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 or polycarbonate housing and utilize the most advanced construction methods and design features. This level of engineering provides for the finest disposable filtration devices possible.

Integrated syringeless filters and filter vials

Whatman integrated syringeless filters and filter vials are preassembled, convenient filtration devices for removing particulates from samples. They replace syringe-coupled filtration devices with single disposable units, making sample preparation easier, faster, and more efficient.

Mini-UniPrep™ integrated syringeless filters and filter vials

Mini-UniPrep is a preassembled filtration device consisting of a 0.4 mL capacity chamber and a plunger. The plunger contains a filtration membrane at one end and a preattached 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 autosampler able to contain 2 mL vials for injection into your instrument.

The device can be used either manually or with a compressor unit. The multicompressor can process up to six 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 accommodating 12 × 32 mm vials. Alternatively the septum can be pierced with a needle and the sample drawn off for manual injection into an analyzer.

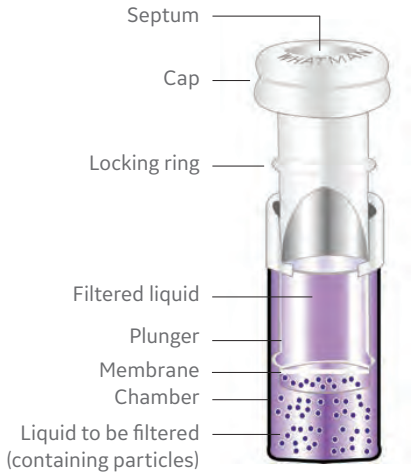
Mini-UniPrep Syringeless Filters

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. Reduce costs by up to 40%

Applications

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



A variety of Mini-UniPrep filters to meet your needs

For customers who need to filter light-sensitive samples, there is Amber Mini-UniPrep. Slit septa Mini-UniPrep is available for customers using robotics to maximize throughput.

Amber Mini-UniPrep filter vial

Protects samples from UV damage.

Features and benefits

- Amber colorant prevents photodegradation of light sensitive samples
- Same colorant used in pharmaceutical containers designed to meet United States Pharmacopeia 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

Slit septa Mini-UniPrep filter vial

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
- Pre-slit septa for easier needle penetration

Applications

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

New Whatman Mini-UniPrep multi-compressor

Mini-UniPrep G2 Multi-compressor tray

Mini-UniPrep in an HPLC autosampler

Amber Mini-UniPrep filter vial

Selection—Mini-UniPrep filtering media

Sample type	Suitable Mini-UniPrep media
High 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	Regenerated Cellulose (RC) or Polyethersulfone (PES)
Aqueous/organic solvents—low nonspecific protein binding media	Polyvinylidene Difluoride (PVDF) or Regenerated Cellulose (RC)
Aqueous/organic solvents—high flow and loading capacity	Polypropylene Depth Filter non woven PP fibers

Typical properties—Mini-UniPrep integrated syringeless filters and filter vials

Dimensions	Equivalent in size to 12 × 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 integrated syringeless filters and filter vials

Pore size (µm)	Catalog number	Media	Quantity/pack
Standard cap—translucent housing			
0.2	UN203NPENYL	Nylon	100
0.2	UN503NPENYL	Nylon	1000
0.45	UN203NPUNYL	Nylon	100
0.45	UN503NPUNYL	Nylon	1000
0.2	UN203NPEPES	PES	100
0.45	UN203NPUPES	PES	100
0.45	UN503NPUPES	PES	1000
0.2	UN203NPEAQU	PVDF	100
0.2	UN503NPEAQU	PVDF	1000
0.45	UN203NPUAQU	PVDF	100
0.45	UN503NPUAQU	PVDF	1000
0.2	UN203NPERC	RC	100
0.2	UN503NPERC	RC	1000
0.45	UN203NPURC	RC	100
0.45	UN503NPURC	RC	1000
0.2	UN203NPEORG	PTFE	100
0.2	UN503NPEORG	PTFE	1000
0.45	UN203NPUORG	PTFE	100
0.45	UN503NPUORG	PTFE	1000
0.2	UN203NPEPP	PP	100
0.2	UN503NPEPP	PP	1000
0.45	UN203NPUPP	PP	100
0.45	UN503NPUPP	PP	1000
0.45	UN203NPUDPP	DpPP	100
0.45	UN503NPUDPP	DpPP	1000
0.45	UN203NPUGMF	GMF	100
0.45	UN503NPUGMF	GMF	1000

PES—Polyethersulfone
PTFE—Polytetrafluoroethylene
PVDF—Polyvinylidene Difluoride
RC—Regenerated Cellulose
DpPP—Polypropylene Depth Filter
GMF—Glass Microfiber
PP—Polypropylene

Ordering information—Mini-UniPrep integrated syringeless filters and filter vials (*continuation*)

Pore size (µm)	Catalog number	Media	Quantity/pack
Slit septum cap—translucent housing			
0.2	US203NPENYL	Nylon	100
0.2	US503NPENYL	Nylon	1000
0.45	US203NPUNYL	Nylon	100
0.2	US203NPEPES	PES	100
0.2	US503NPEPES	PES	1000
0.45	US203NPUPES	PES	100
0.2	US203NPEAQU	PVDF	100
0.2	US503NPEAQU	PVDF	1000
0.45	US203NPUAQU	PVDF	100
0.45	US503NPUAQU	PVDF	1000
0.2	US203NPEORG	PTFE	100
0.2	US503NPEORG	PTFE	1000
0.45	US203NPUORG	PTFE	100
0.45	US503NPUORG	PTFE	1000
0.2	US203NPEPP	PP	100
0.2	US503NPEPP	PP	1000
0.45	US203NPUPP	PP	100
0.45	US503NPUPP	PP	1000
0.45	US203NPUDPP	DpPP	100
0.45	US503NPUDPP	DpPP	1000
0.45	US203NPUGMF	GMF	100
0.45	US503NPUGMF	GMF	1000
Amber housing (for light sensitive samples)—standard cap			
0.2	UN203APENYL	Nylon	100
0.45	UN203APUNYL	Nylon	100
0.2	UN203APEPES	PES	100
0.45	UN203APUPES	PES	100
0.2	UN203APEAQU	PVDF	100
0.45	UN203APUAQU	PVDF	100
0.2	UN203APEORG	PTFE	100
0.45	UN203APUORG	PTFE	100
0.2	UN203APEPP	PP	100
0.45	UN203APUPP	PP	100
0.45	UN203APUDPP	DpPP	100
0.45	UN203APUGMF	GMF	100
Amber housing (for light sensitive samples)—slit septum cap			
0.45	US203APUNYL	Nylon	100
Accessories—multi-compressor			
–	MUPMCPBC8	Mini-UniPrep multi-compressor 1/pack comes with one tray	
–	MUPMCBT8	Mini-UniPrep multi-compressor tray 1/pack	

PES—Polyethersulfone
PTFE—Polytetrafluoroethylene
PVDF—Polyvinylidene Difluoride
RC—Regenerated Cellulose
DpPP—Polypropylene Depth Filter
GMF—Glass Microfiber
PP—Polypropylene

Whatman Mini-UniPrep G2 integrated syringeless filters and glass vials

The Mini-UniPrep G2 includes an integral borosilicate glass vial housed within the plunger and a borosilicate glass chamber for holding the unfiltered liquid. It offers the same great Mini-UniPrep performance while minimizing the risk of extractable compounds from a plastic housing that might otherwise leach into your sample.

Technical specifications—Mini-UniPrep G2 integrated syringeless filters and glass vials

Dimensions	Once compressed, equivalent in size to 12 mm × 32 mm vial
Materials of construction	Chamber: Borosilicate glass Plunger outer housing: Polypropylene Plunger inner storage vial: Borosilicate glass Filter medium: As specified Septa: Silicone with PTFE liner Cap: Polypropylene
Maximum operating temp.	50°C (122°F)
Filtering capacity	Chamber (unfiltered sample): 500 µL Inner storage vial (filtered sample): 330 µL Recommended minimum filtering volume: 220 µL placed in the chamber to obtain 50 µL in inner storage vial
Nominal force needed to compress	Approx. 11.3 kg (25 lbs)
Autosampler compatibility	Any autosampler that accommodates standard 12 mm × 32 mm profile vials
Autosampler needle height adjustment	5 mm from bottom of Mini-UniPrep G2

Liquid storage capacity

Volume (µL)	Height of liquid in inner glass reservoir (mm)
50	4.3
100	7.0
150	10.3
200	12.4
250	15.4
300	18.4
350	21.4
410 (max.)	25.0

Mini-UniPrep G2 Multicompressor

Ordering information—Mini-UniPrep G2 integrated syringeless filters and glass vials

Membrane	Pore size (µm)	Housing	Cap	Catalog number*	Catalog number**	Catalog number***
PTFE	0.2	Translucent	Normal	GN203NPEORG	GN503NPEORG	GN203NPEORGSP
PTFE	0.2	Translucent	Slit septum	GS203NPEORG	GS503NPEORG	GS203NPEORGSP
PTFE	0.2	Amber	Normal	GN203APEORG	–	GN203APEORGSP
PTFE	0.45	Translucent	Normal	GN203NPUORG	GN503NPUORG	GN203NPUORGSP
PTFE	0.45	Translucent	Slit septum	GS203NPUORG	GS503NPUORG	GS203NPUORGSP
PVDF	0.2	Translucent	Normal	GN203NPEAQU	GN503NPEAQU	GN203NPEAQUSP
PVDF	0.2	Translucent	Slit septum	GS203NPEAQU	GS503NPEAQU	GS203NPEAQUSP
PVDF	0.2	Amber	Normal	GN203APEAQU	–	GN203APEAQUSP
PVDF	0.45	Translucent	Normal	GN203NPUAQU	GN503NPUAQU	GN203NPUAQUSP
PVDF	0.45	Translucent	Slit septum	GS203NPUAQU	GS503NPUAQU	GS203NPUAQUSP
RC	0.2	Translucent	Normal	GN203NPERC	GN503NPERC	GN203NPERCSP
RC	0.45	Translucent	Normal	GN203NPURC	GN503NPURC	GN203NPURCSP
Nylon	0.2	Translucent	Normal	GN203NPENYL	GN503NPENYL	GN203NPENYLSP
Nylon	0.2	Translucent	Slit septum	GS203NPENYL	GS503NPENYL	GS203NPENYLSP
PP	0.2	Translucent	Normal	GN203NPEPP	GN503NPEPP	GN203NPEPPSP
PP	0.2	Translucent	Slit septum	GS203NPEPP	–	GS203NPEPPSP
Glass fiber	0.45	Translucent	Normal	GN203NPUGMF	GN503NPUGMF	GN203NPUGMFSP
Glass fiber	0.45	Translucent	Slit septum	GS203NPUGMF	–	GS203NPUGMFSP
Hand compressor						
Mini-UniPrep G2 hand compressor 1/pack						MUPG2HCPWC1
Multi-compressor						
Mini-UniPrep G2 multi-compressor 1/pack, comes with one tray						MUPG2MCPWC8
Mini-UniPrep G2 multi-compressor tray 1/pack						MUPG2MCWT8

* *100 pack*
** *1000 pack*
*** *100 pack—starter pack with hand compressor*

PTFE—Polytetrafluoroethylene
PVDF—Polyvinylidene difluoride
RC—Regenerated Cellulose
PP—Polypropylene

UniPrep™ filter vials

UniPrep filter vials 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.

UniPrep devices function in a similar way to the Mini-UniPrep. However, UniPrep does not contain a septum in the cap and can be used to filter larger volumes (1 to 5 mL).

