	PVDF	PTFE	PS	Nylon	PVDF	PS	PVDF
50	0.1	-	-	-	-	-	-	-	-
	0.2	-	-	-	-	6786-0402	6791-0402	6780-0402	6777-0402
	0.45	-	-	-	-	-	-	6780-0404	6777-0404
100	0.2	6789-0402	6779-0402	6784-0402	6782-0402	-	-	-	-
	0.45	6789-0404	6779-0404	6784-0404	6782-0404	-	-	-	-
500	0.2	6790-0402	6792-0402	6783-0402	-	-	-	-	-
	0.45	6790-0404	6792-0404	6783-0404	-	-	-	-	-

Ordering Information - Puradisc 13 mm Syringe Filters (Non-sterile)

Quantity/ Pack	Pore Size (µm)	Without Tube Tip Membranes:								With Tube Tip Membranes:	
		Nylon	PVDF	PTFE	PS	PP	GMF	CA	PVDF	PTFE	
50	0.2	-	-	-	-	-	-	-	-	6777-1302	6775-1302
	0.45	-	-	-	-	-	-	-	-	6777-1304	6775-1304

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Quantity/ Pack	Pore Size (µm)	Without Tube Tip Membranes:							With Tube Tip Membranes:	
		Nylon	PVDF	PTFE	PS	PP	GMF	CA	PVDF	PTFE
100	0.1	6789-1301	-	6784-1301	-	-	-	-	-	-
	0.2	6789-1302	6779-1302	6784-1302	6782-1302	6788-1302	-	-	-	-
	0.45	6789-1304	6779-1304	6784-1304	6782-1304	6788-1304	-	6771-1304	6796-1304	-
	1.0	-	-	6784-1310	-	-	-	-	-	-
	5.0	-	-	6784-1350	-	-	-	-	-	-
	GF/A 1.6*	-	-	-	-	-	6820-1316	-	-	-
	GF/B 1.0*	-	-	-	-	-	6821-1310	-	-	-
	GF/C 1.2*	-	-	-	-	-	6822-1312	-	-	-
	GF/D 2.7*	-	-	-	-	-	6823-1327	-	-	-
500	0.2	-	6792-1302	6783-1302	-	6785-1302	-	-	6760-1302	-
	0.45	-	6792-1304	6783-1304	6781-1304	6785-1304	6818-1304	-	6762-1304	-
	0.2	-	6765-1302	6766-1302	-	-	-	-	-	-
	0.45	-	6765-1304	6766-1304	-	-	-	6763-1304	-	-
	934 AH 1.5*	-	-	-	-	-	6816-1315	-	-	-

* Particle Retention Rating

Ordering Information - Puradisc 13 mm Syringe Filters (Sterile)

Quantity/ Pack	Pore Size (µm)	Without Tube Tip Membranes:			With Tube Tip Membranes:
		Nylon	PVDF	PES	PVDF
50 pack	0.1	6786-1301	-	-	-
	0.2	6786-1302	6791-1302	6780-1302	6778-1302
	0.45	-	6791-1304	6780-1304	-

Ordering Information - Puradisc 25 mm Syringe Filters Without Tube Tip

Quantity/ Pack	Pore Size (µm)	Non-Sterile Membranes:						Sterile Membranes:
		Nylon	PVDF	PTFE	PP	AS (PES)	Glass Microfiber*	PES
50	0.1	-	-	6784-2501	-	-	-	-
	0.2	6750-2502	6746-2502	6784-2502	6786-2502	-	-	6780-2502
	0.45	6750-2504	6746-2504	6784-2504	6786-2504	-	-	6780-2504
	1.0	6750-2510	-	6784-2510	-	-	-	6780-2510
	0.7 GF/F	-	-	-	-	-	6825-2517	-

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Quantity/ Pack	Pore Size (µm)	Non-Sterile Membranes:						Sterile Membranes:
		Nylon	PVDF	PTFE	PP	AS (PES)	Glass Microfiber*	PES
100	1.0 GD 1	-	-	-	-	-	6783-2510	-
	2.0 GD 2	-	-	-	-	-	6783-2520	-
200	0.2	6751-2502	-	6785-2502	6788-2502	6781-2502	-	-
	0.45	6751-2504	6747-2504	6785-2504	6788-2504	6781-2504	-	-
	1.0	6751-2510	-	-	-	6781-2510	-	-
	0.7 GF/F	-	-	-	-	-	6825-2527	-
300	0.2	-	-	-	-	6759-2502	-	-
	0.45	-	-	-	-	6759-2504	-	-
500	0.45	6752-2504	-	-	-	-	-	
1000	0.1	-	-	6798-2501	-	-	-	-
	0.2	6753-2502	-	6798-2502	-	6794-2502	-	6794-2512
	0.45	6753-2504	6749-2504	6798-2504	-	6794-2504	-	6794-2514
	1.0	6753-2510	-	6798-2510	-	-	-	-
	1.0 GD 1	-	-	-	-	-	6792-2510	-

* Particle Retention Rating

Ordering Information - Puradisc FP30 Syringe Filters

Catalog Number	Description	Diameter (mm)	Pore Size (µm)	Membrane/ Housing	Connection ¹ In/Out	Color Code	Quantity/Pack
Individually Sterile Packed							
10 462 200	FP 30 CA-S ²	30	0.2	CA/PC	LLF/LM	red	50
10 462 205	FP 30 CA-S ²	30	0.2	CA/PC	LLF/LLM	red	50
10 462 100	FP 30 CA-S ²	30	0.45	CA/PC	LLF/LM	white	50
10 462 240	FP 30 CA-S	30	0.8	CA/PC	LLF/LM	green	50
10 462 260	FP 30 CA-S	30	1.2	CA/PC	LLF/LM	orange	50
10 462 000	FP 30 CN-S	30	5.0	CN/PC	LLF/LM	black	50
Non-sterile							
10 462 701	FP 30 CA	30	0.2	CA/PC	LLF/LM	red	50
10 462 710	FP 30 CA	30	0.2	CA/PC	LLF/LM	red	100
10 462 700	FP 30 CA	30	0.2	CA/PC	LLF/LM	red	500
10 462 206	FP 30 CA	30	0.2	CA/PC	LLF/LLM	red	500
10 462 601	FP 30 CA	30	0.45	CA/PC	LLF/LM	white	50
10 462 610	FP 30 CA	30	0.45	CA/PC	LLF/LM	white	100
10 462 600	FP 30 CA	30	0.45	CA/PC	LLF/LM	white	500
10 462 241	FP 30 CA	30	0.8	CA/PC	LLF/LM	green	50
10 462 243	FP 30 CA	30	0.8	CA/PC	LLF/LM	green	500
10 462 261	FP 30 CA	30	1.2	CA/PC	LLF/LM	orange	50
10 462 263	FP 30 CA	30	1.2	CA/PC	LLF/LM	orange	500

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Catalog Number	Description	Diameter (mm)	Pore Size (µm)	Membrane/ Housing	Connection ¹ In/Out	Color Code	Quantity/Pack
10 462 520	FP 30 CN	30	5.0	CN/PC	LLF/LM	black	50
10 462 510	FP 30 CN	30	5.0	CN/PC	LLF/LM	black	100
10 462 500	FP 30 CN	30	5.0	CN/PC	LLF/LM	black	500
10 462 655	GW 30 CA	30	0.45	CA/PC	LLF/LM	white	100
10 462 650	GW 30 CA	30	0.45	CA/PC	LLF/LM	white	500

CA – Cellulose acetate
 CN – Cellulose nitrate
 GF – Glass fiber
 PES – Polyethersulfone
 PP – Polypropylene

PTFE – Teflon

RC – Regenerated cellulose

¹ LLF – Luer-lock female; LM – Luer male; LLM – Luer-lock male

² Non-pyrogenic according to LAL test (USPXXIII), sensitivity: 0.25 EU/ mL

ReZist®

For solutions and aerosol separation and venting Whatman offers ready-to-use filter units with an integral filter to retain fine contaminants.

