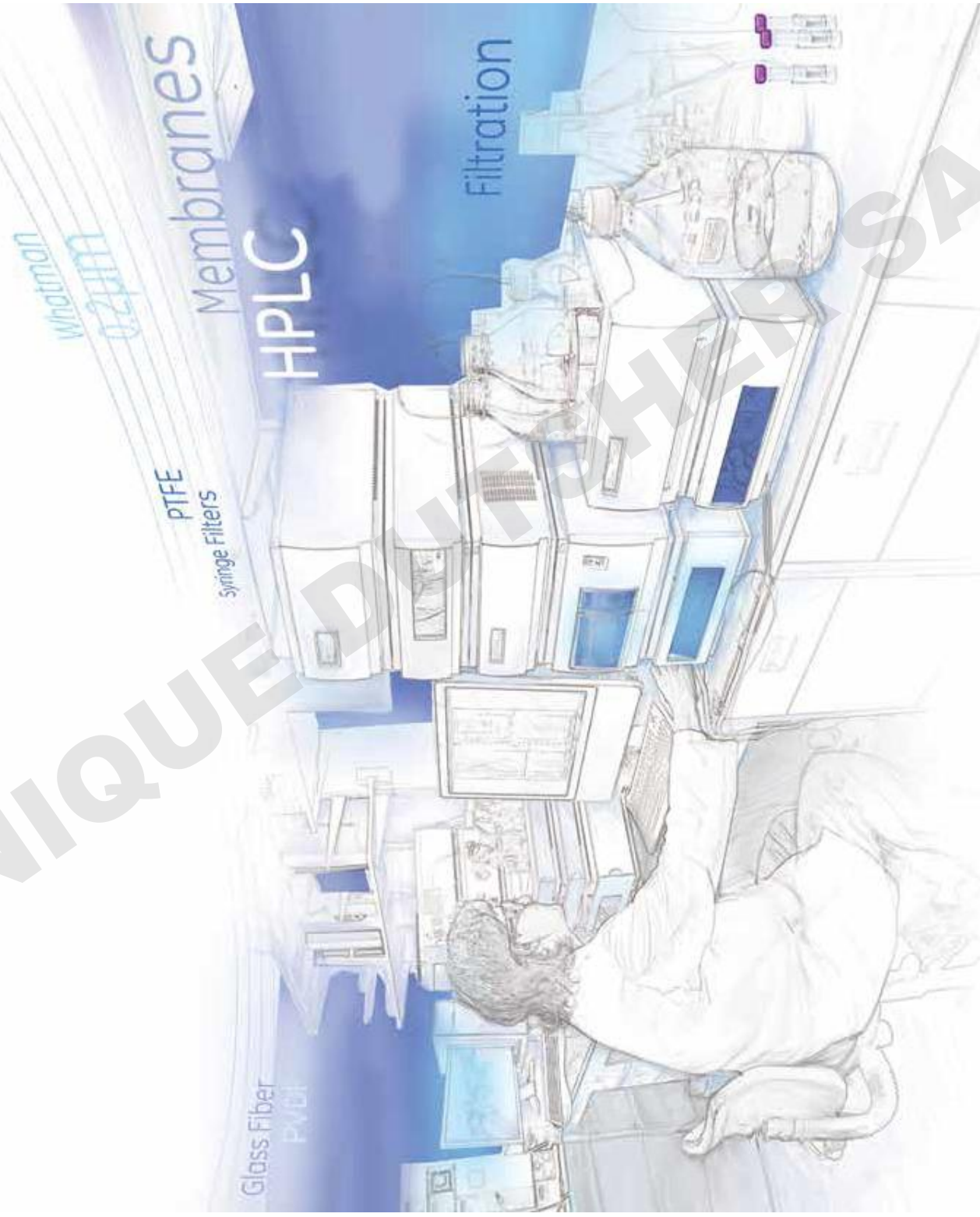


Synchronized solutions for (U)HPLC sample preparation



Membrane selection guide

Solvent	Anopore™	PTFE**	PVDF	RC
Acetic Acid, 5%	R	R	R	R
Acetic Acid, Glacial	R	R	R	NR
Acetone	R	R	NR	R
Acetonitrile	R	R	R	R
Ammonia, 6N	NR	R	LR	LR
Amyl Acetate	LR	R	LR	R
Amyl Alcohol	R	R	R	R
Benzene*	R	R	R	R
Benzyl Alcohol*	R	R	R	R
Boric Acid	R	R	R	R
Butyl Alcohol	R	R	R	R
Butyl Chloride*		R	R	
Carbon Tetrachloride*	R	R	R	R
Chloroform*	R	R	R	R
Chlorobenzene*	R	R	R	R
Citric Acid		R	R	R
Cresol*		R	NR	R
Cyclohexanone	R	R	R	R
Cyclohexane*	R	R	R	R
Diethyl Acetamide		R	NR	R
Dimethyl Formamide	LR	R	NR	LR
Dioxane	R	R	LR	R
DMSO	LR	R	LR	LR
Ethanol	R	R	R	R
Ethers*	R	R	LR	R
Ethyl Acetate	R	R	NR	R
Ethylene Glycol	R	R	R	R

R = Resistant; **LR** = Limited Resistance; **NR** = Not recommended; * = Short term resistance of housing
 The above data is to be used as a guide only. Testing prior to application is recommended.
 ** = Membrane may need pre-wetting with isopropanol/methanol if filtering a polar liquid.

Material abbreviations:

PTFE — Polytetrafluoroethylene
 PVDF — Polyvinylidene Difluoride
 RC — Regenerated Cellulose

Solvent	Anopore	PTFE**	PVDF	RC
Formaldehyde*	LR	R	R	LR
Formic Acid		R	R	LR
Hexane	R	R	R	R
Hydrochloric Acid, Conc*	NR	R	R	NR
Hydrofluoric Acid*		R	R	NR
Isobutyl Alcohol	R	R	R	R
Isopropyl Alcohol	R	R	R	R
Methanol	R	R	R	R
Methyl Ethyl Ketone	R	R	NR	R
Methylene Chloride*	R	R	R	R
Nitric Acid, Conc*		R	R	NR
Nitric Acid, 6N*		R	R	LR
Nitrobenzene*	LR	R	R	R
Pentane*	R	R	R	R
Perchloro Ethylene*	R	R	R	R
Phenol 0.5%	LR	R	R	R
Pyridine	R	R	NR	R
Sodium Hydroxide, 6N	NR	R	NR	NR
Sulfuric Acid, Conc*	NR	R	NR	NR
Tetrahydrofuran*	R	R	R	R
Toluene*	R	R	R	R
Trichloroethane*	R	R	R	R
Trichloroethylene*	R	R	R	R
Water	R	R	R	R
Xylene*	R	R	R	R

GE Healthcare offers synchronized solutions...