UniPrep Syringeless Filters

Features and benefits

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

Applications

- Sample preparation (e.g. prior to preparative HPLC)
- Difficult-to-filter samples
- Quick filtration of samples

The UniPrep filter vial 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 for various applications

- **GMF:** Layered glass microfiber depth filter for use with samples containing aqueous or organic solvents (indicated pore size is the particle retention rating)
- **NYL:** Naturally hydrophilic membrane for filtration of samples containing aqueous or organic solvents with a pH range of 3-10
- **PTFE:** Chemically inert PTFE 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 properties—UniPrep filter vials

Housing	Polypropylene
Filtration area	0.3 cm^2
Capacity	1-5 mL
Volume hold-up	50 µL
Prefilter	Glass fiber
Sterilization	Autoclave: 121°C at 15 psi (1 bar) for 20 min.

Ordering information—UniPrep filter vials

Pore size (µm)	Catalog number	Media	Quantity/pack
0.2	UN113ENYL	Nylon	50
0.45	UN113UNYL	Nylon	50
0.2	UN113EAQU	PVDF	50
0.45	UN113UAQU	PVDF	50
0.45	UN513UAQU	PVDF	1000
0.2	UN113EORG	PTFE	50
0.45	UN113UORG	PTFE	50
0.45	UN513UORG	PTFE	1000
0.45*	UN113UGMF	GMF	50

** Particle retention rating*

GMF—Glass Microfiber
PTFE—Polytetrafluoroethylene
PVDF—Polyvinylidene Difluoride

Autovial™ filter vials

Autovial filter vials 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—pre-assembled and easy to load
- Choice of filter media. Compatible with a wide range of sample types
- Excellent for hazardous samples. Self-contained device removes the risk of filter pop-off
- Built-in air purge maximizes sample recovery
- Sterile option available to maintain sample integrity
- Glass fiber or polypropylene prefilter in selected 12 mL vials—for difficult-to-filter samples

Autovial membranes for various applications

- **CA:** Low nonspecific 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 to 10
- **PES:** Low nonspecific protein binding membrane for samples in aqueous solutions
- **PP:** Hydrophobic membrane, resistant to a wide range of organic solvents
- **PTFE:** For samples with > 50% organic solvent
- **PVDF:** Low nonspecific protein binding membrane for samples in aqueous solutions and/or organic solvents

Autovial Syringeless Filters

Typical properties—Autovial filter vials

	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
Sterilization	Autoclave at 121°C for 20 min	Autoclave at 121°C for 20 min

Ordering information—Autovial filter vials

Pore size (µm)	**Catalog number**	**Media**	**Sterile**	**Quantity/pack**
Autovial 5—no prefilter				
0.45	AV115NPUNYL**	Nylon	No	50
0.45	AV115NPUAQU**	PVDF	No	50
0.2	AV115NPEORG**	PTFE	No	50
0.45	AV115NPUORG**	PTFE	No	50
0.45*	AV115UGMF**	GMF	No	50
Autovial 12—with glass prefilter				
0.45	AV125UCA	CA	No	50
0.2	AV125SNAO	Nylon	Yes	40
0.2	AV125ENAO	Nylon	No	50
0.45	AV125UNAO	Nylon	No	50
0.45	AV525UNAO	Nylon	No	1000
0.45	AV125NPUPSU**	PES	No	50
0.2	AV125SAQU	PVDF	Yes	40
0.2	AV125EAQU	PVDF	No	50
0.45	AV125UAQU	PVDF	No	50
0.45	AV525UAQU	PVDF	No	1000
0.45	AV125NPUAQU**	PVDF	No	50
0.2	AV125EORG	PTFE	No	50
0.45	AV125UORG	PTFE	No	50
0.45	AV525UORG	PTFE	No	1000
0.45*	AV125UGMF	GMF	No	50
Autovial 12—with polypropylene prefilter				
0.2	AV125EPP	PP	No	50
0.45	AV125UPP	PP	No	50

* *Particle retention rating*
** *No prefilters*

CA—Cellulose Acetate
GMF—Glass Microfiber
PES—Polyethersulfone
PP—Polypropylene
PTFE—Polytetrafluoroethylene
PVDF—Polyvinylidene Difluoride

Guide to laboratory filtration

Filtration devices for small volume sample preparation

Select the optimal Whatman filter for your application

Step 1: Choose application
Step 2: Choose appropriate filter

Start here

Applications

1. Air venting
2. Automated filtration of samples/ Tablet dissolution testing
3. Biological sample preparation
4. Capillary electrophoresis
5. Difficult to filter samples (high solid content samples)
6. Filtration of colloidal material
7. HPLC/UHPLC sample preparation
8. Ion-chromatography
9. Filtration of protein containing samples
10. Filtration of nano particles
11. Sterile filtration (use sterile filter and membrane with pore size 0.2 µm)
12. COD/TOC/DOC
13. Trace metal analysis (ICP/AAS/ICP-MS)
14. UV/VIS analysis

COD = Chemical oxygen demand;
TOC = Total organic carbon;
DOC = Dissolved organic carbon
Note: For guidance. Only a selection of applications shown above

Puradisc FP
3* 4 9*
11 14
*Notes:
3 and 9: CA

Puradisc Aqua 30
12 13

ReZist™
1 4 7 14

Protein Prep for ÄKTA™
9

Puradisc
3* 4 7 9*
11 12* 13* 14
*Notes:
3 & 9: CA, PES, PVDF
12 & 13: PES

Anotop™
3 4 6 7 8
9 10* 11 14
*Notes: 0.02 µm

Mini-UniPrep™ G2
2 7

Anotop Plus
4 5 7 10*
*Notes: 0.02 µm

Mini-UniPrep
2 7

Roby
2

GD/XP
4 5 7 8
12 13 14

Uniflo™
3 4 7 11
12 13 14

SPARTAN™
4 7 9 14

Whatman GD/X™
4 5
7 11 14

Syringe filters

Whatman disposable syringe filter 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 or polycarbonate housing using the most advanced methods and design features available today. These syringe filters are suitable for numerous applications in pharmaceutical, environmental, biotechnology, food/beverage, and agricultural testing laboratories.

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

Safety—applicable to ALL syringe filters

Syringe use can result in high pressure. The smaller the syringe, the higher the pressure that can be generated. As a general guide, the following pressures can be obtained by hand with the syringes indicated:

- 20 mL—30 psi (2 bar)
- 10 mL—50 psi (3.4 bar)
- 5 mL—75 psi (5.2 bar)
- 3 mL—100 psi (6.9 bar)
- 1 mL—150 psi (10.3 bar)

Individual users should determine the pressure they generate by hand with a specific size syringe and take appropriate safety precautions not to exceed the recommended rating for the device used. If the limitations are exceeded, the device may burst.

See appendix section for summary of typical properties, product availability and application guidance.

Product overview—syringe filters

Diameter (mm)	Filters	Features	Media
10, 25	Anotop	• Use with most organic solvents and aqueous materials	Anopore
10, 25	Anotop Plus	• Suitable for ion chromatography • Low levels of anion leaching	Anopore
13, 25	GD/X	• Contains proprietary prefiltration stack of Whatman GMF 150 and Grade GF/F • 3x flow rates compared to unprotected membrane	CA, PTFE, Nylon, PP, PES, PVDF, GMF, RC
25	GD/XP	• Contains proprietary polypropylene prefiltration stack • Suitable for inorganic ion analysis	Nylon, PVDF, PP, PES, PTFE, Depth Polypropylene
4, 13, 25	Puradisc	• Designed for manual operation	PTFE, Nylon, PP, PES, CA PVDF, GMF, DpPP
13, 30	Puradisc FP	• Polycarbonate housing	CA, CN, RC
30	Puradisc Aqua	• Filtration of environmental samples prior to COD and DOC	CA
25	Roby 25	• Designed to be compatible with the major dissolution test systems	CA, Nylon, RC, GMF
13, 30	ReZist	• PTFE for HPLC sample prep	PTFE, GF
13, 30	SPARTAN	• Optimized for HPLC sample prep, HPLC certified, batch certificate can be downloaded. Compatible with organic and aqueous solvents	RC
13, 25	Uniflo	• Overmolded syringe filter • Disposable filter units designed to provide clean filtrate up to 100 mL	PTFE, Nylon, PES, PVDF

CA—Cellulose Acetate
CN—Cellulose Nitrate
GMF—Glass Microfiber
PES—Polyethersulfone
PP—Polypropylene
PTFE—Polytetrafluoroethylene
PVDF—Polyvinylidene Difluoride
RC—Regenerated Cellulose
DpPP—Polypropylene Depth Filter

Whatman GD/X™ syringe filters

The Whatman GD/X range is specifically designed for high particulate loaded samples. Constructed of a pigment-free polypropylene housing with a prefiltration stack of Whatman GMF 150 (graded density) and GF/F glass microfiber media, these filters remove sample contamination and allow you to filter even the most difficult samples with less hand pressure. GD/X syringe filters can process three to seven times more sample volume than standard syringe filters.

GMF 150 and GF/F are produced from 100% borosilicate glass microfiber. Graded density GMF 150 medium has a coarse top layer meshed with a fine bottom layer that retains particles to 1.0 µm. A GF/F filter then retains particles down to 0.7 µm. The prefilter stack ends with a final membrane.

The filter construction facilitates exceptional loading capacity with fast flow rates. This prevents the build up of back pressure typically caused by the blocking of an unprotected membrane.

Whatman GD/X Syringe filter

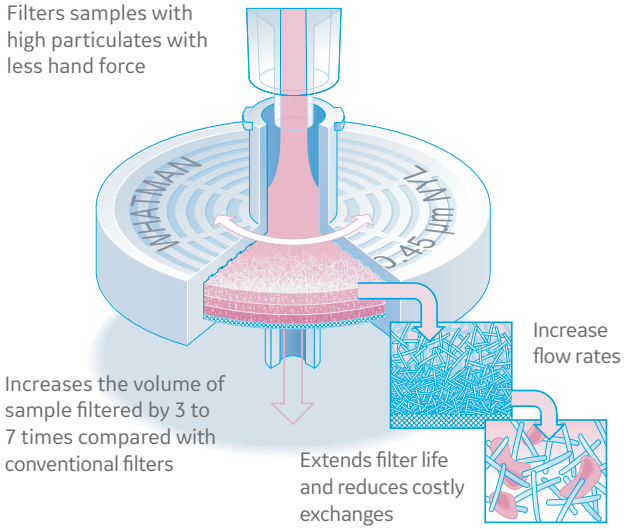
Features and benefits

- 13 mm devices for samples up to 10 mL and 25 mm devices for samples greater than 10 mL (however, the volume of sample that can be filtered through each filter depends on the characteristics of the sample)
- Sterile options
- Pigment-free polypropylene housing
- Prefiltration stack of Whatman GMF 150 (graded density) and GF/F glass microfiber media
- Minimizes sample contamination
- Requires less hand pressure, even with the most difficult samples
- Processes three to seven times more sample volume

Applications

Whatman GD/X syringe filters are excellent for heavily particulate-laden samples found in:

- Dissolution testing
- Content uniformity
- Concentration analysis
- Routine sample preparation
- Food analysis
- Environmental samples
- Composite assay



Typical properties—Whatman 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 (6.9 bar)	75 psi (5.2 bar)
Volume hold-up*—full housing —with air purge	0.5 mL 50 µL (approx)	1.4 mL 250 µL (approx)
Dimensions*	20.8 × 30.0 mm	20.8 × 30.0 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 luer	Male luer
Sterlization	Autoclave at 121°C (131°C max) at 15 psi (1 bar) for 20 min	Autoclave at 121°C (131°C max) at 15 psi (1 bar) for 20 min
Glass microfiber prefiltration media	100% borosilicate glass fiber GMF 150 10 µm: 1 µm GF/F 0.7 µm	100% borosilicate glass fiber GMF 150 10 µm: 1 µm GF/F 0.7 µm