ReZist Membrane Filter Type

Hydrophobic PTFE membranes are used for the clarification of aggressive organic solvents.

ReZist for HPLC Sample Preparation

Features and Benefits

- Hydrophobic PTFE membrane laminated with polypropylene
- First-class chemical resistance against the usual organic HPLC solvents
- 13 mm diameter with Mini-Tip outlet is ideal for filtration into very small sample bottles
- 13 mm diameter with extremely low dead volume <10 µL for optimal utilization of small sample volumes



ReZist 13 mm PTFE and ReZist 30 mm PTFE

ReZist for Air-Venting

Features and Benefits

- With integral permanently hydrophobic PTFE membranes
- With polypropylene support for extremely high resistance

Typical Applications - ReZist

Prefiltration of difficult-to-filter aqueous or organic solutions containing particles	ReZist 30/GF92
Filtration of organic solutions in HPLC	ReZist
Filtration of aggressive solutions	
1 µm membrane for prefiltration of loaded solutions	
Moisture barrier when venting	ReZist 30
Air sterilization for tubing systems	
Aerosol separation for protecting vacuum pumps	
Sterile venting of small volumes	
For the sterile venting of small fermenters and culture vessels	ReZist 50
Aerosol separation for protecting vacuum pumps	

PTFE – Teflon
 GF – Glass fiber

Ordering information - ReZist

Description	Diameter (mm)	Pore Size (µm)	Membrane/Housing*	Connection* In/Out	Color Code	Quantity/Pack	Catalog Number
ReZist 30/GF92	30	-	GF/PP	LLF/LLM	natural	100	10 463 543
ReZist 30/GF92	30	-	GF/PP	LLF/LLM	natural	500	10 463 545
ReZist 13 PTFE	13	0.2	PTFE/PP	LLF/Mini-Tip	white	100	10 463 703
ReZist 13 PTFE	13	0.45	PTFE/PP	LLF/Mini-Tip	green	100	10 463 713
ReZist 30 PTFE	30	0.2	PTFE/PP	LLF/LM	white	100	10 463 503
ReZist 30 PTFE	30	0.2	PTFE/PP	LLF/LM	white	500	10 463 505
ReZist 30 PTFE	30	0.45	PTFE/PP	LLF/LM	green	100	10 463 513
ReZist 30 PTFE	30	0.45	PTFE/PP	LLF/LM	green	500	10 463 515
ReZist 30 PTFE	30	1.0	PTFE/PP	LLF/LM	yellow	100	10 463 523
ReZist 30 PTFE	30	1.0	PTFE/PP	LLF/LM	yellow	500	10 463 525
ReZist 30 PTFE	30	5.0	PTFE/PP	LLF/LM	grey	100	10 463 533
ReZist 30 PTFE	30	5.0	PTFE/PP	LLF/LM	grey	500	10 463 535
ReZist PTFE-S**	30	0.2	PTFE/PP	LLW/LM	white	50	10 463 500
ReZist PTFE-S**	30	0.45	PTFE/PP	LLW/LM	green	50	10 463 510
ReZist PTFE-S**	30	5.0	PTFE/PP	LLW/LM	grey	50	10 463 530
ReZist PTFE-S**	50	0.2	PTFE/PP	TN/TN	-	10	10 463 607 contd>

Description	Diameter (mm)	Pore Size (µm)	Membrane/Housing*	Connection* In/Out	Color Code	Quantity/Pack	Catalog Number
ReZist PTFE-S**	50	0.45	PTFE/PP	TN/TN	-	10	10 463 610
ReZist 50 PTFE	50	0.2	PTFE/PP	TN/TN	-	10	10 463 608
ReZist 50 PTFE	50	0.2	PTFE/PP	TN/TN	-	50	10 463 609
ReZist 50 PTFE	50	0.45	PTFE/PP	TN/TN	-	10	10 463 611
ReZist 50 PTFE	50	0.45	PTFE/PP	TN/TN	-	50	10 463 612

* GF – Glass fiber
 ** Sterile, non-pyrogenic according to LAL test (USPXXIII), sensitivity: 0.25 EU/mL
 PP – Polypropylene
 PTFE – Teflon
 LLF – Luer-lock female; LM – Luer male; LLM – Luer-lock male
 TN – Tubing nozzle 6-14 mm with luer inner cone

SPARTAN® - HPLC Certified

SPARTAN is certified batch to batch with solvents used in HPLC such as acetonitrile, methanol and water. It has the controlled and guaranteed lowest fraction of UV-absorbing extractables.

You can download your batch certificate from the internet at <http://www.whatman.com/hplc-certificate>. This means that the unequalled purity of each batch is documented. Simply enter the catalog number and batch number and you will receive the appropriate batch chromatogram together with the test conditions.

Features and Benefits

- Versatile use; ready-to-use filter unit with a hydrophilic, low protein binding membrane made of regenerated cellulose
- First-class chemical resistance against the most common aqueous and organic HPLC solvents
- SPARTAN 13 and 30 are tested and certified for UV-absorbing substances at wavelengths of 210 and 254 nm with water, methanol and acetonitrile; this means quality batch for batch

Application

- Filtration of organic and aqueous solutions in HPLC for achieving reproducible results



SPARTAN Membrane Filter Type
Regenerated cellulose membranes have an excellent chemical resistance to organic solvents and can be used for the purification of both aqueous and organic solutions.



SPARTAN 13



SPARTAN 30

Ordering Information - SPARTAN Syringe Filters

Description	Diameter (mm)	Pore Size (µm)	Membrane/ Housing*	Connection* In/Out	Color Code	Quantity/ Pack	Catalog Number
SPARTAN 13 RC	13	0.2	RC/PP	LLF/Mini-Tip	dark brown	100	10 463 040
SPARTAN 13 RC	13	0.2	RC/PP	LLF/Mini-Tip	dark brown	500	10 463 042
SPARTAN 13 RC	13	0.2	RC/PP	LLF/LM	dark brown	100	10 463 100
SPARTAN 13 RC	13	0.2	RC/PP	LLF/LM	dark brown	500	10 463 102
SPARTAN 13 RC	13	0.45	RC/PP	LLF/Mini-Tip	light brown	100	10 463 030
SPARTAN 13 RC	13	0.45	RC/PP	LLF/Mini-Tip	light brown	500	10 463 032
SPARTAN 13 RC	13	0.45	RC/PP	LLF/LM	light brown	100	10 463 110
SPARTAN 13 RC	13	0.45	RC/PP	LLF/LM	light brown	500	10 463 112
SPARTAN 30 RC	30	0.2	RC/PP	LLF/LM	dark brown	100	10 463 060
SPARTAN 30 RC	30	0.2	RC/PP	LLF/LM	dark brown	500	10 463 062
SPARTAN 30 RC	30	0.45	RC/PP	LLF/LM	light brown	50	10 463 053
SPARTAN 30 RC	30	0.45	RC/PP	LLF/LM	light brown	100	10 463 050
SPARTAN 30 RC	30	0.45	RC/PP	LLF/LM	light brown	500	10 463 052

* RC – Regenerated cellulose membrane
PP – Polypropylene
LLF – Luer-lock female; LM – Luer male

Syringe Filters - Automation

Whatman offers a complete line of disposable syringe filters for automation. These devices are designed to provide fast and efficient filtration of aqueous and organic solutions. They are made with a wide variety of membrane filters with a polypropylene housing using the most advanced methods and design features available today.