This brochure highlights the extensive range of GE Healthcare filtration solutions for HPLC sample preparation offered under the Whatman™ brand.

Whatman products are among the industry leaders in separations technology, and our range of filtration devices is no exception. Every filter is manufactured to strict quality standards in ISO certified facilities.

Whatman filtration devices are suitable for HPLC sample preparation in:

- Pharmaceutical
- Food and beverage
- Environmental
- General laboratory

The following icons will guide you to the device most suitable for your specific needs.

For chemical compatibility of our membranes please refer to our membrane selection table on the previous pages.



Anopore

Whatman Anopore membrane is a special inorganic filtration media (Fig 1).

Electrochemically manufactured out of alumina, it has a precise, nondeformable honeycomb pore structure, with no lateral crossover between individual pores. That leads to a precise stated cut-off, allowing no larger sized particles to pass through the membrane.

The membrane is hydrophilic and it is compatible with most solvents and aqueous material. No monomers, plasticizers, adhesives, surfactants or wetting agents are used in the manufacturing process. This eliminates sample contamination and ensures minimal loss of sample.

Recommended filter with Anopore membrane

Anotop™ syringe filters

Anotop syringe filters are a universal solution for numerous filtration applications (Fig 2).

The distinctive hexagonal housing is manufactured from pigment-free polypropylene to eliminate sample contamination. No wetting agents or adhesives are used in the manufacturing process.

Anotop syringe filters contain a proprietary alumina-based Anopore membrane. These syringe filters are supplied in three pore sizes (0.02 µm; 0.1 µm; 0.2 µm) and two diameters (10 mm and 25 mm).

Glass microfiber prefilter versions are available for difficult-to-filter samples.