* *Housings are the same size but the filtration size is smaller*

Ordering information—Whatman GD/X syringe filters

Pore size (µm)	Catalog number	Media	Quantity/pack
GD/X 13 mm—nonsterile			
0.2	6880-1302	CA	150
0.45	6880-1304	CA	150
0.2	6870-1302	Nylon	150
0.2	6871-1302	Nylon	1500
0.45	6870-1304	Nylon	150
0.45	6871-1304	Nylon	1500
0.2	6876-1302	PES	150
0.45	6876-1304	PES	150
0.2	6872-1302	PVDF	150
0.45	6872-1304	PVDF	150
0.45	6873-1304	PVDF	1500
0.2	6878-1302	PP***	150
0.45	6878-1304	PP***	150
0.2	6874-1302	PTFE	150
0.2	6875-1302	PTFE	1500
0.45	6874-1304	PTFE	150
0.45	6875-1304	PTFE	1500
1.6*	6882-1316	GF/A**	150
1.0*	6884-1310	GF/B**	150
1.2*	6886-1312	GF/C**	150
2.7*	6888-1327	GF/D**	150
0.7*	6890-1307	GF/F**	150
0.45*	6894-1304	GMF	150

* *Glass microfiber particle retention rating*
** *Contains GMF 150 without the GF/F prefilter*
*** *Mildly hydrophobic*

CA—Cellulose Acetate
GF—Glass Fiber
GMF - Glass Microfiber
PES—Polyethersulfone
PP—Polypropylene
PTFE—Polytetrafluoroethylene
PVDF—Polyvinylidene Difluoride

Ordering information—Whatman GD/X syringe filters *(continuation)*

Pore size (µm)	Catalog number	Media	Quantity/pack
GD/X 25 mm—nonsterile			
0.2	6887-2502	RC	150
0.45	6882-2504	RC	150
0.2	6888-2502	RC	1500
0.45	6883-2504	RC	1500
0.2	6880-2502	CA	150
0.45	6880-2504	CA	150
0.45	6881-2504	CA	1500
0.2	6869-2502	Nylon high charge (positive)	150
0.45	6869-2504	Nylon high charge (positive)	150
0.2	6870-2502	Nylon	150
0.2	6871-2502	Nylon	1500
0.45	6870-2504	Nylon	150
0.45	6871-2504	Nylon	1500
5.0	6870-2550	Nylon	150
5.0	6871-2550	Nylon	1500
0.2	6876-2502	PES	150
0.2	6905-2502	PES	1500
0.45	6876-2504	PES	150
0.45	6905-2504	PES	1500
0.2	6872-2502	PVDF	150
0.2	6873-2502	PVDF	1500
0.45	6872-2504	PVDF	150
0.45	6873-2504	PVDF	1500
0.2	6878-2502	PP	150
0.45	6878-2504	PP	150
0.45	6879-2504	PP	1500
0.2	6874-2502	PTFE	150
0.2	6875-2502	PTFE	1500
0.45	6874-2504	PTFE	150
0.45	6875-2504	PTFE	1500
1.6*	6882-2516	GF/A**	150
1.6*	6883-2516	GF/A**	1500
1.0*	6884-2510	GF/B**	150
1.2*	6886-2512	GF/C**	150
2.7*	6888-2527	GF/D**	150
0.7*	6890-2507	GF/F**	150
0.7*	6891-2507	GF/F**	1500
0.45*	6894-2504	GMF**	150
0.45*	6895-2504	GMF**	1500
1.5*	6892-2515	934-AH**	150
GD/X 25 mm—sterile			
0.2	6896-2502	PES	50
0.45	6896-2504	PES	50
0.2	6897-2502	PES	500
0.45	6897-2504	PES	500
0.2	6900-2502	PVDF	50
0.45	6900-2504	PVDF	50
0.45*	6902-2504	GMF**	50
0.2	6901-2502	CA	50
0.45	6901-2504	CA	50

* *Glass microfiber particle retention rating*
** *Contains GMF 150 without the GF/F prefilter*

CA—Cellulose Acetate
GF—Glass Fiber
GMF—Glass Microfiber
PES—Polyethersulfone
PP—Polypropylene
PTFE—Polytetrafluoroethylene
PVDF—Polyvinylidene Difluoride
RC—Regenerated Cellulose

GD/XP syringe filters

Whatman GD/XP disposable syringe filters are designed 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
- Sample preparation prior to determination of dissolved heavy metals

GD/XP Syringe Filters—Prefilter

Typical properties—GD/XP syringe filters

	GD/XP 25 mm
Housing	Polypropylene (pigment free)
Filtration area	4.6 cm^2
Maximum pressure	75 psi (5.2 bar)
Volume hold-up full housing with air purge	1.4 mL 250 µL (approx)
Dimensions	20.8 × 30.0 mm
Weight	3 g (approx)
Flow direction	Flow should enter from the inlet
Inlet connection	Female luer lock
Outlet connection	Male luer
Sterlization	Autoclave at 121°C (131°C max) at 15 psi (1 bar) for 20 min
Prefiltration media	PP 20 µm: 5 µm

Ordering information—GD/XP syringe filters

Diameter (mm)	Pore size (µm)	Catalog number	Media	Hydrophilic	Quantity/pack
25	0.45	6970-2504	Nylon	Yes	150
25	0.45	6971-2504	Nylon	Yes	1500
25	0.45	6994-2504	PES	Yes	150
25	0.45	6995-2504	PES	Yes	1500
25	0.45	6972-2504	PVDF	Yes	150
25	0.45	6973-2504	PVDF	Yes	1500
25	0.45	6978-2504	PP	No	150
25	0.45	6992-2504	DpPP	No	150
25	0.45	6974-2504	PTFE	No	150
25	0.45	6993-2504	DpPP	No	1500

DpPP—Polypropylene Depth Filter
PES—Polyethersulfone
PP—Polypropylene
PVDF—Polyvinylidene Difluoride
PTFE—Polytetrafluoroethylene

Puradisc syringe filters

Puradisc syringe filters combine premium quality and economy. They are used for the quick, efficient filtration of samples up to 100 mL volume.

Puradisc filters are produced from pigment-free polypropylene or polycarbonate with standard inlet (female luer lock) and outlet (male luer) connections (unless otherwise stated). Options include a sterile, medical-grade blister pack for critical applications and a special tube tip outlet that allows the sample to be accurately dispensed into a micro-vial, removing air lock.

Features and benefits

- Pigment-free polypropylene (polycarbonate for Puradisc FP 30 and Aqua 30)
- Standard inlet and outlet luer connectors
- Optional sterile, medical-grade blister pack
- Tube-tip format (optional) for accurate dispensing into a micro-vial
- Choice of membrane or glass microfiber filter media
- Choice of filter sizes (4, 13, 25 or 30 mm) to minimize sample loss
- Sterile option for critical applications
- Wide range of membranes

Puradisc 4

Features

- 4 mm diameter syringe filter
- Sample volume up to 2 mL
- Low hold-up volume < 10 µL ensures maximum sample recovery
- Tube-tip format (optional)

Applications

- HPLC samples containing low solid content—filtration will improve column life
- CE (Capillary Electrophoresis) samples—filtration will remove spurious peaks
- Sterile[#] filtration of low volume samples
- UV/Vis samples—filter directly into cuvette using tube tip
- Refractometry—filter samples to prevent damage to instrument optics and improve accuracy of results
- Minimizing nonspecific binding to membrane (due to small membrane size)

Puradisc 13

Features

- 13 mm diameter syringe filter
- Sample volume up to 10 mL
- Low hold-up volume < 25 µL ensures maximum sample recovery
- Glass microfiber option available
- Tube-tip format (optional)

Applications

- Biological sample preparation
- HPLC sample preparation

Puradisc 13 syringe filters with tube tip

[#] *Refers to sterilization by filtration for small sample use which is an industry term for filters of pore size 0.2 µm or smaller as referenced in guidance such as EPA Guidance for Industry Sterile Drug Products Produced by Aseptic Processing — Current Good Manufacturing Practice Section IX, Part B (September 2004).*

Puradisc 25

Features

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

Applications

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

Puradisc 25 syringe filters

Puradisc FP 30

Features

- 30 mm diameter
- Larger filtration area (44% greater in comparison with 25 mm)
- Designed for aqueous samples

Puradisc FP 30 syringe filter

Puradisc Aqua 30

Specifically designed for filtration of environmental samples prior to COD and DOC analysis. The membranes used in these devices are prewashed prior to assembly of the filters so as to reduce the organic carbon level.

Typical properties—Puradisc syringe filters

	Puradisc 4	Puradisc 13	Puradisc 25	Puradisc 30/Aqua 30
Housing	Polypropylene	Polypropylene	Polypropylene	Polycarbonate
Filtration area	0.2 cm^2	1.3 cm^2	4.2 cm^2	5.7 cm^2
Maximum pressure	75 psi (5.2 bar)	75 psi (5.2 bar)	75 psi (5.2 bar)	100 psi (6.9 bar)
Volume hold-up full housing with air purge	< 10 µL	< 25 µL	< 100 µL	< 50 µL
Dimensions	10.1 × 23.5 mm	16.3 × 19.8 mm	22.9 × 28.4 mm	26 × 34 mm
Weight	0.55 g	0.95 g	2.7 g	4.7 g
Volume throughput	Up to 2 mL	Up to 10 mL	Up to 100 mL	Up to 100 mL
Inlet connection	Female luer lock	Female luer lock	Female luer lock	Female luer lock
Outlet connection	Male luer	Male luer	Male luer	Male luer
Sterlization	Autoclave at 121°C (131°C max)	Autoclave at 121°C (131°C max)	Autoclave at 121°C (131°C max)	Autoclave at 121°C (131°C max)

Refers to sterilization by filtration for small sample use which is an industry term for filters of pore size 0.2 µm or smaller as referenced in guidance such as EPA Guidance for Industry Sterile Drug Products Produced by Aseptic Processing — Current Good Manufacturing Practice Section IX, Part B (September 2004).

Ordering information—Puradisc 4 mm syringe filters

	Catalog number			
Pore size (µm)	**Nylon**	**PVDF**	**PTFE**	**Quantity/pack**
Nonsterile with tube tip				
0.2	–	6777-0402	–	50
0.45	–	6777-0404	–	50
Sterile without tube tip				
0.2	6786-0402	6791-0402	–	50
Nonsterile without tube tip				
0.2	6789-0402	6779-0402	6784-0402	100
0.2	6790-0402	6792-0402	6783-0402	500
0.45	6789-0404	6779-0404	6784-0404	100
0.45	6790-0404	6792-0404	6783-0404	500

PTFE—Polytetrafluoroethylene
PVDF—Polyvinylidene Difluoride

Ordering information—Puradisc 13 mm syringe filters (nonsterile)

	Catalog Number							Quantity/ pack
Pore size (µm)	**CA**	**Nylon**	**PES**	**PVDF**	**PP**	**PTFE**	**GMF**	
With tube tip								
0.2	–	–	–	6777-1302	–	6775-1302	–	50
0.2	–	–	–	6778-1302	–	–	–	50
0.45	–	–	–	6777-1304	–	6775-1304	–	50
Without tube tip								
0.1	–	6789-1301	–	–	–	6784-1301	–	100
0.2	–	6789-1302	6782-1302	6779-1302	6788-1302	6784-1302	–	100
0.2	–	6790-1302	–	6792-1302	6785-1302	6783-1302	–	500
0.2	–	6768-1302	–	6765-1302	–	6766-1302	–	2000
0.45	6771-1304	6789-1304	6782-1304	6779-1304	6788-1304	6784-1304	–	100
0.45	–	6790-1304	6781-1304	6792-1304	6785-1304	6783-1304	6818-1304	500
0.45	–	6768-1304	–	6765-1304	–	6766-1304	–	2000
1.0	–	–	–	–	–	6784-1310	–	100
5.0	–	–	–	–	–	6784-1350		100
GF/F 0.7*	–	–	–	–	–	–	6825-1307	100
GF/B 1.0*	–	–	–	–	–	–	6821-1310	100
GF/C 1.2*	–	–	–	–	–	–	6822-1312	100
GF/A 1.6*	–	–	–	–	–	–	6820-1316	100
GF/A 1.6	–	–	–		–	–	6806-1316	500
GF/D 2.7*	–	–	–	–	–	–	6823-1327	100
934-AH 1.5*	–	–	–	–	–	–	6827-1315	100