These syringe filters are compatible with Caliper Zymark and Sotax instrumentations and are ideal for numerous applications in pharmaceutical, environmental, biotechnology, food/beverage and agricultural testing laboratories. Whatman syringe filters for automation are composed of a pure polypropylene housing, heat sealed without the use of glues or sealants.



Roby 25

Filter for Automation

Roby 25 filters for robot systems have been specially developed for automatic sample preparation for the clarification of samples. A wide range of these ready-to-use filter holders fitted with various membrane filters is available. For difficult-to-filter samples, syringe filters with membrane and integral glass fiber prefilters or with glass fiber filters are available.



Roby 25



The filter housing is made from mechanically stable polypropylene. The external geometry of the filter housing ensures simple and smooth filter transport from the storage turntable to the filtration site and easy filter changing.

Roby 25 has been optimized for Sotax and Caliper tablet testers.

Applications

- Fine filtration of samples in the automatic tablet dissolution test
- Method development with the Roby 25 Filter Validation Kit

Roby 25 Filter Validation Kit

Features and Benefits

- Eight different types of filters: eight tubes each with 25 filter holders
- Filter validation protocol with filter selection aid
- All important selection tests explained step-by-step with all the important properties at a glance

Ordering Information - Roby 25 Syringe Filters

Description	Diameter (mm)	Pore Size (µm)	Membrane/Housing*	Connection* in/Out	Color Code	Quantity/Pack	Catalog Number
Roby 25/GF92	25	> 1	GF/PP	LLF/LM	natural	200**	10 463 801
Roby 25/GF92	25	> 1	GF/PP	LLF/LM	natural	1000	10 463 800
Roby 25/GF55	25	0.7	GF/PP	LLF/LM	-	200	10 463 814
Roby 25/GF55	25	0.7	GF/PP	LLF/LM	-	1000	10 463 815
Roby 25 NL	25	0.45	NL/PP	LLF/LM	printed	200**	10 463 803
Roby 25 NL	25	0.45	NL/PP	LLF/LM	printed	1000	10 463 802
Roby 25 NL-GF92	25	0.45	NL-GF/PP	LLF/LM	yellow	200**	10 463 805
Roby 25 NL-GF92	25	0.45	NL-GF/PP	LLF/LM	yellow	1000	10 463 804
Roby 25 RC	25	0.45	RC/PP	LLF/LM	printed	200**	10 463 807
Roby 25 RC	25	0.45	RC/PP	LLF/LM	printed	1000	10 463 806
Roby 25 RC-GF92	25	0.45	RC-GF/PP	LLF/LM	brown	200**	10 463 809
Roby 25 RC-GF92	25	0.45	RC-GF/PP	LLF/LM	brown	1000	10 463 808
Roby 25 CA-GF92	25	0.45	CA-GF/PP	LLF/LM	green	200**	10 463 813
Roby 25 CA-GF92	25	0.45	CA-GF/PP	LLF/LM	green	1000	10 463 812
Filter Validation Kit ¹						200	10 463 898

¹ Kit includes: Roby 25/GF92; Roby 25/GF55; Roby 25/RC; Roby 25/RC-GF92; Roby 25 NL; Roby 25 NL-GF92; Roby 25 CA; Roby 25 CA-GF92.

* CA – Cellulose acetate
GF – Glass fiber

PP – Polypropylene
NYL – Nylon
RC – Regenerated cellulose
LLF – Luer-lock female; LM – Luer male
** 8 tubers with 25 pieces each

ZC

Filters for Automation

ZC disposable robotic/syringe filters are designed to be fully compatible with the Caliper Life Sciences Benchmate and other Caliper robotic systems. The ZC syringe filters feature a polypropylene housing and contain a prefilter stack of Whatman graded density Multigrade GMF 150 and GF/F glass microfiber, which increases loading capacity and significantly reduces back pressure when difficult samples are filtered.

These devices offer an effective alternative to single layer devices and prevent premature membrane clogging.

Features

- 13 mm diameter syringe filters
- For sample volumes up to 10 mL
- High loading capacity for difficult samples
- Choice of membranes and pore sizes available for wide sample compatibility
- Suitable for manual and automated processes

Applications

- Automated sample filtration
- Tablet dissolution tests

Typical Data - ZC Syringe Filters

	13 mm ZC
Housing	Polypropylene
Dimensions	21.7 mm x 29.7 mm
Weight	3 g (approx)
Filtration Area	1.3 cm ²
Glass Microfiber	100% borosilicate
Maximum Pressure	100 psi
Volume 'Hold Up'	0.5 mL
Full Housing with Air Purge	50 µL (approx)
Inlet Connection	Female slip luer
Outlet Connection	Male slip luer
Prefiltration Media	GMF 150 10 µm : 1 µm and GF/F 0.7 µm
Sterilization	Autoclave at 121°C (max 131°C) at 15 psi for 20 minutes
Biosafe	All materials pass USP Class VI

Ordering Information - ZC Syringe Filters

Catalog Number	Membrane	Pore Size (µm)	Hydrophilic	Protein Binding	Solvent Resistance	Quantity/Pack
13 mm ZC Syringe Filters						
6840-1304	Nylon	0.45	Yes	High	Good	200
6841-1302	Nylon	0.2	Yes	High	Good	1000
6842-1304	PVDF	0.45	Yes	Low	Good	200
6843-1304	PVDF	0.45	Yes	Low	Good	1000
6844-1302	PTFE	0.2	No	Low	Excellent	200
6844-1304	PTFE with Prefilter	0.45	No	Low	Excellent	200

Syringeless Filters

Whatman syringeless filters are pre-assembled convenient filtration devices for removing particulates from samples. They replace syringe-coupled filtration devices with single, disposable units. Whatman has made sample preparation easier, faster and more efficient with its innovative product line of syringeless filters.

Autovial™ Syringeless Filters

Autovial syringeless filters are preassembled filtration devices for removing particulates from samples. They replace syringe-coupled filtration devices with single, disposable units.

Autovial devices are comprised of two parts: a graduated filter barrel and a plunger. The proven design features an integral filter, built-in air purge and a support stand that protects the recessed slip-luer tip. They are available in a 5 mL and 12 mL volume capacity.



The Autovial filter is selected according to membrane compatibility with the sample. In practice, the sample is poured into the 5 mL or 12 mL capacity filter barrel. A plunger is inserted into the barrel until the bottom is securely in place; there is a gap of air between the sample and plunger. Then, the tip of the Autovial is placed into the mouth of an autosampler vial or container and the plunger compressed. Filtration begins immediately and, as the plunger is compressed until it reaches the bottom, the membrane is purged with air for maximum sample recovery. For direct instrument injection, a needle is placed on the Autovial slip-luer outlet.