Anotop 10 mm syringe filters

Pore size	Code no.	Code no.	Quantity
Membrane type	Aluminum oxide	Aluminum oxide with glass fiber prefilter	
0.02 µm	6809-1002	6809-3002	50/pack
0.1 µm	6809-1012	6809-3012	50/pack
0.2 µm	6809-1022	6809-3022	50/pack

Anotop 25 mm syringe filters

Pore size	Code no.	Code no.	Quantity
Membrane type	Aluminum oxide	Aluminum oxide with glass fiber prefilter	
0.02 µm	6809-2002	6809-4002	50/pack
0.1 µm	6809-2012	6809-4012	50/pack
0.2 µm	6809-2022	6809-4022	50/pack

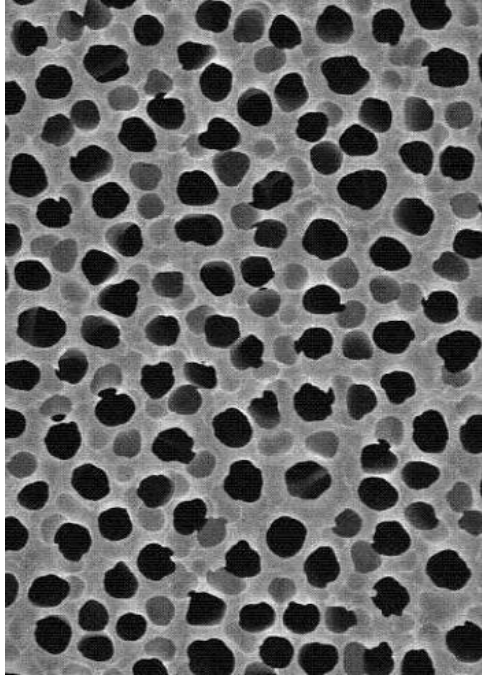


Fig 1. Anopore membrane has low protein binding, minimal autofluorescence, and is nontoxic.



Fig 2. Anotop syringe filters can be used with most organic solvents and aqueous materials, and are suitable for sample volumes up to 100 ml.



Regenerated Cellulose

The Whatman Regenerated Cellulose membrane is made of pure cellulose without any wetting agents (Fig 3).

Whatman filtration devices containing this membrane are compatible with both organic and aqueous solutions. These features, combined with the low protein binding characteristics of the membrane, make it an excellent choice for analytical and bio-analytical sample filtration prior to HPLC or UHPLC analysis.

Recommended filter with Regenerated Cellulose membrane

SPARTAN™ syringe filters

SPARTAN syringe filters enable you to obtain reproducible results from the filtration of organic and aqueous solutions for HPLC and UHPLC (Fig 4).

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. This is due to the incorporated regenerated cellulose membrane and the polypropylene housing. The 30 mm membrane diameter provides a greater membrane surface area compared to the 25 mm syringe filters leading to higher sample throughput.

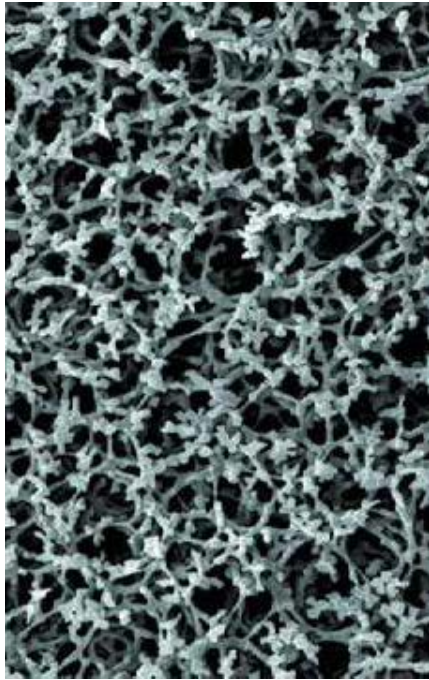


Fig 3. Regenerated cellulose is chemically treated for improved chemical resistance.



Fig 4. SPARTAN syringe filters have excellent chemical resistance against standard aqueous and organic HPLC solvents.



SPARTAN syringe filters

Membrane	Pore size	Code no.	Code no.	Quantity
		13 mm diameter	30 mm diameter	
		with mini-tip		
Regenerated cellulose	0.2 μm	10463100	10463040	100/pack
Regenerated cellulose	0.2 μm	10463102	10463042	500/pack
Regenerated cellulose	0.45 μm	10463110	10463030	100/pack
Regenerated cellulose	0.45 μm	10463112	10463032	500/pack

Innovative filter featuring Regenerated Cellulose membrane

Mini-UniPrep™ syringeless filters

Whatman Mini-UniPrep syringeless filters provide a faster and easier way to remove particulates from samples prior to HPLC/UHPLC analysis (Fig 5).