** Particle retention rating*

CA—Cellulose Acetate
GMF—Glass Microfiber
PES—Polyethersulfone
PP—Polypropylene
PTFE—Polytetrafluoroethylene
PVDF—Polyvinylidene Difluoride

Ordering information—Puradisc 13 mm syringe filters (sterile)

	Catalog number		
Pore size (µm)	**PVDF**	**PES**	**Quantity/pack**
Without tube tip			
0.2	6791-1302	6780-1302	50
0.45	6791-1304	6780-1304	50

PES—Polyethersulfone
PVDF—Polyvinylidene Difluoride

Ordering information—Puradisc FP 13 syringe filters (sterile)

Pore size (µm)	**Media**	**Catalog number**	**Quantity/pack**
With mini tip			
0.2	Regenerated Cellulose	10462940	50
Without mini tip			
0.2	Regenerated Cellulose	10462945	50

Ordering information—Puradisc 25 mm syringe filters

	Catalog number							
Pore size (µm)	**Nylon**	**PES**	**PVDF**	**PP**	**PTFE**	**GMF**	**DpPP**	**Quantity/pack**
Sterile								
0.2	–	6780-2502	–	–	–	–	–	50
0.2	–	6794-2512	–	–	–	–	–	1000
0.45	–	6780-2504	–	–	–	–	–	50
0.45	–	6794-2514	–	–	–	–	–	1000
1.0	–	6780-2510	–	–	–	–	–	50
Nonsterile								
0.1	–	–	–	–	6784-2501	–	–	50
0.1	–	–	–	–	6798-2501	–	–	1000
0.2	6750-2502	–	6746-2502	6786-2502	6784-2502	–	–	50
0.2	6751-2502	6781-2502	6747-2502	6788-2502	6785-2502	–	–	200
0.2	6753-2502	6794-2502	–	6790-2502	6798-2502	–	–	1000
0.45	6750-2504	–	6746-2504	–	6784-2504	–	6786-2504	50
0.45	6751-2504	6781-2504	6747-2504	–	6785-2504	–	6788-2504	200
0.45	6752-2504	–	–	–	–	–	–	500
0.45	6753-2504	6794-2504	6749-2504	–	6798-2504	–	6790-2504	1000
0.7 GF/F*	–	–	–	–	–	6825-2517	–	50
0.7 GF/F*	–	–	–	–	–	6825-2527	–	200
0.7 GF/F*	–	–	–	–	–	6787-2520	–	1000
1.0	6750-2510	–	–	–	6784-2510	–	–	50
1.0	6751-2510	6781-2510	–	–	–	–	–	200
1.0	6753-2510	6794-2510	–	–	6798-2510	–	–	1000
1.0 GD 1*	–	–	–	–	–	6783-2510	–	100
1.0 GD 1*	–	–	–	–	–	6792-2510	–	1000
2.0 GD 2*	–	–	–	–	–	6783-2520	–	100

* *Particle retention rating*

DpPP—Polypropylene Depth Filter
GD—Graded Density
GMF—Glass Microfiber
PES—Polyethersulfone
PP—Polypropylene
PTFE—Polytetrafluoroethylene
PVDF—Polyvinylidene Difluoride

Ordering information—Puradisc FP 30 mm syringe filters

Pore size (µm)	Catalog number	Description	Media housing	Connection in/out	Color code	Quantity/pack
0.2	10462200*	FP 30 CA-S	CA/PC	FLL/ML	Red	50
0.2	10462701	FP 30 CA	CA/PC	FLL/ML	Red	50
0.2	10462710	FP 30 CA	CA/PC	FLL/ML	Red	100
0.2	10462700	FP 30 CA	CA/PC	FLL/ML	Red	500
0.45	10462100*	FP 30 CA-S**	CA/PC	FLL/ML	White	50
0.45	10462601	FP 30 CA	CA/PC	FLL/ML	White	50
0.45	10462610	FP 30 CA	CA/PC	FLL/ML	White	100
0.45	10462600	FP 30 CA	CA/PC	FLL/ML	White	500
0.8	10462241	FP 30 CA	CA/PC	FLL/ML	Green	50
0.8	10462240*	FP 30 CA-S**	CA/PC	FLL/ML	Green	50
0.8	10462243	FP 30 CA	CA/PC	FLL/ML	Green	500
1.2	10462260*	FP 30 CA-S	CA/PC	FLL/ML	Orange	50
1.2	10462261	FP 30 CA	CA/PC	FLL/ML	Orange	50
1.2	10462263	FP 30 CA	CA/PC	FLL/ML	Orange	500
5.0	10462000*	FP 30 CN-S	CN/PC	FLL/ML	Black	50
5.0	10462520	FP 30 CN	CN/PC	FLL/ML	Black	50
5.0	10462510	FP 30 CN	CN/PC	FLL/ML	Black	100
5.0	10462500	FP 30 CN	CN/PC	FLL/ML	Black	500
Luer-lock outlet						
0.2	10462205*	FP 30 CA-S**	CA/PC	FLL/MLL	Red	50
0.2	10462206	FP 30 CA	CA/PC	FLL/MLL	Red	500
0.2	10462300*	FP 30	PTFE/PC	FLL/ML	Blue	50

* *Sterile*
** *Edotoxin-free according to LAL test (USPXXII), sensitivity: 0.25 EU/mL*

CA—Cellulose Acetate
CN—Cellulose Nitrate
FLL—Female Luer Lock
ML—Male Luer
MLL—Male Luer Lock
PC—Polycarbonate

Ordering information—Puradisc Aqua 30 mm syringe filters

Pore size (µm)	Catalog number	Description	Media housing	Connection in/out	Color code	Quantity/pack
0.45	10462656	Aqua 30 CA	CA/PC	FLL/ML	White	50
0.45	10462655	Aqua 30 CA	CA/PC	FLL/ML	White	100
0.45	10462650	Aqua 30 CA	CA/PC	FLL/ML	White	500

CA—Cellulose Acetate
PC—Polycarbonate
FLL—Female Luer Lock
ML—Male Luer

Puradisc Syringe Filters

SPARTAN™ HPLC certified syringe filters

SPARTAN syringe filters ensure reproducible results from the filtration of organic or aqueous solutions for HPLC. For batch-to-batch consistency, the SPARTAN range of filters is tested and certified for the absence of UV-absorbing substances at wavelengths of 210 and 254 nm with water, methanol, and acetonitrile.

Features and benefits

- Ready-to-use filter unit with a hydrophilic, low protein-binding membrane made of regenerated cellulose
- Excellent chemical resistance against the standard aqueous and organic HPLC solvents
- 13 mm diameter with extremely low dead volume < 10 µL
- Use for any application requiring a chemically resistant, hydrophilic, low protein-binding membrane
- Documented batch-to-batch quality and consistency ensure reproducible results
- 13 mm diameter with Mini-Tip outlet is excellent for filtration into very small sample bottles

Applications

- Filtration of organic and aqueous solutions in HPLC with reproducible results
- Purification of aqueous and organic solutions
- Filtration of protein solutions

Technical tip

Download your SPARTAN 13 and 30 batch certificate from the Internet to document the unequalled purity of each batch.

To download, visit the gelifesciences.com/support/quality/certificates. Enter the lot number, and you will receive the lot-specific chromatogram and test conditions.

SPARTAN 30 mm syringe filter

Ordering information—SPARTAN HPLC certified syringe filters

Diameter (mm)	Pore size (µm)	Catalog number	Media/housing	Connection (in/out)	Color code	Quantity/pack
13	0.2	10463040	RC/PP	FLL/Mini-tip	Dark brown	100
13	0.2	10463042	RC/PP	FLL/Mini-tip	Dark brown	500
13	0.2	10463100	RC/PP	FLL/ML	Dark brown	100
13	0.2	10463102	RC/PP	FLL/ML	Dark brown	500
13	0.45	10463030	RC/PP	FLL/Mini-tip	Light brown	100
13	0.45	10463032	RC/PP	FLL/Mini-tip	Light brown	500
13	0.45	10463110	RC/PP	FLL/ML	Light brown	100
13	0.45	10463112	RC/PP	FLL/ML	Light brown	500
30	0.2	10462960*	RC/PP	FLL/ML	Dark brown	50
30	0.2	10463060	RC/PP	FLL/ML	Dark brown	100
30	0.2	10463062	RC/PP	FLL/ML	Dark brown	500
30	0.45	10462950*	RC/PP	FLL/ML	Light brown	50
30	0.45	10463053	RC/PP	FLL/ML	Light brown	50
30	0.45	10463050	RC/PP	FLL/ML	Light brown	100
30	0.45	10463052	RC/PP	FLL/ML	Light brown	500

* *Sterile filters*

FLL—Female Luer Lock
ML—Male Luer
PP—Polypropylene
RC—Regenerated Cellulose

ReZist™ syringe filters

The Whatman ReZist range of syringe filters has been specifically designed to be resistant to organic solvents. These filters are suitable for the clarification of aggressive organic solvents. ReZist 30 mm filters can also be used as a venting filter for small vessels.

ReZist for HPLC sample preparation

Features and benefits

- Hydrophobic PTFE membrane is laminated with polypropylene
- 13 mm diameter with extremely low dead volume < 10 µL
- Excellent chemical resistance against standard organic HPLC solvents
- 13 mm diameter with Mini-Tip outlet permits filtration into very small sample bottles
- Permits optimal utilization of small sample volumes

ReZist for air venting

Features and benefits

- Integral, permanently hydrophobic PTFE membranes
- Polypropylene support
- Extremely high chemical resistance

ReZist Syringe Filters

Typical applications—ReZist syringe filters

Filtration of organic solutions in HPLC	ReZist 13 and 30
Filtration of aggressive solutions	ReZist 13 and 30
Moisture barrier when venting	ReZist 30
Aerosol separation for protecting vacuum pumps	ReZist 30
Sterile[#] venting of small volumes	ReZist 30
Prefiltration of difficult-to-filter aqueous or organic solutions containing particles	ReZist 30/GF92

Ordering information—ReZist syringe filters

Diameter (mm)	Pore size (µm)	Catalog number	Media/housing	Connection (in/out)	Color code	Quantity/pack
13	0.2	10463703	PTFE/PP	FLL/Mini-Tip	White	100
13	0.45	10463713	PTFE/PP	FLL/Mini-Tip	Green	100
30	0.2	10463500*	PTFE/PP	FLL/ML	White	50
30	0.2	10463503	PTFE/PP	FLL/ML	White	100
30	0.2	10463505	PTFE/PP	FLL/ML	White	500
30	0.45	10463513	PTFE/PP	FLL/ML	Green	100
30	0.45	10463515	PTFE/PP	FLL/ML	Green	500
30	> 1.0	10463545	GF92/PP	FLL/ML	Natural	500
30	> 1.0	10463543	GF92/PP	FLL/ML	Natural	100
30	1.0	10463523	PTFE/PP	FLL/ML	Yellow	100
30	1.0	10463525	PTFE/PP	FLL/ML	Yellow	500
30	5.0	10463533	PTFE/PP	FLL/ML	Grey	100
30	5.0	10463535	PTFE/PP	FLL/ML	Grey	500

** Sterile*

FLL—Female Luer Lock
GF—Glass Fiber
ML—Male Luer
PP—Polypropylene
PTFE—Polytetrafluoroethylene

[#] *Refers to sterilization by filtration for small sample use which is an industry term for filters of pore size 0.2 µm or smaller as referenced in guidance such as EPA Guidance for Industry Sterile Drug Products Produced by Aseptic Processing — Current Good Manufacturing Practice Section IX, Part B (September 2004).*

Anotop™ syringe filters

Anotop filters contain the proprietary alumina-based Anopore membrane and are supplied in three pore sizes. Glass microfiber prefilter versions are available for difficult-to-filter samples. Anotop filters can be used with most organic solvents and aqueous materials.