Features and Benefits

- Single unit convenience saves time. No assembly required – easier to load.
- Choice of filter media. Compatible with a wide range of sample types.
- Ideal for hazardous samples. Self contained device eliminates risk of filter pop-off.
- Built-in air purge maximizes sample recovery
- Sterile option available to maintain sample integrity
- Unique prefilter design for difficult-to-filter samples

Autovial membranes are available for various applications:

- CA: Cellulose Acetate - low non-specific protein binding and high loading capacity membrane for biological solutions
- GMF: Glass microfiber depth filter for samples in aqueous or organic solutions
- NYL: Nylon membrane for aqueous and organic samples within a pH range of 3-10
- PTFE: Polytetrafluorethylene - Teflon® membrane for samples with > 50% organic solvent
- PVDF: Polyvinylidene Fluoride - low non-specific protein binding membrane for samples in aqueous solutions and/or organic solvents
- PSU: Polysulfone – low non-specific protein binding membrane for samples in aqueous solutions

Patent # 4,859,336

Typical Data - Autovial Syringeless Filters

	Autovial 5	Autovial 12
Housing	Polypropylene	Polypropylene
Filtration Area	1.7 cm ²	3.0 cm ²
Capacity	5 mL	12 mL
Volume 'Hold Up'	30 µL	140 µL
Outlet Connection	Male slip luer	Male slip luer
Autoclavable	121° C for 20 minutes	121° C for 20 minutes

Ordering Information - Autovial Syringeless Filters

	Catalog Number	Membrane	Pore Size (µm)	Sterile	Quantity/Pack
Autovial 5					
	AV115NPEORG	PTFE	0.2	No	50
	AV115NPUORG	PTFE	0.45	No	50
	AV115NPUNYL	Nylon	0.45	No	50
	AV115UGMF	GMF	0.45*	No	50
	AV115NPUAQU	PVDF	0.45	No	50
Autovial 12					
	AV125UGMF	GMF	0.45*	No	50
	AV125ENAO	Nylon	0.2	No	50
	AV125SNAO	Nylon	0.2	Yes	40
	AV125SORG	PTFE	0.2	Yes	40
	AV125SAQU	PVDF	0.2	Yes	40
	AV125UNAO	Nylon	0.45	No	50
	AV125EPP	PP	0.2	No	50
	AV125EORG	PTFE	0.2	No	50
	AV125UORG	PTFE	0.45	No	50
	AV125EAQU	PVDF	0.2	No	50
	AV125UAQU	PVDF	0.45	No	50
	AV125UCA	CA	0.45	No	50
	AV125NPUAQU**	PVDF	0.45	No	50
	AV125NPUSU**	PSU	0.45	No	50
	AV525UORG	PTFE	0.45	No	1000
	AV525UAQU	PVDF	0.45	No	1000
	AV525UNAO	Nylon	0.45	No	1000
	AV525BGMF	GF/B	1.0	No	1000
	AV125UPP	AV12	0.45	PP	50
	AV12URCT	AV12	0.45	GMF	75
Autovial Accessories					
Autovial Stand - 4 mL Vial Size	AVST25040				4

* Particle retention rating

** No prefilters

Mini-UniPrep™ Syringeless Filters

Simple, Innovative, Convenient

The Whatman Mini-UniPrep syringeless filters, now with a new durable plastic cap, provide a faster, easier way to remove particulates from samples being prepared for High Performance Liquid Chromatography (HPLC) analysis. In fact, Mini-UniPrep lets you prepare samples in one third the time required by other methods. Add up the time savings, plus the money saved from cutting multiple consumables out of the sample preparation process and you'll see huge benefits for your laboratory.

Mini-UniPrep is a pre-assembled filtration device consisting of a 0.4 mL capacity chamber and a plunger. The plunger contains a filtration membrane at one end and a pre-attached cap/septum at the other. The plunger is pressed through the sample in the outer chamber and positive pressure forces the filtrate into the reservoir of the plunger. Air escapes through the vent hole until the locking ring is engaged providing an air-tight seal. Within seconds the Mini-UniPrep can be placed into any approved autosampler for injection into your instrument.

The device can be used either manually or with one of the compressor units available. The new multi compressor can process up to 6 samples at one time, further improving sample processing time and reducing the risk of hand stress. The Mini-UniPrep device is designed to fit into any autosampler designed to accommodate 12 x 32 mm vials. Alternatively the septum can be pierced with a needle and the sample drawn off for manual injection into an analyzer.

Features and Benefits

- All-in-one filtration process allows you to process sample loads in one-third the time
- Wide range of membrane choices from 0.2 and 0.45 µm pore sizes to meet specific sample application requirements
- Compatible with most major autosamplers
- Fewer consumables required - lower costs by up to 40 percent

Applications

- Routine analysis
- Composite assays
- Content uniformity
- Protein precipitation
- Solubility testing
- Dissolution testing
- Sample filtration



Mini-UniPrep



Mini-UniPrep Automated



Six Position Compressor

A Variety of Mini-UniPrep Filters to Meet Your Needs

In a process of continuous improvement and innovation, Whatman has listened to customers and created a whole family of Mini-UniPrep filters to meet specific needs. For customers using robotics to maximize throughput, Whatman offers Slit Septa Mini-UniPrep. For customers who need to filter light sensitive samples, there is Amber Mini-UniPrep.

Amber Mini-UniPrep Syringeless Filter

Protects samples from UV damage.

Features and Benefits

- Amber colorant prevents photo degradation of light sensitive samples
- Same colorant used in pharmaceutical containers designed to meet USP specifications for light resistance
- Translucent amber chamber and plunger enable easy visual inspection

Applications

- Use with any compound that requires protection from light, such as catecholamines or vitamins



Amber Mini-UniPrep

Slit Septa Mini-UniPrep Syringeless Filter

For high throughput automation.

Features and Benefits

- Slit septum cap enables Mini-UniPrep use with current robotics on HPLC instruments for high throughput automation
- Durable yet flexible slit septum cap has been specially designed for instruments with sensitive sampling needs. Sample evaporation is minimal.

Applications

- Use with standard robotics on HPLC instruments with sensitive needles, allowing for higher throughput



Mini-UniPrep HPLC Instrument

Choose the Right Mini-UniPrep Filtering Media

Sample Type	Suitable Mini-UniPrep Media
Particulate laden liquids	Glass Microfiber (GMF)
Aqueous/organic samples in 3 to 10 pH range	Nylon (NYL)
General filtration media/solvent based samples	Polypropylene (PP)
Chemically aggressive solutions	Polytetrafluoroethylene (PTFE)
Biological samples requiring low protein binding media	Polyethersulfone (PES)
Aqueous/organic solvents-low non-specific protein binding media	Polyvinylidene fluoride (PVDF)
Aqueous/organic solvents-high flow and loading capacity	Polypropylene Depth (dpPP)

Typical Data - Mini-UniPrep Syringeless Filters

Dimensions	Equivalent in size to 12 mm x 32 mm vials
Materials of Construction	
Housing and Cap	Polypropylene
Filter Media	As specified
Septa	PTFE coated silicone rubber
Filtering Capacity	0.4 mL
Nominal Force Needed to Compress	Approximately 18 lbs/8.2 Kg
Maximum Operating Temperature	120° F (50° C)

Ordering Information - Mini-UniPrep Syringeless Filters

Catalog Number	Pore Size (µm)	Media	Quantity/Pack
Standard Cap - Translucent Housing			
UN203NPEAQU	0.2	PVDF	100
UN203NPENYL	0.2	Nylon	100
UN203NPEORG	0.2	PTFE	100
UN203NPEPES	0.2	PES	100
UN203NPEPP	0.2	PP	100
UN203NPUAQU	0.45	PVDF	100
UN203NPUDPP	0.45	Dp PP	100
UN203NPUGMF	0.45	GMF	100
UN203NPUNYL	0.45	Nylon	100
UN203NPUORG	0.45	PTFE	100
UN203NPUPES	0.45	PES	100
UN203NPUPP	0.45	PP	100
UN503NPEAQU	0.2	PVDF	1000
UN503NPENYL	0.2	Nylon	1000
UN503NPEORG	0.2	PTFE	1000
UN503NPEPES	0.2	PES	1000