Anotop 10

Features and benefits

- 10 mm diameter syringe filter
- Inorganic membrane
- Capillary pore structure
- Low protein binding
- Filters sample volume up to 10 mL
- Low hold-up volume < 20 µL ensures maximum sample recovery
- Sterile formats are available for critical applications

Anotop 10 Syringe Filters—Sterile

Anotop 25

Features

- 25 mm diameter syringe filter
- Filters 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 10 Syringe Filters—Sterile

[#] *Refers to sterilization by filtration for small sample use which is an industry term for filters of pore size 0.2 µm or smaller as referenced in guidance such as EPA Guidance for Industry Sterile Drug Products Produced by Aseptic Processing — Current Good Manufacturing Practice Section IX, Part B (September 2004).*

Anotop 10 and Anotop 25 Plus

The Anotop 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 remove the need for sample clean-up or expensive and time-consuming sequential filtration.

Anotop 25 Plus Syringe Filters—Prefilter, Non-Sterile

Applications

- Filtration of tissue culture media
- Clean-up 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
- Each batch certified for IC
- Enhanced consistency of analytical results
- Extended column life
- Certified and guaranteed low levels of anion leaching for improved results

Applications

- Ion chromatography sample preparation
- HPLC sample preparation

Anotop LC

Whatman Anotop LC syringe filters have been specially designed for simple and effective preparation of your samples prior to HPLC. They preserve the life of your column by efficiently removing particulates from your analytical samples. Because the Anotop LC syringe filter is made from pigment-free polypropylene and uses the Anopore inorganic membrane, you can be sure that after filtration the level of extractable UV absorbing compounds is minimal.

Features

- Better consistency of analytical results and longer column life
- Extremely low levels of UV absorbing compounds mean better HPLC results
- Easy to use with all sample types

Typical properties—Anotop 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 (6.9 bar)	100 psi (6.9 bar)	100 psi (6.9 bar)	100 psi (6.9 bar)
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	15.4 mm	15.4 mm	36.8 mm	36.8 mm
Device length	18.5 mm	18.5 mm	26.3 mm	26.3 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 luer	Male luer	Male luer	Male luer
Protein adsorption	Low	Medium/High	Low	Medium/High
Extractable materials	Low	Low	Low	Low
Cytotoxicity	Non-cytotoxic	Non-cytotoxic	Non-cytotoxic	Non-cytotoxic

Typical properties—Anotop syringe filters

	Anotop 10 IC	Anotop 10 LC	Anotop 25 IC	Anotop 25 LC
Housing	Polypropylene	Polypropylene (pigment free)	Polypropylene	Polypropylene (pigment free)
Filtration area	0.78 cm^2	0.78 cm^2	4.78 cm^2	4.78 cm^2
Maximum pressure	100 psi (6.9 bar)	100 psi (6.9 bar)	100 psi (6.9 bar)	100 psi (6.9 bar)
Volume hold-up with air purge	< 20 µL	< 20 µL	< 150 µL	< 150 µL
Membrane diameter	10 mm	10 mm	25 mm	25 mm
Construction process	Thermal weld	Thermal weld	Thermal weld	Thermal weld
Extractable materials	Negligible	Negligible	Negligible	Negligible
Average membrane thickness	60 µm	60 µm	60 µm	60 µm
Device width	15.4 mm	15.4 mm	36.8 mm	36.8 mm
Device length	18.5 mm	18.5 mm	26.3 mm	26.3 mm
Inlet connection	Female luer lock	Female luer lock	Female luer lock	Female luer lock
Outlet connection	Male luer	Male luer	Male luer	Male luer
Membrane type	Anopore	Anopore	Anopore	Anopore

Typical properties—Anotop IC syringe filters

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

Typical average anion leaching levels in 18 MΩ × cm (MegaOhm × cm) water at 20°C

Ordering information—Anotop syringe filters

Pore size (µm)	Media	Catalog number	Quantity/pack
Anotop 10			
0.02	Anopore	6809-1002	50
0.1	Anopore	6809-1012	50
0.2	Anopore	6809-1022	50
0.02	Anopore, sterile	6809-1102	50
0.1	Anopore, sterile	6809-1112	50
0.2	Anopore, sterile	6809-1122	50
Anotop 10 Plus			
0.02	Anopore with prefilter	6809-3002	50
0.1	Anopore with prefilter	6809-3012	50
0.2	Anopore with prefilter	6809-3022	50
0.02	Anopore with prefilter, sterile	6809-3102	50
0.1	Anopore with prefilter, sterile	6809-3112	50
0.2	Anopore with prefilter, sterile	6809-3122	50
Anotop 25			
0.02	Anopore	6809-2002	50
0.1	Anopore	6809-2012	50
0.2	Anopore	6809-2022	50
0.2	Anopore	6809-2024	200
0.02	Anopore, sterile	6809-2102	50
0.1	Anopore, sterile	6809-2112	50
0.2	Anopore, sterile	6809-2122	50
Anotop 25 Plus			
0.02	Anopore with prefilter	6809-4002	50
0.1	Anopore with prefilter	6809-4012	50
0.2	Anopore with prefilter	6809-4022	50
0.02	Anopore with prefilter, sterile	6809-4102	50
0.1	Anopore with prefilter, sterile	6809-4112	50
0.2	Anopore with prefilter, sterile	6809-4122	50
0.2	Anopore with prefilter	6809-4024	200
Anotop 10 IC			
0.2	Anopore	6809-9233	100
0.2	Anopore	6809-9234	200
Anotop 25 IC			
0.2	Anopore	6809-9244	200
Anotop 10 IC blister			
0.2	Anopore	6809-9232	50
0.2	Anopore	6809-9235	250
Anotop 10 LC			
0.2	Anopore	2001-0100	100
0.2	Anopore	2001-0200	200
Anotop 25 LC			
0.2	Anopore	2002-5100	100
0.2	Anopore	2002-5200	200

Whatman Uniflo™ syringe filters

Disposable filter units designed to provide clean filtrate from small volumes up to 100 mL. Available in a variety of membrane choices and a polypropylene overmold housing. Whatman Uniflo syringe filters are available in 13 mm and 25 mm diameters and 0.2 µm and 0.45 µm pore sizes.

Whatman Uniflo 13 mm syringe filters

Uniflo 13 mm Syringe Filters are designed to enable maximum filtrate throughput from typical sample volumes of 10 mL or less.

Whatman Uniflo 25 mm syringe filters

Uniflo 25 mm Syringe Filters are designed to enable maximum filtrate throughput from typical sample volumes of 100 mL or less.

Filter media	Typical application
Nylon	Aqueous and/or organic samples; hydrophilic
PES	Aqueous samples
PTFE	Organic based samples Hydrophobic membrane
PVDF	Aqueous and/or organic based samples; low protein binding membrane

Uniflo Syringe Filters

Integrity test data

Description	Pore size (µm)	Minimum bubble point (psi)
Nylon	0.22	29.0
Nylon	0.45	20.0
Polyethersulfone	0.22	40.0
Polyethersulfone	0.45	33.0
Polytetrafluoroethylene*	0.22	10.0
Polytetrafluoroethylene*	0.45	6.0
Polyvinylidene Difluoride	0.22	39.0
Polyvinylidene Difluoride	0.45	17.5

* *Bubble point determined with 95% Ethanol (v/v), all others determined with water*

Uniflo Syringe Filters

Typical properties—Whatman Uniflo syringe filters

	Uniflo 13 mm	Uniflo 25 mm
Dimensions	19.6 mm × 16.9 mm	24.5 mm × 29.2 mm
Filtration area	0.88 cm^2	3.45 cm^2
Operating pressure	65.2 psi	65.2 psi
Housing	Polypropylene	Polypropylene
Volume hold up	≤ 50 µL after air purge	≤ 100 µL after air purge
Flow direction	Flow should enter from inlet	Flow should enter from inlet
Inlet Connectors	Female Luer Lock	Female Luer Lock
Outlet Connectors	Male Slip Luer	Male Slip Luer
Sterilization	Autoclave at 121°C at 15 psi for 20 minutes	Autoclave at 121°C at 15 psi for 20 minutes
Biosafe	Polymer grade and membrane types meet the USP test requirements (for Class VI Plastics)	Polymer grade and membrane types meet the USP test requirements (for Class VI Plastics)

Ordering information—Whatman Uniflo syringe filters

Diameter (mm)	Sterility	Pore size (µm)	Membrane	Catalog number	Quantity/pack
13	Nonsterile	0.22	PVDF	9909-1302	500
13	Nonsterile	0.45	PVDF	9909-1304	500
13	Nonsterile	0.22	Nylon	9910-1302	500
13	Nonsterile	0.45	Nylon	9910-1304	500
13	Nonsterile	0.22	PTFE	9911-1302	500
13	Nonsterile	0.45	PTFE	9911-1304	500
13	Nonsterile	0.22	PES	9912-1302	500
13	Nonsterile	0.45	PES	9912-1304	500
25	Nonsterile	0.22	PVDF	9909-2502	500
25	Nonsterile	0.45	PVDF	9909-2504	500
25	Nonsterile	0.22	Nylon	9910-2502	500
25	Nonsterile	0.45	Nylon	9910-2504	500
25	Nonsterile	0.22	PTFE	9911-2502	500
25	Nonsterile	0.45	PTFE	9911-2504	500
25	Nonsterile	0.22	PES	9912-2502	500
25	Nonsterile	0.45	PES	9912-2504	500
13	Sterile	0.22	PES	9916-1302	100
13	Sterile	0.45	PES	9916-1304	100
25	Sterile	0.22	PVDF	9913-2502	45
25	Sterile	0.45	PVDF	9913-2504	45
25	Sterile	0.22	PES	9914-2502	45
25	Sterile	0.45	PES	9914-2504	45
25	Sterile	0.22	PES	9915-2502	200
25	Sterile	0.45	PES	9915-2504	200

PTFE—Polytetrafluoroethylene
PVDF—Polyvinylidene Difluoride
PES—Polyethersulfone

Roby 25 for robotic systems

Roby 25 syringe filters for robotic systems were developed specifically for automated sample filtration and are available with various membranes. For difficult-to-filter samples, Roby syringe filters are also available with membranes plus an integral glass fiber prefilter.

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.

Features and benefits

- Optimized for automatic dissolution test systems
- Mechanically stable polypropylene
- Easy filter changing
- Ensures simple and smooth filter transport

Applications

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

Roby Automated Filter Validation Kit

Roby 25 filter validation kit

The Roby 25 Filter Validation Kit includes step-by-step instructions for essential selection tests. Instructions include all important properties in an at-a-glance format.

Features

- Six types of filters: six tubes each with 25 filters
- Filter validation protocol with filter selection aid

Ordering information—Roby 25 syringe filters for automation

Diameter (mm)	Pore size (µm)	Description	Catalog number	Media/ housing	Connection in/out	Color code	Quantity/ pack
25	0.45	Roby 25 CA-GF92	10463813	CA-GF/PP	FLL/ML	Green	200*
25	0.45	Roby 25 NL	10463803	NYL/PP	FLL/ML	Translucent yellow	200*
25	0.45	Roby 25 NL	10463802	NYL/PP	–	–	1000
25	0.45	Roby 25 NL-GF92	10463805	NYL-GF/PP	FLL/ML	Yellow	200*
25	0.45	Roby 25 NL-GF92	10463804	NYL-GF/PP	FLL/ML	Yellow	1000
25	0.45	Roby 25 RC	10463806	RC/PP	–	–	1000
25	0.45	Roby 25 RC-GF92	10463809	RC-GF/PP	FLL/ML	Brown	200*
25	0.45	Roby 25 RC-GF92	10463808	RC-GF/PP	–	–	1000
25	0.7	Roby 25/GF55	10463814	GF/PP	FLL/ML	Natural	200*
25	0.7	Roby 25/GF55	10463815	GF/PP	FLL/ML	Natural	1000
25	1.0	Roby 25/GF92	10463801	GF/PP	FLL/ML	Natural	200*
25	1.0	Roby 25/GF92	10463800	GF/PP	FLL/ML	Natural	1000
25	–	Filter validation kit**	10463898	–	FLL/ML	–	1

* *8 tubes with 25 pieces each*

** *Filter Validation Kit includes: Roby 25 NL; Roby 25 NL-GF92; Roby 25/RC; Roby 25/RC-GF92; Roby 25/GF55; Roby 25/GF92*

CA—Cellulose Acetate
GF—Glass Fiber
ML—Male Luer
FLL—Female Luer Lock
NYL—Nylon
PP—Polypropylene
RC—Regenerated Cellulose

Sample preparation with the Protein Prep syringe filter for ÄKTA systems

Sample
(from cell lysis and centrifugation)

Filtration with syringe filter
To remove particles and microorganisms

The sample can be injected into the system

ÄKTA start system

Protein Prep syringe filter for ÄKTA systems

- 13 mm or 30 mm diameter
- 0.2 µm or 0.45 µm pore size

Tips for choosing the right filter

- Use 13 mm diameter filter for sample volumes < 10 mL
- Use 0.2 µm pore size filter if the particle size of the chromatography resin is < 30 µm

Ordering information—Protein Prep syringe filter for ÄKTA systems

Description	Diameter (mm)	Pore size (µm)	Quantity per pack	Catalog number
Protein Prep filter for ÄKTA systems	13	0.2	150	10463103
Protein Prep filter for ÄKTA systems	13	0.45	150	10463113
Protein Prep filter for ÄKTA systems	30	0.2	150	10463043
Protein Prep filter for ÄKTA systems	30	0.45	150	10463033

Inline filters

Whatman inline 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.

Polydisc filters

Whatman Polydisc 50 mm inline disc filters are designed for larger volume sample filtration in the laboratory, at a pilot plant, or in manufacturing. Sample volumes up to 1 liter can be filtered with one device. Polydisc devices can be used in conjunction with a syringe or connected inline 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.

Whatman Inline Filter/Degassers (IFD) connect directly into an HPLC line to simultaneously filter and degas the mobile phase as it is being used.

Polydisc AS

The Polydisc AS (Aqueous Solution) family of 50 mm filter devices features 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, radiation 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 g); avoids the collapsing of tubing, which can be caused by heavy filter devices

Applications

- Tissue culture media
- Reagent preparation
- Particle counting solutions

Typical properties—Polydisc AS

Pore size (µm)*	Inline connection	Filling volume (µL)	Prefilter/media	Filtration area (cm^2)	Water flow rate mL/min at 0.7 bar (10 psi)
0.2	6–10 mm ID hose	540	GMF/PES	20.4	150
0.45	6–10 mm ID hose	540	GMF/PES	20.4	225

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

GMF—Glass Microfiber
PES—Polyethersulfone

Ordering information—Polydisc AS

Pore size (µm)	Catalog number	Prefilter/media	Quantity/pack
Sterile			
0.2	6724-5002	GMF/PES	10
0.45	6724-5045	GMF/PES	10
Nonsterile			
0.45	6724-5145	GMF/PES	50

Polydisc TF and ReZist

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

Polydisc In-line Filters, TF

Features and benefits

- Solvent-resistant membrane
- Chemical-resistant housing
- Hydrophobic PTFE membrane
- Autoclavable (multiple times)
- Integrity-testable (bubble point or water breakthrough pressure “in situ” methods)
- Biosafe
- Lightweight (11.5 g for Polydisc and 17.9 g for ReZist); avoids the collapsing of tubing, which can be caused by heavy filter devices

Applications

- Pharmaceutical: vents and inline applications
- Biotech: sterile vents and exhausts for growth environments, inline sterilization# of gases
- Laboratory: filtration of solvents and reagents, drying gases
- Electronics: photoresists, solvents, gases for research

Typical properties—Polydisc TF

Pore size (µm)	Integrity test data* IPA bubble point		Water breakthrough		Flow rates* methanol mL/min at 0.7 bar (10 psi)	Air SLPM at 0.2 bar (3 psi)
	(bar)	(psi)	(bar)	(psi)		
0.1	1.7	25	3.4	50	200	8
0.2	0.9	13	2.1	38	400	16
0.45	0.5	7	1.1	16	700	24
1.0	0.2	3	0.3	13	900	30

* *Typical values*

\# *Refers to sterilization by filtration for small sample use which is an industry term for filters of pore size 0.2 µm or smaller as referenced in guidance such as EPA Guidance for Industry Sterile Drug Products Produced by Aseptic Processing — Current Good Manufacturing Practice Section IX, Part B (September 2004).*

Ordering information—Polydisc TF and ReZist

Pore size (µm)	Media	Catalog number	Sterile	Quantity/pack
Polydisc TF				
0.1	PTFE	6720-5001	No	10
0.2	PTFE	6720-5002	No	10
0.45	PTFE	6720-5045	No	10
1.0	PTFE*	6721-5010	No	10
ReZist filter 50 mm, sterile				
0.2	PTFE	10463607	Yes	10
0.2	PTFE	10463608	No	10
0.2	PTFE	10463609	No	50

* *With PP prefilter*

Inline connection 6-10 mm ID hose
PTFE—Polytetrafluoroethylene

Polydisc HD

Excellent flow rate characteristics for filtering large volumes to 1 liter of aqueous and solvent samples. Polydisc HD (Heavy Duty) 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

Typical properties—Polydisc HD

Pore size (µm)*	Filling volume (µL)	Air flow rate SLPM at 1.0 bar (14.5 psi)	Filtration area (cm^2)	Water flow rate mL/min at 1.0 bar (14.5 psi)
5.0	540	110	20.4	1500
10.0	540	140	20.4	2200

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

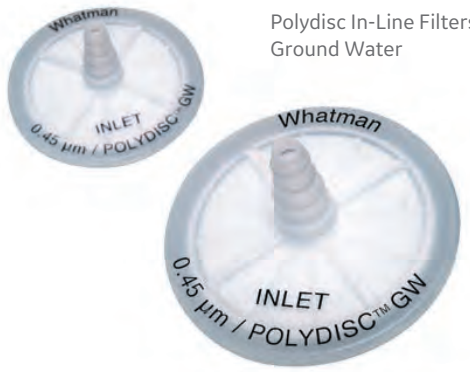
Ordering information—Polydisc HD

Pore size (µm)	Catalog number	Media	Quantity/pack
5.0	6728-5050	Polypropylene	10
10.0	6728-5100	Polypropylene	10
5.0	2227	Polypropylene	50
10.0	2228	Polypropylene	50

Polydisc GW

Polydisc GW (Ground Water) 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 (each pack contains a certificate).

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, a membrane filter in sandwich arrangement and a high dirt loading capacity.



Polydisc In-Line Filters, Ground Water

Typical properties—Polydisc GW

Housing	Polypropylene
Membrane type	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 (65 psi)
Connections	Tubing nozzle 6-14 mm i.d. hose
Maximum operating temperature	80°C

Ordering information—Polydisc GW 50 mm

Pore size (µm)	Catalog number	Prefilter/media	Quantity/pack
0.45	10463400	Quartz fiber/nylon	20
0.45	10463401	Quartz fiber/nylon	50

Inline connection—Polydisc GW accepts 6-14 mm i.d. hose

Polydisc SPF

Filtering serum requires removing proteins, lipids, salts, and other cell debris. This range of particulate matter is effectively handled with multilayer prefilters to facilitate downstream work and to avoid clogging later serum filters.

Polydisc SPF stacks a high-flow, hydrophilic PES membrane with a high particle-loading GMF filter to clean out particulates from serum and reduce stress on the final-stage serum filters.

Features and benefits

- High-throughput, inline prefilters for use upstream of serum filters
- GMF prefilter captures large particles and cell debris while PES stack removes remaining particles and bacteria larger than 1 µm
- Designed to extend the life of downstream serum filters
- Effective for microbiology and tissue culture, immunoassays, virology, and diagnostic controls
- 6 to 10 mm i.d. hose connection

Typical properties—Polydisc SPF

Prefilter material	Glass Microfiber (GMF)
Diameter	50 mm
Housing	Polypropylene (PP)
Connections	Tubing nozzle 6-10 mm i.d. hose
Filtration area	20.4 cm²
Filling volume	540 µL

Ordering information—Polydisc SPF

Pore size (µm)	Catalog number	Prefilter/media	Membrane	Quantity/pack
1.0	6724-5000	Glass Microfiber (GMF)	1.0 µm PES	10

PES—Polyethersulfone

Inline filter degasser

Whatman Inline 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. Aqueous IFD is designed to work with mobile phases containing at least 20% of the aqueous component.

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.

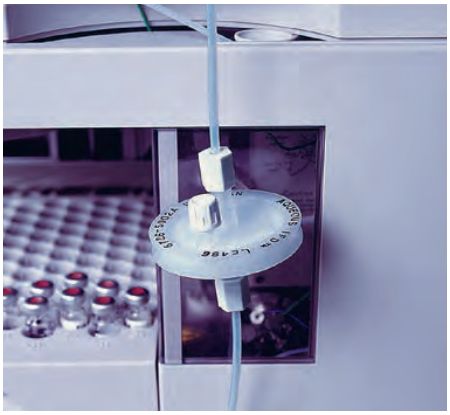
The inline filters work on the principle of “bubble point”—the point of pressure at which gases will pass through a wet membrane. If pressure is maintained below the bubble point, the gas will not pass through the membrane and is trapped by the particular filter device.

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



Inline Filter/ Degassers (IFD)

Typical properties—Aqueous IFD and Solvent IFD

	Aqueous IFD	Solvent IFD
*Bubble point**		
bar	2.9 (a)	0.76 (b)
psi	42 (a)	11.0 (b)
Maximum flow rate**	2.5 mL/min	2.5 mL/min
Filtration area	16 cm^2	16 cm^2

* *Typical values determined with (a) water and (b) isopropanol*
** *For effective gas bubble removal in HPLC*

Ordering information—Aqueous IFD and Solvent IFD

Diameter	Pore size (µm)	Catalog number	Description	Media	Quantity/pack
50	0.2	6726-5002	Aqueous IFD*	Nylon	10
50	0.2	6726-5002A	Aqueous IFD**	Nylon	10
50	0.2	6725-5002	Solvent IFD*	PP	10
50	0.2	6725-5002A	Solvent IFD**	PP	10

* *Standard catalog numbers include O-rings: 1/32-5/32; accepts different diameter tubing 0.8-4 mm*
** *Catalog numbers with suffix A are non-o-ring style and accept 1/8 tubing only*

PP—Polypropylene

Capsule filters

Whether you are conducting research, pilot manufacturing or filtering large volumes or hard-to-filter samples, GE has a capsule to fit your needs.