contd >

Catalog Number	Pore Size (µm)	Media	Quantity/Pack
Slit Septa for Automated Samples - Translucent Housing			
UN203NPERC	0.2	RC	100
UN503NPERC	0.2	RC	1000
UN503NPEPP	0.2	PP	1000
UN203NPURC	0.45	RC	100
UN503NPURC	0.45	RC	1000
UN503NPUAQU	0.45	PVDF	1000
UN503NPUDPP	0.45	Dp PP	1000
UN503NPUGMF	0.45	GMF	1000
UN503NPUNYL	0.45	Nylon	1000
UN503NPUORG	0.45	PTFE	1000
UN503NPUPES	0.45	PES	1000
UN503NPUPP	0.45	PP	1000
US203NPEAQU	0.2	PVDF	100
US203NPENYL	0.2	Nylon	100
US203NPEORG	0.2	PTFE	100
US203NPEPES	0.2	PES	100
US203NPEPP	0.2	PP	100
US203NPUAQU	0.45	PVDF	100
US203NPUDPP	0.45	Dp PP	100
US203NPUGMF	0.45	GMF	100
US203NPUNYL	0.45	Nylon	100
US203NPUORG	0.45	PTFE	100
US203NPUPES	0.45	PES	100
US203NPUPP	0.45	PP	100
US503NPEAQU	0.2	PVDF	1000
US503NPENYL	0.2	Nylon	1000
US503NPEORG	0.2	PTFE	1000
US503NPEPES	0.2	PES	1000
US503NPEPP	0.2	PP	1000
US503NPUAQU	0.45	PVDF	1000
US503NPUDPP	0.45	Dp PP	1000
US503NPUGMF	0.45	GMF	1000
US503NPUNYL	0.45	Nylon	1000
US503NPUORG	0.45	PTFE	1000
US503NPUPES	0.45	PES	1000
US503NPUPP	0.45	PP	1000

contd >

Catalog Number	Pore Size (µm)	Media	Quantity/Pack
Amber for Light Sensitive Samples - Standard Cap			
UN203APEAQU	0.2	PVDF	100
UN203APENYL	0.2	Nylon	100
UN203APEORG	0.2	PTFE	100
UN203APEPES	0.2	PES	100
UN203APEPP	0.2	PP	100
UN203APUAQU	0.45	PVDF	100
UN203APUDPP	0.45	Dp PP	100
UN203APUGMF	0.45	GMF	100
Amber for Light Sensitive Samples Slit Septa Cap			
UN203APUNYL	0.45	Nylon	100
UN203APUORG	0.45	PTFE	100
UN203APUPES	0.45	PES	100
UN203APUPP	0.45	PP	100
Six Position Compressor Accessory			
CR0000006			1

UniPrep® Syringeless Filters

UniPrep syringeless filters are preassembled filtration devices for the filtration and storage of laboratory samples. These devices are quick and easy to use and feature a plunger, filter and vial in one unit. They replace syringe-coupled filtration devices with single, disposable units.

UniPrep devices consist of two parts: A test tube and a filter-plunger. The design incorporates a prefilter and a membrane into the tip of the plunger. When the filter plunger is pressed through the liquid placed in the test tube, positive pressure forces the filtrate up into the reservoir of the filter-plunger.



Features and Benefits

- Integral storage vial saves time and minimizes laboratory waste
- Built-in prefilters means even difficult samples are quick and easy to prepare
- Choice of membranes for wide sample compatibility

Applications

- Sample preparation
- Difficult-to-filter samples
- Quick filtration of samples

The UniPrep syringeless filter is selected based on compatibility with the sample in use. In manual operation, the filter-plunger, after the tip comes in contact with the liquid, is slowly pushed into the test tube until it stops at the bottom. The UniPrep is emptied either by decanting into a sample or autosampler vial or by drawing the filtered sample into a syringe for manual injection into an instrument.

UniPrep membranes are available for various applications:

- GMF: Layered glass microfiber depth filter for use with samples containing aqueous organic solvents
- NYL: Naturally hydrophilic membrane for filtration of samples containing aqueous or organic solvents with a pH range of 3-10
- PTFE: Chemically inert Teflon membrane for filtration of samples containing > 50% organic solvent
- PVDF: Low protein binding membrane for filtration of samples with aqueous or aqueous/organic solvent composition

Typical Data - UniPrep Syringeless Filters

Housing	Polypropylene
Filtration Area	0.3 cm ²
Capacity	1-5 mL
Volume 'Hold Up'	50 µL
Autoclavable	121° C for 20 minutes

Ordering Information - UniPrep Syringeless Filters

Catalog Number	Membrane	Pore Size (µm)	Sterile	Quantity/Pack
UN113EORG	PTFE	0.2	No	50
UN113UORG	PTFE	0.45	No	50
UN113UNYL	Nylon	0.45	No	50
UN113UGMF	GMF	0.45*	No	50
UN113EAQU	PVDF	0.2	No	50
UN113UAQU	PVDF	0.45	No	50
UN113ENYL	Nylon	0.2	No	50

* Particle Retention Rating

Vacuum Protection Filters

VACU-GUARD™

These easy-to-use in-line filter devices help to confine and isolate infectious materials in vacuum systems and protect your laboratory.

Features and Benefits

- Ideal for protecting vacuum pump systems from solvent vapor or gaseous contaminants and aqueous aerosols
- Designed for in-line use with stepped barb connections for 10-12 mm ID hose
- Available with choice of chemical trap: activated carbon, molecular sieve or desiccant
- Membrane retains 99.99% of airborne particles greater than 0.1 µm
- Features hydrophobic PTFE membrane

Applications

- Vacuum pump protection
- Activated carbon removes organic vapors and radioactive particles
- Molecular sieve for use with organic and alkaline air streams
- Desiccant for use with high velocity acidic air streams
- Eliminates a potential health hazard from the work place

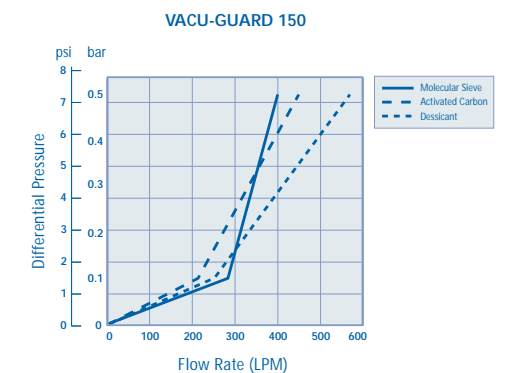


VACU-GUARD



VACU-GUARD 150

Air Flow Rates*



* Flow rates are indicative and vary by type of end fitting

Typical Data - VACU-GUARD

Housing Type	Maximum Pressure	Filtration Media	Connections	Retentions
Polypropylene	1 Bar (15 psi)	PTFE	6722-5000 (50mm)	Aqueous Solutions:
			6-10 mm (1/4"- 3/8") SB (Stepped Barb)	up to 0.9 bar (14psi)
			6722-5001 (60mm)	Particulates in Air:
			10-12 mm (3/8"-1/2") SB (Stepped Barb)	0.1 µm 99.99%

Typical Data - VACU-GUARD 150

Product	VACU-GUARD 150	VACU-GUARD 150	VACU-GUARD 150
	Activated Carbon	Desiccant	Molecular Sieve
Chemical Trap Media	Activated Carbon	Anhydrous Calcium Sulfate	Silico Aluminate Zeolite
Filter Media ¹	PTFE	PTFE	PTFE
Surface Area ² or Weight (nominal)	82,000 m ² (Carbon)	318 g (Desiccant)	318 g (Zeolite)
Connectors - Inlet/Outlet *	HB/SB	HB/SB	HB/SB
Maximum Operating Pressure			
Dry Gas	60 psi	60 psi	60 psi
Wet Gas	14 psi	14 psi	14 psi

¹ PTFE – Polytetrafluoroethylene

SB – Stepped Barb: 3/8" - 1/2" (10-12 mm) - outlet

² For 50 mm disc = 16 cm²; 60 mm = 25 cm²

For 50 mm disc = SB; 60 mm disc = HB

* HB – Hose Barb 1/2 cm² - inlet

Ordering Information - VACU-GUARD and VACU-GUARD 150

Catalog Number	Chemical Media ¹	Housing Type	Quantity/Pack
VACU-GUARD 150			
6722-1001	Activated Carbon	Capsule	1
6722-1002	Desiccant	Capsule	1
6722-1003	Molecular Sieve	Capsule	1
VACU-GUARD			
6722-5000	PTFE	50 mm Disc	10
6722-5001	PTFE	60 mm Disc	10

¹ PTFE – 0.2 µm polytetrafluoroethylene

Vacuum Specialty Devices

Whatman offers a unique line of disposable specialty filter devices designed to provide fast and efficient filtration of aqueous and organic solutions. They are made with a wide variety of different membrane filters with a polypropylene housing using the most advanced methods and design features available today.