Polycap AS

Polycap AS (Aqueous Solution) is 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 biosafe, and has excellent flow rates
- Ultra-clean, containing no surfactant or mold release agents
- Housing is 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 presterilized with gamma irradiation
- Manufactured in clean room facilities under ISO Quality Systems

Label the image Polycap AS

Applications

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

Typical properties—Polycap AS

Housing	Polypropylene
Vent	On inlet
Prefilter	Glass microfiber double laminated with polyolefin monofilament nonwoven
Membrane	Nylon
Support system	Polypropylene
Sealing	Heat-fused
Maximum pressure	60 psi (4.1 bar)
Endotoxin level	LAL tested, ≤ 0.5 EU/mL
Biosafety	Materials pass USP Class VI
Sterilization	Certain filter devices have been sterilized*. Capsules may be autoclaved at 121°C for 20 min (maximum 132°C). However, an integrity test should be performed after autoclaving. Filling bell is not autoclavable but is detachable.
Nominal filtration area	36 mm capsule: ~ 400 cm^2 (62 in^2) 75 mm capsule: ~ 820 cm^2 (127 in^2)
IPA bubble point	0.2 µm membrane: > 1.1 bar (16 psi) 0.45 µm membrane: > 0.70 bar (10 psi) 1.0 µm membrane: > 0.21 bar (3 psi)

* *Sterile and nonsterile options offered*

Ordering information—Polycap AS

				Connections			
Pore size (µm)	**Catalog number**	**Media**	**Prefilter**	**Inlet**	**Outlet**	**Sterile**	**Quantity/pack**
Polycap AS 36							
0.2	6708-3602	Nylon	GMF	1/2 SB	1/2 SB	Yes	1
0.2	6705-3602	Nylon	GMF	SB	SB	Yes	1
0.2	6709-3602	Nylon	GMF	MNPT	SB	Yes	1
0.2	2606T	Nylon	GMF	FNPT	FNPT	No	5
0.45	6705-3604	Nylon	GMF	SB	SB	Yes	1
1.0	2608NS	Nylon	GMF	SB	SB	No	5
Polycap AS 36 plus filling bell							
0.2	6706-3602	Nylon	GMF	SB	SB	Yes	1
Polycap AS 75							
0.2	2706T	Nylon	GMF	FNPT	FNPT	No	5
0.45	2707NS	Nylon	GMF	SB	SB	No	5

FNPT—Female National Pipe Thread
GMF—Glass Microfiber Filter
MNPT—Male National Pipe Thread
1/2 SB—Stepped Barb for 10-12 mm (3/8”-1/2”) tubing
SB—Stepped Barb for 6-10 mm (1/4”-3/8”) tubing

Polycap HD

Polycap HD provides an 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 a 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 min
- Manual vent with luer lock to bleed air from upstream or serve as an injection or sample port
- Available with a retention rating of 0.2, 0.45, 1.0, 5.0 or 10 µm and a variety of end-fitting configurations
- Manufactured in a Class 10,000 clean room in an ISO certified manufacturing plant

Polycap HD

Applications

- Buffers
- 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
- Reagents
- Sample preparations
- Semiconductor and magnetic media
- Solvents

Typical properties—Polycap HD

Housing	Polypropylene
Vent	On inlet
Filter media	Polypropylene
Support system	Polypropylene
Biosafety	Materials pass USP Class VI
Nominal filtration area	36 mm capsule: ~ 400 cm^2 (62 in^2) 75 mm capsule: ~ 820 cm^2 (127 in^2) 150 mm capsule: ~ 1650 cm^2 (256 in^2)
Sterilization	Capsules autoclavable at 121°C for 20 min (maximum temperature is 132°C)
Maximum pressure	4.1 bar (60 psi)

Ordering information—Polycap HD (nonsterile)

				Connections		
Pore size (µm)	**Catalog number**	**Media**	**Prefilter**	**Inlet**	**Outlet**	**Quantity/pack**
Polycap HD 36						
0.2	2610T	PP	No	FNPT	FNPT	5
1.0	6703-3610	PP	No	SB	SB	1
1.0	2611	PP	No	SB	SB	5
1.0	2611T	PP	No	FNPT	FNPT	5
5.0	6703-3650	PP	No	SB	SB	1
5.0	2612T	PP	No	FNPT	FNPT	5
10.0	6703-3611	PP	No	SB	SB	1
10.0	2613T	PP	No	FNPT	FNPT	5
20.0	6703-3621	PP	No	SB	SB	1
20.0	2614T	PP	No	FNPT	FNPT	5
Polycap HD 75						
0.45	2710	PP	No	1/2 HB	1/2 HB	5
1.0	6703-7510	PP	No	1/2 SB	1/2 SB	1
1.0	2711T	PP	No	FNPT	FNPT	5
5.0	6703-7550	PP	No	1/2 SB	1/2 SB	1
5.0	2712M	PP	No	MNPT	MNPT	5
5.0	2712T	PP	No	FNPT	FNPT	5
10.0	6703-7511	PP	No	1/2 SB	1/2 SB	1
10.0	2713T	PP	No	FNPT	FNPT	5
10.0	2713	PP	No	HB	SB	5
20.0	6703-7521	PP	No	1/2 SB	1/2 SB	1
20	2714	PP	No	1/2 HB	1/2 HB	5
20.0	2714T	PP	No	FNPT	FNPT	5
Polycap HD 150						
0.45	2810	PP	No	1/2 HB	1/2 HB	5
0.45	2810T	PP	No	FNPT	FNPT	5
5.0	2812T	PP	No	FNPT	FNPT	5
10.0	2813T	PP	No	FNPT	FNPT	5
10.0	2813	PP	No	1/2 HB	1/2 HB	5
20.0	2814T	PP	No	FNPT	FNPT	5

FNPT—Female National Pipe Thread
HB—1/2 Hose Barb
MNPT—Male National Pipe Thread
PP—Polypropylene
1/2 SB—Stepped Barb for 10-12 mm (3/8”-1/2”) tubing
SB—Stepped Barb for 6-10 mm (1/4”-3/8”) tubing

Polycap SPF

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
- Excellent 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

Polycap SPF

Applications

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

Typical properties—Polycap SPF

Housing	Polypropylene
Vent	On inlet
Prefilter	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 min (132°C max)
Nominal filtration area	36 mm capsule: ~ 260 cm^2 (40 in^2) 75 mm capsule: ~ 535 cm^2 (83 in^2)

Ordering information—Polycap SPF (nonsterile)

				Connections		
Pore size (µm)	**Catalog number**	**Media**	**Prefilter**	**Inlet**	**Outlet**	**Quantity/pack**
Polycap SPF 36						
1.0	6705-3600	PES	GMF	SB	SB	1
Polycap SPF 75						
1.0	6705-7500	PES	GMF	SB	SB	1

GMF—Glass Microfiber Filter
PES—Polyethersulfone
SB—Stepped Barb for 6-10 mm (1/4-3/8) tubing

Polycap TC

Polycap TC (PES) is available with and without a filling bell. They 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 biosafe, has excellent flow rates, and exhibits low protein binding.

Features and benefits

- Polycap TC/PES 0.2/0.1, 0.2/0.2, 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 nonsterile versions with a filling bell option
- Manufactured in clean room facilities under ISO Quality Systems
- PES membrane protein adsorption characteristics:
  - HSA 0.4 µg/cm^2
  - Insulin 2.0 µg/cm^2
  - Gammaglobulin 1.5 µg/cm^2

Applications

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

Polycap TC

Typical 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
Endotoxin level	LAL tested, ≤ 0.5 EU/mL
Biosafety	Materials pass USP class VI
Sterilization	Certain filter devices have been sterilized*. Capsule may be autoclaved at 121°C for 20 min (maximum 132°C). However, an integrity test should be performed after autoclaving.
Nominal filtration area	36 mm capsule: ~ 440 cm^2 (72 in^2) 75 mm capsule: ~ 930 cm^2 (144 in^2) 150 mm capsule: ~ 1900 cm^2 (302 in^2)
Water bubble point (final membrane)	0.1 µm > 3.2 bar (46 psi) 0.2 µm > 2.7 bar (40 psi) 0.45 µm > 2.1 bar (30 psi) 1.0 µm > 1.1 bar (16 psi)

** Sterile and nonsterile options offered*

Ordering information—Polycap TC

				Connections		
Pore size (µm)	**Catalog number**	**Media**	**Inlet**	**Outlet**	**Sterile**	**Quantity/pack**
Polycap TC 36						
0.2/0.1	6714-3601	PES	SB	SB	Yes	1
0.2/0.2	6714-3602	PES	SB	SB	Yes	1
0.65/0.45	6714-3604	PES	SB	SB	Yes	1
Polycap TC 36 plus filling bell						
0.2/0.1	6715-3601	PES	SB	SB	Yes	1
0.2/0.2	6715-3602	PES	SB	SB	Yes	1
0.2/0.2	6716-3602	PES	MNPT	SB	Yes	1
0.65/0.45	6715-3604	PES	SB	SB	Yes	1
0.8/0.2	6715-3682	PES	SB	SB	Yes	1
Polycap TC 75						
0.2/0.1	6714-7501	PES	SB	SB	Yes	1
0.2/0.2	6714-7502	PES	SB	SB	Yes	1
0.65/0.45	6717-7504	PES	1/2 SB	1/2 SB	Yes	1
1.0/1.0	6717-7510	PES	1/2 SB	1/2 SB	Yes	1
Polycap TC 75 plus filling bell						
0.2/0.2	6715-7502	PES	SB	SB	Yes	1
0.8/0.2	6715-7582	PES	SB	SB	Yes	1
Polycap TC 150						
0.2/0.1	6717-9501	PES	1/2 SB	1/2 SB	Yes	1
0.2/0.2	6717-9502	PES	1/2 SB	1/2 SB	Yes	1
0.2/0.2	6704-9502	PES	1 1/2" Sanitary	1 1/2" Sanitary	No	1
0.65/0.45	6717-9504	PES	1/2 SB	1/2 SB	Yes	1
Polycap TC 150 plus filling bell						
0.2/0.2	6718-9502	PES	1/2 SB	1/2 SB	Yes	1
0.8/0.2	6718-9582	PES	1/2 SB	1/2 SB	Yes	1

MNPT—Male National Pipe Thread
PES—Polyethersulfone
1/2 SB—Stepped Barb for 10-12 mm (3/8"-1/2") tubing
SB—Stepped Barb for 6-10 mm (1/4"-3/8") tubing

Polycap TF

Polycap TF filter 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.

Features and benefits

- Resistant to most solvents, autoclavable, and integrity-testable
- Available in 0.1, 0.2, 0.45, and 1.0 µm pore sizes
- 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
- Inline filtration
- Isolation
- Electronics
- Pharmaceutical
- Biotech
- Laboratory
- Other uses

Polycap TF

Typical 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 min (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.
Nominal filtration area	36 mm capsule: ~ 500 cm^2 (77 in^2) 75 mm capsule: ~ 1000 cm^2 (155 in^2) 150 mm capsule: ~ 2000 cm^2 (310 in^2)
IPA bubble point	0.1 µm membrane: > 1.5 bar (23 psi) 0.2 µm membrane: > 0.9 bar (13 psi) 0.45 µm membrane: > 0.5 bar (7 psi) 1.0 µm membrane: > 0.2 bar (3 psi)

Ordering information—Polycap TF (nonsterile)

			Connections		
Pore size (µm)	**Catalog number**	**Media**	**Inlet**	**Outlet**	**Quantity/pack**
Polycap TF 36					
0.1	6711-3601	PTFE	MNPT	3/8 SB	1
0.2	6711-3602	PTFE	MNPT	3/8 SB	1
0.2	6710-3602	PTFE	1/2 SB	1/2 SB	1
0.2	6700-3602	PTFE	3/8 SB	3/8 SB	1
0.2	2601	PTFE	–	–	5
0.2	2601T	PTFE	FNPT	FNPT	5
0.45	6711-3604	PTFE	MNPT	3/8 SB	1
0.45	2602S	PTFE	1 1/2" Sanitary	1 1/2" Sanitary	5
1.0	6700-3610	PTFE	3/8 SB	3/8 SB	1
1.0	2603	PTFE	–	–	5
1.0	2603T	PTFE	FNPT	FNPT	5
Polycap TF 75					
0.1	6700-7501	PTFE	3/8 SB	3/8 SB	1
0.1	2700T	PTFE	FNPT	FNPT	5
0.2	6711-7502	PTFE	MNPT	3/8 SB	1
0.2	6710-7502	PTFE	1/2 SB	1/2 SB	1
0.2	6700-7502	PTFE	3/8 SB	3/8 SB	1
0.2	2702M	PTFE	MNPT	MNPT	5
0.2	2702T	PTFE	FNPT	FNPT	5
0.45	6700-7504	PTFE	3/8 SB	3/8 SB	1
0.45	2703T	PTFE	FNPT	FNPT	5
1.0	6701-7510	PTFE	1/2 SB	1/2 SB	1
Polycap TF 150					
0.1	2800T	PTFE	FNPT	FNPT	5
0.2	2802T	PTFE	FNPT	FNPT	5
0.2	2801	PTFE	1 1/2" Sanitary	1 1/2" Sanitary	5
0.45	2803T	PTFE	FNPT	FNPT	5
1.0	2804T	PTFE	FNPT	FNPT	5

FNPT—Female National Pipe Thread
MNPT—Male National Pipe Thread
PTFE—Polytetrafluoroethylene
1/2 SB—Stepped Barb for 10-12 mm (3/8"-1/2") tubing
SB—Stepped Barb for 6-10 mm (1/4"-3/8") tubing

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 inline filter unit.