Disposable Filter Funnels

The Whatman Disposable Filter Funnels, available in 25 mm and 47 mm diameters, are convenient filter funnels containing Whatman brand filter media. The filter media can be easily removed for further analysis. The unit is composed of medical grade polypropylene, compatible with most solutions.

25 mm Disposable Filter Funnel

The 25 mm Disposable Filter Funnel is a convenient, disposable filter funnel containing Whatman brand filter media. This 25 mm diameter filter can be used in evaluation of processed proteins in TCA precipitation or binding assay procedures and can be easily removed for further analysis or culturing.

The 25 mm Disposable Filter Funnel is available with glass microfiber filters. Typical applications include TCA precipitation, cell harvesting, tissue washing, protein precipitation and high recovery capture filtration.

Chemical Resistance

Both are compatible with aqueous solutions and most organic solvents. Caution should be used when working with strong acids or strong bases in these filter funnels.

Features and Benefits

- Disposable design eliminates dedicated glassware, ideal for radioactive applications
- Chemically resistant polypropylene housing allows for use with a wide range of aggressive solutions
- Designed for single use or batch sample processing
- Robotic friendly
- Removable filter allows for further processing
- Luer taper outlet for easy vacuum attachment



47 mm Disposable Filter Funnel

The 47 mm Disposable Filter Funnel is a convenient, disposable unit containing Whatman brand media. The 47 mm diameter filter can be easily removed for further analysis or culturing.

Features and Benefits

- 47 mm diameter Whatman brand filter
- Retrievable filter for further analysis
- Disposable for cleanliness and convenience
- 250 mL reservoir
- 0.45 µm cellulose nitrate available sterile for culturing



Ordering Information - 25 mm Disposable Filter Funnel

Catalog Number	Filter Media	Nominal Particle Retention (µm)	Volume Capacity	Quantity/Pack
1922-1820	Grade GF/A	1.6	30 mL	50
1922-1822	Grade GF/C	1.2	30 mL	50

Ordering Information - 47 mm Disposable Filter Funnel

Catalog Number	Filter Media	Nominal Particle Retention (µm)	Volume Capacity	Quantity/Pack
1920-1441	Grade 41	20-25	250 mL	5
1920-7001	WCN 0.45 µm Grid Sterile	0.45	250 mL	5
1920-7113	WCN 0.45 µm Grid Sterile with Pads	0.45	250 mL	50

AUTOCUP™ Disposable Filter Funnel

The AUTOCUP filter funnel is a convenient, disposable device for batch filtration of samples. Designed specifically for use with automated systems, AUTOCUP can also be used with a standard flask or manifold under vacuum. The device is fully compatible with Zymark automated systems.

AUTOCUP is manufactured from pigment-free polypropylene and contains a choice of Nylon or PTFE membrane for use with aqueous and solvent solutions.

Features and Benefits

- 20 mL sample volume, ideal for batch processing of laboratory samples
- Manufactured using no adhesives or additives and ensures sample purity
- Versatile and easy to use and suitable for use under vacuum or in automated systems

Applications

- Drug discovery synthesis
- Sample clarification
- Sample filtration
- Combinatorial chemistry
- Batch preparation



Typical Data - AUTOCUP Disposable Filter Funnel

Housing	Polypropylene
Volume	20 mL
Filtration Area	4.7 cm ²
Filter Diameter	25.7 mm
Maximum Pressure	10 psi

Ordering Information - AUTOCUP Disposable Filter Funnel

Catalog Number	Membrane	Pore Size (µm)	Quantity/Pack
1602-0465	Nylon	0.45	250
1602-0475	PTFE	0.45	250

FilterCup™

The FilterCup is a disposable filter funnel available with a range of 70 mm Whatman brand filter media. This convenient device is molded from polypropylene with an integral, heat bonded filter for easy filtration.

Features and Benefits

- Choice of glass microfiber and cellulose filter media
- 250 mL capacity
- > 31 cm² filtration area



Chemical Compatibility - FilterCup

Dilute Acids	Recommended
Dilute Bases	Recommended
Alcohols: Aliphatic	Recommended
Aldehydes	Recommended
Esters	Recommended
Ketones	Recommended
Hydrocarbons: Aliphatic	Recommended
Hydrocarbons: Aromatic	Limited Applications
Hydrocarbons: Halogenated	Not Recommended

Note: Paper Grade 113 contains a wet-strengthening agent which may leach out when used with solvents

Ordering Information - FilterCup Disposable Filter Funnel

Catalog Number	Filter Media	Particle Retention Liquid (µm)	Quantity/Pack
1600-001	Grade 1	11	25
1600-003	Grade 3	6	25
1600-113	Grade 113	30	25
1600-820	Grade GF/A	1.6	25
1600-822	Grade GF/C	1.2	25
1600-825	Grade GF/F	0.7	25
FilterCup Stem with Stopper			
1600-900	-	-	1

Filter Tubes

Versatile Whatman Filter Tubes are designed to prepare and filter samples in batches using standard SPE vacuum manifolds and automated systems. The devices feature a rigid pigment-free polypropylene housing, a filter support and a choice of filter media.

The polypropylene housing is autoclavable for repeated use and ensures excellent chemical and biomolecule compatibility with minimum extractables. The filter media is securely welded into the tube to ensure that the filter cannot be bypassed and no sample is lost.

Filter Tubes are available with 1PS filters and PTFE membranes for chemical compatibility with solvents. The 1PS Filter Tube contains Whatman Phase Separator filter media and is ideal for the quick and easy separation of solvent and aqueous phase layers.

Features and Benefits

- 6, 12 and 60 mL tube capacities
- Autoclavable, saving time and money in the laboratory
- Wide solvent compatibility is ideal for combinatorial chemistry applications



Applications

- Sample preparation and cleanup
- Combinatorial chemistry
- Drug synthesis
- Sample and batch filtration
- Custom made SPE device

Typical Data - Filter Tubes

Housing	Polypropylene (pigment free)
Inlet Connection	Standard tube opening
Outlet Connection	Male slip luer
Maximum Force	100 psi for PTFE (not available for 1PS)
Filtration Area:	
6 mL	1.2 cm ²
12 mL	1.4 cm ²
60 mL	5.3 cm ²
Weight:	
6 mL	3.2 g
12 mL	4.8 g
60 mL	18.8 g
Bubble Point for PTFE Filter Tubes (in Isopropanol):	
1.0 µm	9 psi
5.0 µm	2 psi

Ordering Information - Filter Tubes

Catalog Number	Membrane	Pore Size (µm)	Capacity (mL)	Quantity/Pack
6984-0610	PTFE	1.0	6	50
6984-0650	PTFE	5.0	6	50
6984-1210	PTFE	1.0	12	40
6984-1250	PTFE	5.0	12	40
6987-0699	1PS	-	6	50
6987-1299	1PS	-	12	40
6987-6099	1PS	-	60	100

Bottle-top Filters

For Residue Analysis

VACUFLO

Features and Benefits

- Filter cakes can be used for microscopic analysis
- Complete units with tubing nozzle, 125 mL funnel and receiver vessel, both graduated
- Rapid filtration thanks to exchangeable mixed esters membrane filter 50 mm diameter with glass fiber prefilter

ZapCap®

For filtration of medium volumes, cell culture media and HPLC solutions.

Features and Benefits

- Complete 500 mL units with tubing nozzle; for attaching to bottles (bottle-top)
- Connection seals on any standard bottles 33-450 mm
- Membrane diameter 76 mm, filter area 39.2 cm²
- ZapCap-S with included borosilicate prefilter for high flow rates
- ZapCap-S Plus with integral borosilicate prefilter for very high flow rates
- ZapCap-CR, the chemical-resistant bottle-top filter
- Can be used up to 50° C



VACUFLO



ZapCap

Typical Applications - Bottle-top Filter Unit

Residue analysis in environmental analysis	VACUFLO
Filtration of cell culture media	ZapCap-S
1. Cellulose acetate membrane filters (CA) with extremely low protein binding for cell culture media and other aqueous solutions.	
2. Sterile filtration of solutions which cannot be autoclaved	
Sterile filtration and clarification of difficult-to-filter aqueous solutions	ZapCap-S Plus
Filtration of HPLC solutions	ZapCap-CR
1. Polyamide membrane filters (NL) for the retention of fine particles and microorganisms in HPLC/FPLC solutions when the column packing is 10 µm.	
2. PTFE membrane filters (TE) for the retention of particles in organic solutions, strong acids or aldehydes.	

Ordering Information - VACUFLO and ZapCap Bottle-top Filters

Description	Pore Size (µm)	Membrane/Housing*	Color Code	Quantity/Pack	Catalog Number
Residue analysis					
VACUFLO PV 050/3*	0.2	ME-GF/PS	blue	10	10 443 301
VACUFLO PV 050/2*	0.45	ME-GF/PS	white	10	10 443 311
Filtration of medium volumes, cell culture media					
ZapCap S CA ¹	0.2	CA/PS	-	12	10 443 401
ZapCap S CA ¹	0.45	CA/PS	-	12	10 443 411
ZapCap S Plus CA ¹	0.2	CA-GF/PS	-	12	10 443 430
ZapCap S Plus CA ¹	0.45	CA-GF/PS	-	12	10 443 435
Filtration of HPLC solutions					
ZapCap CR NL	0.2	NL/PP	-	12	10 443 421
ZapCap CR NL	0.45	NL/PP	-	12	10 443 423
ZapCap CR TE	0.45	TE/PP	-	12	10 443 425

¹ Sterilized by gamma radiation

* CA – Cellulose acetate

GF – Glass microfiber

NL – Nylon

PP – Polypropylene

PS – Polysulfone

Venting Filters

Whatman Venting Filters are disposable devices designed and manufactured with a high purity polypropylene housing to maintain sample purity and are available with a choice of filtration media to suit a range of venting applications. No glue, adhesive, metal, epoxy or other extraneous materials are used in construction. All seals are fused. This design provides the finest in disposable filter devices available today.

PolyWENT™/SteriVENT™

PolyWENT/SteriVENT is an integral filter product for sterile venting of vessels and tanks. These devices are constructed from a single, standardized set of materials - PTFE membranes and polypropylene housing - to simplify the approval process.

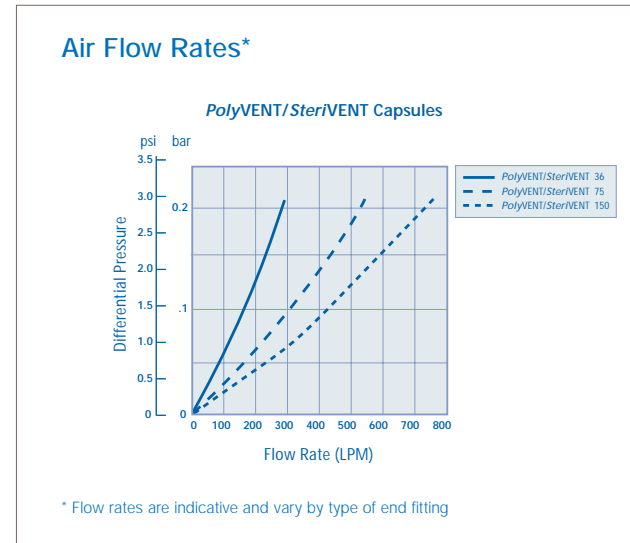
Features and Benefits

- Pass the HIMA Challenge Test for Sterilizing Grade
- Retain >107 CFU/cm² *Brevundimonas diminuta* per ASTM F838-83 standards; this microbial retention is correlated to 100% integrity testing during manufacturing (rated in liquid)
- Membrane made of hydrophobic 0.2 µm PTFE membrane
- Validated for 50 steam autoclave cycles; compatible with EtO
- Testable by Water Break Through (WBT) test or bubble point testing
- Pass USP Class VI biosafety tests for plastics
- Manufactured in clean room facilities
- Bi-directional and autoclavable



Applications

- Venting (filling)
- Isolation (incubators, autoclaves, lyophilizers, EtO sterilizers, fermenters)
- Electronics (gases)



Technical Properties - PolyVENT/SteriVENT

Housing	Polypropylene
Filter Media	PTFE (polytetrafluoroethylene)
Pore Size	0.2 μm
Vent	On inlet
Support System	Polypropylene
Sealing	Heat-fused
Maximum Pressure	29 psi (2 bar) – Forward direction
Water Break Through	29 psi (2 bar)/15 seconds
Flow Direction	Supported bi-directionally. Certain applications may require orientation, i.e. vents. The pressure rating is not the same in both directions. Reverse flow only for low-pressure applications.
Biosafety	Materials pass USP Class VI
Sterilization	Can be autoclaved at 121° C for 20 minutes (maximum 132° C). Multiple autoclave cycles are possible. However, the responsibility for reuse is with the operator. The device should be protected from cross contamination. An integrity test should be performed after autoclaving. Compatible with EtO sterilization.
Non-pyrogenic	LAL total, non-reactive
Filtration Area	36 mm Capsule: 500 cm ² 75 mm Capsule: 1,000 cm ² 150 mm: 2,000 cm ² 50 mm Disc: 16 cm ² 25 mm Disc: 4 cm ²

Ordering Information - PolyVENT/SteriVENT

Catalog Number	Membrane ¹	Pore Size (μm)	Housing Type	Connections*		Quantity/Pack
				Inlet	Outlet	
<i>PolyVENT/SteriVENT 36</i>						
6713-5036	PTFE	0.2	Capsule	SB	SB	1
2103	PTFE	0.2	Capsule	1/2" SB	1/2" SB	1
<i>PolyVENT/SteriVENT 75</i>						
6713-1075	PTFE	0.2	Capsule	1/2" SB	1/2" SB	1
<i>PolyVENT/SteriVENT 150</i>						
2107	PTFE	0.2	Capsule	1/2" SB	1/2" SB	1
2108	PTFE	0.2	Capsule	1 1/2" Sanitary	1 1/2" Sanitary	1
<i>PolyVENT Discs</i>						
6713-0425	PTFE	0.2	25 mm Disc	SB	SB	50
6713-1650	PTFE	0.2	50 mm Disc	SB	SB	10
6713-1651	PTFE	0.2	50 mm Disc	SB	SB	100

¹ PTFE – Polytetrafluoroethylene

* SB – Stepped Barb for 6-10 mm 1/4" - 3/8" tubing

1/2 SB – Stepped Barb for 10-2 mm 3/8" - 1/2" tubing

FNP – Female National Pipe Thread

BugStopper®

BugStopper is a unique, reusable closure, providing an ideal sterile vent for culture vessels. It replaces traditional methods of venting at minimal cost and maintains sample integrity. The device is manufactured from biosafe silicone rubber and the vent is a hydrophobic ultra-fine glass microfiber filter reinforced with polyester monofilament laminates. A stainless steel reinforcement ring surrounds the vent for added support.