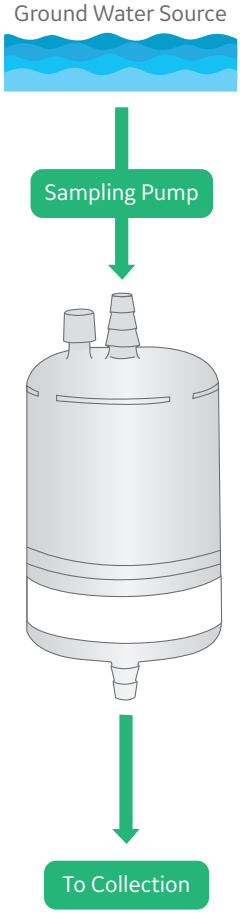
Features and benefits

- Connects directly to outlet of a sampling pump
- Easy to use
- Filtration membrane is encapsulated in durable polypropylene housing
- Large surface area optimized to provide at least 600 cm^2 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
- Lot number printed on each unit for traceability

Polycap GW

Applications

- Filter ground water samples before dissolved metal analysis



Typical properties—Polycap GW

Housing	Polypropylene
Filter media	0.45 µm: PES filter
Inlet/outlet	1⁄4 to 3⁄8 in (6-9 mm) Stepped Barb (SB)
Support system	Polypropylene
Vent	On inlet
Nominal filtration area	600 cm^2 (93 in^2)
Wetting characteristics	Hydrophilic
Maximum pressure	60 psi (4.1 bar)
Water flow rate at 1.0 bar (14.5 psi)	60 L/min
Flow direction	Flow should follow arrows

Ordering information—Polycap GW

Pore size (µm)	Catalog number	Media	Connections		Quantity/ pack
			Inlet	Outlet	
Polycap GW 75					
0.45	6714-6004	PES	SB	SB	1
0.45	6724-6004	PES	SB	SB	100

PES—Polyethersulfone
SB—Stepped Barb for 6-10 mm (1/4"-3/8") tubing

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 filled with high-purity, high-efficiency, acidwashed, 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
- Removes a potential health hazard from the workplace

Carbon Cap

Typical 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

Description	Catalog number	Quantity/pack
Carbon Cap 75	6704-7500	1
Carbon Cap 150	6704-1500	1

Venting filters

Whatman Venting Filters are disposable devices designed and manufactured with a high-purity polypropylene housing to maintain sample purity. Products 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.

Whatman PolyVENT integral vent filters

Whatman PolyVENT filters are integral venting filters that work bidirectionally to prevent contaminants from entering vessels like fermentation tanks during draining or filling.

Feature and benefits

- 0.2 µm hydrophobic PTFE air filters are excellent industrial air filter media
- Testable by water break through (WBT) test or bubble point testing
- Passes USP Class VI biosafety tests for plastics
- Manufactured in clean room facilities
- Range of filtration areas from 4–2000 cm² to support filtration volumes as small as one liter and as large as a large tank vessel

Draining or filling of incubators, fermentation tanks, and other vessels requires a venting filter capable of preventing bacterial contamination. With an integral PTFE filter membrane, Whatman PolyVENT acts as an industrial air filter media for sterilization# of gases entering bioreactors such as fermentation tanks.

PolyVENT Integral Vent Filters

Typical properties—PolyVENT venting filters

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 breakthrough test	29 psi (2 bar)/15 seconds
Flow direction	Bidirectional
Biosafety	Materials pass USP Class VI
Sterilization	Can be autoclaved at 121°C for 20 min (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.
Nominal filtration area	36 mm capsule: ~ 500 cm^2 75 mm capsule: ~ 1000 cm^2 150 mm capsule: ~ 2000 cm^2 50 mm disc: 16 cm^2 25 mm disc: 4 cm^2

Ordering information—PolyVENT venting filters

			Connections*			
Pore size (µm)	**Catalog number**	**Housing type**	**Inlet**	**Outlet**	**Media**	**Quantity/pack**
PolyVENT 36						
0.2	6713-5036	Capsule	SB	SB	PTFE	1
0.2	2103	Capsule	1/2 SB	1/2 SB	PTFE	1
PolyVENT 75						
0.2	6713-1075	Capsule	1/2 SB	1/2 SB	PTFE	1
PolyVENT 150						
0.2	2107	Capsule	1/2 SB	1/2 SB	PTFE	1
0.2	2108	Capsule	1 1/2" Sanitary	1 1/2" Sanitary	PTFE	1
PolyVENT discs						
0.2	6713-0425	25 mm	FLL	ML	PTFE	50
0.2	6713-1650	50 mm	SB	SB	PTFE	10
0.2	6713-1651	50 mm	SB	SB	PTFE	100

FLL—Female Luer Lock
ML—Male Luer Lock
PTFE—Polytetrafluoroethylene
1/2 SB—Stepped Barb for 10-12 mm (3/8"-1/2") tubing
SB—Stepped Barb for 6-10 mm (1/4"-3/8") tubing

[#] *Refers to sterilization by filtration for small sample use, which is an industry term for filters of pore size 0.2 µm or smaller as referenced in guidance such as EPA Guidance for Industry Sterile Drug Products Produced by Aseptic Processing — Current Good Manufacturing Practice Section IX, Part B (September 2004).*

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 ≥ 0.3 µm 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 min (132°C max) for assured sterility
- Allows bidirectional flow
- Depth filter design allows for high loading capacity
- Preventing bacterial, algal, or fungal contamination in fermentors or incubators
- Tissue culture applications

HEPA- VENT and HEPA—CAP Filters

Applications

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

Typical 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
Nominal filtration area	36 mm capsule: ~ 625 cm^2 (97 in^2) 75 mm capsule: ~ 1300 cm^2 (201 in^2) 150 mm capsule: ~ 2590 cm^2 (402 in^2) 50 mm disc: 16 cm^2

Ordering information—HEPA-VENT and HEPA-CAP filters

		Connections		
Catalog number	**Housing type**	**Inlet**	**Outlet**	**Quantity/pack**
HEPA-CAP 36				
6702-3600	Capsule	1/4-3/8 SB	1/4-3/8 SB	1
2609T	Capsule	3/8 in. FNPT	3/8 in. FNPT	5
HEPA-CAP 75				
6702-7500	Capsule	3/8-1/2 in. SB	3/8-1/2 in. SB	1
2709T	Capsule	3/8 in. FNPT	3/8 in. FNPT	5
HEPA-CAP 150				
6702-9500	Capsule	3/8 in. FNPT	3/8 in. FNPT	1
2809T	Capsule	3/8 in. FNPT	3/8 in. FNPT	5
HEPA-VENT disc filter				
6723-5000	50 mm disc	1/4-3/8 SB	1/4-3/8 SB	10

FNPT—Female National Pipe Thread
1/2 SB—Stepped Barb for 10-12 mm (3/8"-1/2") tubing
SB—Stepped Barb for 6-10 mm (1/4"-3/8") tubing

Vacuum protection filters

VACU-GUARD vacuum protection filters

VACU-GUARD help protect your equipment from potentially damaging contaminants.

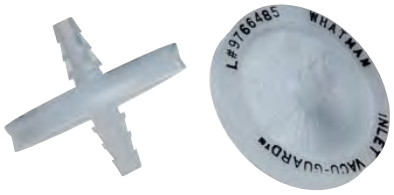
VACU-GUARD

Features and benefits

- Prevents fluid and aerosol contamination of vacuum pumps or aspiration suction systems while removing hazardous exhaust
- Flexible: designed for use with 6–10 or 10–12 mm i.d. tubing
- Biosafe: all materials pass USP Class VI Test for Plastics

Applications

- Protects vacuum pumps and systems from aerosols and particulate contamination



In-line disc filters protect vacuum systems from aqueous aerosols

VACU-GUARD 150

Features and benefits

- Choice of media: VACU-GUARD 150 capsule filters include all the features and benefits of standard VACU-GUARD disc filters, plus a range of media for specific applications
- Added back-up protection: use as a backup between a cold trap and pump to protect against moisture and organic vapors if cold trap fails

Applications

- Activated carbon removes organic vapors from air
- Molecular sieve for removal of water and small organic and alkaline molecules from air streams
- Desiccant for use with high velocity acidic air

In-line capsule filters trap chemicals in addition to aqueous aerosols

Typical properties—VACU-GUARD inline disc filter — 50 and 60 mm

	50 mm	**60 mm**
Filtration area	16 cm^2	25 cm^2
Maximum operating pressure	1 bar (15 psi)	1 bar (15 psi)
Biosafety	All materials pass USP Class VI test for plastics	
Rated retention in air	99.99% particle retention for particles ≥ 0.1 µm	
Pore size (in liquid)	0.45 µm	0.45 µm
Housing	Polypropylene	Polypropylene
Filtration media	PTFE membrane	PTFE membrane
Connectors	1/4–3/8" (6–10 mm) SB (stepped barb) inlet and outlet	3/8–1/2" (10–12 mm) SB inlet and outlet
Flow rates (SLPM):		
2 psi (0.14 bar)*	15	27
4 psi (0.28 bar)*	27	57
6 psi (0.41 bar)*	38	83
10 psi (0.69 bar)*	53	139
Flow direction	Inlet to outlet	Inlet to outlet

* *Differential pressure*

Typical properties—VACU-GUARD 150 inline capsule filter

	Activated carbon	**Desiccant**	**Molecular sieve**
Chemical trap media	Activated carbon	Anhydrous calcium sulphate	Silico aluminate zeolite
Filter media	PTFE	PTFE	PTFE
Surface area or weight (nominal)	82 000 m^2 (carbon)	318 g (desiccant)	363 g (zeolite)
Flow rates (SLPM) (nominal):			
0.1 bar (1.45 psi)*	210	280	250
0.5 bar (7.25 psi)*	450	600	570
Maximum operating pressure:			
Dry gas	4 bar (60 psi)	4 bar (60 psi)	4 bar (60 psi)
Wet gas	1 bar (14 psi)	1 bar (14 psi)	1 bar (14 psi)
Connectors:			
Inlet	Hose barb for 1/2" (12.7 mm) tube		
Outlet	3/8–1/2" (10–12 mm) step barb		

* *Differential pressure*

Note: as with any chemical reaction, care should be used to determine the safety and usefulness of VACU-GUARD 150 products prior to routine use. For example, the molecular sieve rapidly heats up when exposed to water.

Ordering information—VACU-GUARD

Product	**Catalog number**	**Quantity/pack**
VACU-GUARD, 50 mm disc	6722-5000	10
VACU-GUARD, 60 mm disc	6722-5001	10
VACU-GUARD 150 capsule, activated carbon	6722-1001	1
VACU-GUARD 150 capsule, desiccant	6722-1002	1
VACU-GUARD 150 capsule, molecular sieve	6722-1003	1