The device prevents bacteria or viruses from entering or exiting the culture vessel while at the same time allowing the free passage of air and gases through the vent layer. It has a filter rating of 99.9% bacterial filtration efficiency (BFE) and viral efficiency (VFE).

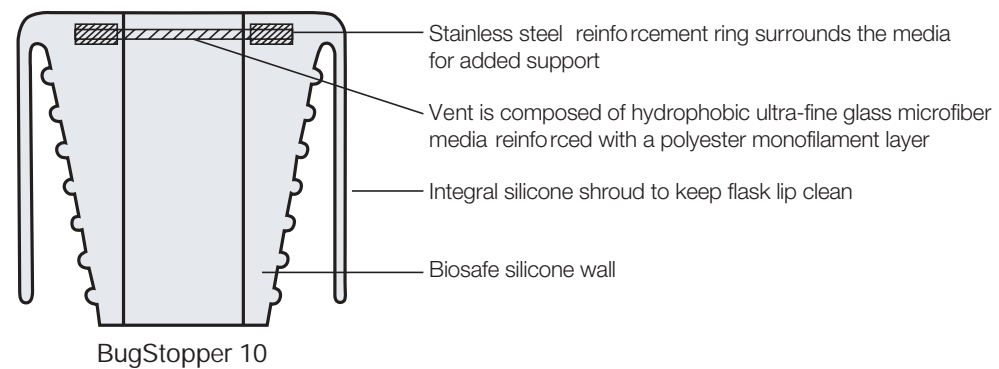
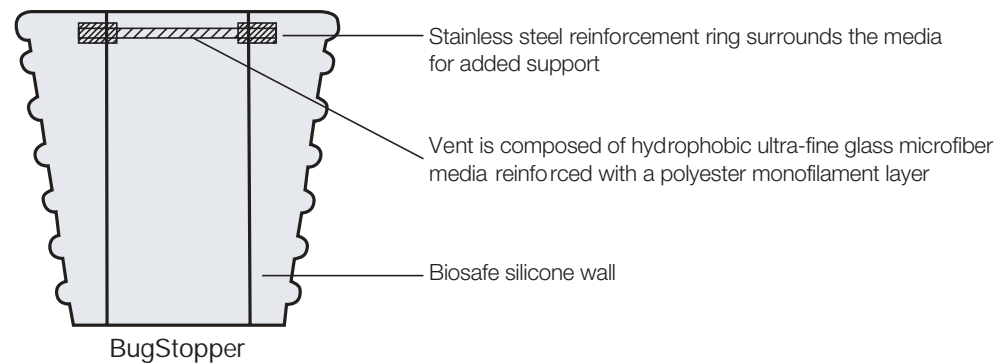
BugStopper is available in two sizes and simply pushes onto a variety of culture vessels. The device fits inside typical 250 mL to 2500 mL flasks and on the outside of typical 125 mL flasks. The silicone portion of the smaller BugStopper device can be penetrated with needles for use as a sample port or for gas infusion. BugStopper 10 fits flasks which accept size 8 1/2 to 10 1/2 stoppers.

Features and Benefits

- Autoclavable in use to maintain solution integrity
- Available in two sizes to fit a wide variety of culture flasks
- Repeated use minimizes cost
- Quick and easy-to-use BugStopper pushes into place and is ready to use

Applications

- Bacterial cultures
- Viral cultures
- Cell cultures



Typical Data - BugStopper

	BugStopper	BugStopper 10
Device	Biosafe silicone	Biosafe silicone
Vent Material	Hydrophobic Ultra-fine Glass Microfiber	Hydrophobic Ultra-fine Glass Microfiber
Support Ring	Stainless steel	Stainless steel
Top Diameter	43 mm	54 mm
Bottom Diameter:		
Internal	21 mm	22 mm
External	28 mm	37 mm

Ordering Information - BugStopper

Catalog Number	Description	Quantity/Pack
6713-3010	BugStopper	10
6713-3100	BugStopper	100
6713-6010	BugStopper 10	10
6713-6050	BugStopper 10	50

HEPA-VENT™ and HEPA-CAP™

HEPA filter media are used throughout the scientific, research and industrial environments in a variety of air and gas filtration applications where high retention, dirt-holding capacity and flow rates are required.



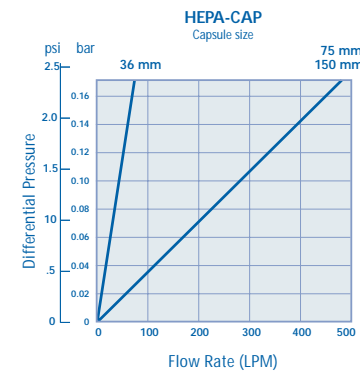
Features and Benefits

- Glass filter media strengthened by dual lamination with a tough polyester monofilament
- Retains 99.97% of all particles $\geq 0.3 \mu\text{m}$ in air
- Durable polypropylene housing
- High flow rates with low pressure drops across filter media, ensuring clean air passing in and out of vessels
- Suitable for particulate removal from air and gases, prefilter for suction or to serve gas inline filter
- Able to be sterilized by autoclaving with steam
- Available in a variety of end-fitting configurations
- Manufactured in clean room facilities under ISO Quality Systems
- Repeatedly autoclavable at 121°C for 20 minutes (132°C max) for assured sterility
- Allows bi-directional flow
- Depth filter design allows for high loading capacity
- Preventing bacterial, algal or fungal contamination in fermentors or incubators
- Tissue culture applications

Applications

- Gas line filter
- Particulate removal from gases
- Prefilters for suction

Air Flow Rates*



* Flow rates are indicative and vary by type of end fitting

Technical Properties - HEPA Venting Filters

Housing	Polypropylene
Filter Media	Laminated hydrophobically treated glass microfiber
Support System	Polypropylene
Sealing	Heat-fused
Maximum Pressure	60 psi (4.1 bar) - Capsule
Flow Direction	Bidirectional
Biosafety	Materials pass USP Class VI
Sterilization	Autoclavable
Filtration Area	36 mm Capsule: 625 cm ² (97 in ²) 75 mm Capsule: 1,300 cm ² (201 in ²) 150 mm Capsule: 2,590 cm ² (402 in ²) 50 mm Disc: 16 cm ²

Ordering Information - HEPA Venting Filters

Catalog Number	Housing Type	Connections*		Quantity/Pack
		Inlet	Outlet	
HEPA-CAP 36				
6702-3600	Capsule	SB	SB	1
2609T	Capsule	3/8" FNPT	3/8" FNPT	5
HEPA-CAP 75				
6702-7500	Capsule	1/2" SB	1/2" SB	1
2709T	Capsule	3/8" FNPT	3/8" FNPT	5
HEPA-CAP 150				
6702-9500	Capsule	3/8" FNPT	3/8" FNPT	1
HEPA-VENT				
6723-5000	50 mm disc	SB	SB	10

* SB – Stepped barb for 6–10 mm 1/4"–3/8" tubing
 1/2 SB – Stepped barb for 10–12 mm 3/8"–1/2" tubing
 FNPT – Female national pipe thread