Features and benefits:

- Replaces syringe, syringe filter, vial, and cap
- Time savings with 6-position compressor (Fig 6)
- Ecofriendly because it produces less waste
- Waste and cost reduction

Also available with Regenerated Cellulose:

Whatman GD/X™ for particulate loaded samples – see page 8

Mini-UniPrep with polypropylene housing

Pore size	Housing	Cap	Code no.	Code no.	Code no.	Code no.	Code no.	Quantity
	Membrane	PTFE	PVDF	Nylon	PP	RC		
0.2 µm	Translucent	Standard	UN203NPEORG	UN203NPEAQU	UN203NPENYL	UN203NPEPP	UN203NPERC	100/pack
0.45 µm	Translucent	Standard	UN203NPUORG	UN203NPUAQU	UN203NPUNYL	UN203NPUPP	UN203NPURC	100/pack
0.2 µm	Amber	Standard	UN203APEORG	UN203APEAQU	UN203APENYL	UN203APEPP		100/pack
0.45 µm	Amber	Standard	UN203APUORG	UN203APUAQU	UN203APUNYL	UN203APUPP		100/pack
0.2 µm	Translucent	Slit septum	US203NPEORG	US203NPEAQU	US203NPENYL	US203NPEPP		100/pack
0.45 µm	Translucent	Slit septum	US203NPUORG	US203NPUAQU	US203NPUNYL	US203NPUPP		100/pack

Mini-UniPrep compressor

Description	Code no.	Quantity
Multi Compressor - 6 positions	CR0000006	1/pack

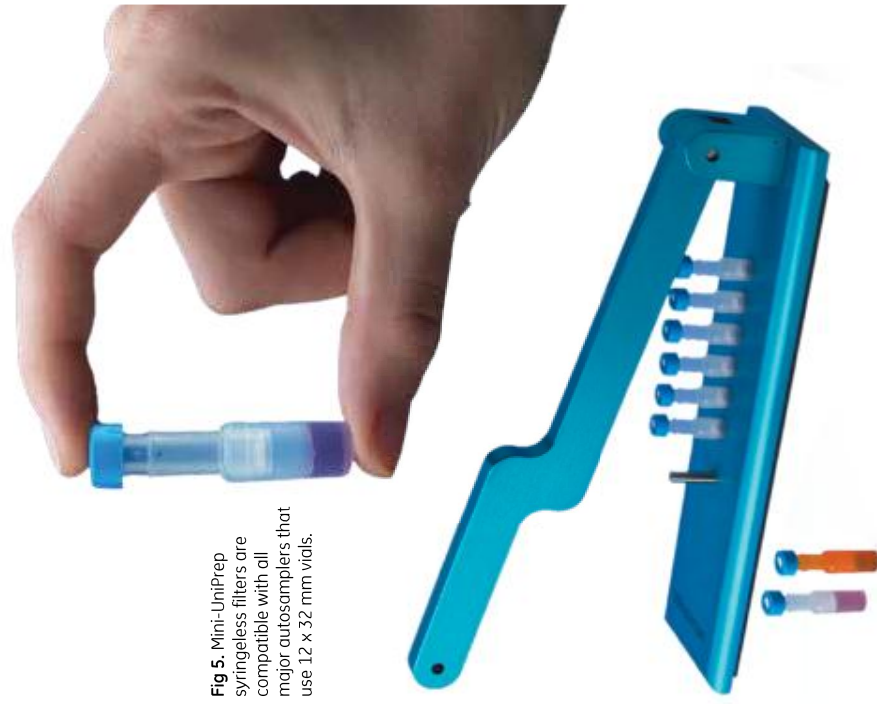


Fig 5. Mini-UniPrep syringeless filters are compatible with all major autosamplers that use 12 x 32 mm vials.

Fig 6. Multi-position compressor enables up to six samples to be processed simultaneously.



PDFE

Whatman Polytetrafluorethylene (PTFE) is an excellent choice for samples containing organic solvents, strong acids, and alkalis (Fig 7).

PTFE membranes are particularly suitable for preparing samples for HPLC and UHPLC when organic solvents are involved. Air and gas sterilization applications utilize the hydrophobic characteristics of PTFE membranes and their ability to stop aqueous aerosols.

Recommended filter
with PTFE membrane

ReZist™ syringe filters

Whatman ReZist syringe filters are specifically designed to be resistant to organic solvents (Fig 8).

ReZist syringe filters feature a polypropylene housing, making it an excellent choice for the filtration of samples containing organic solvents. ReZist syringe filters are available with 13 mm and 30 mm diameters. ReZist 30 mm filters can also be used as a venting filter for small vessels.

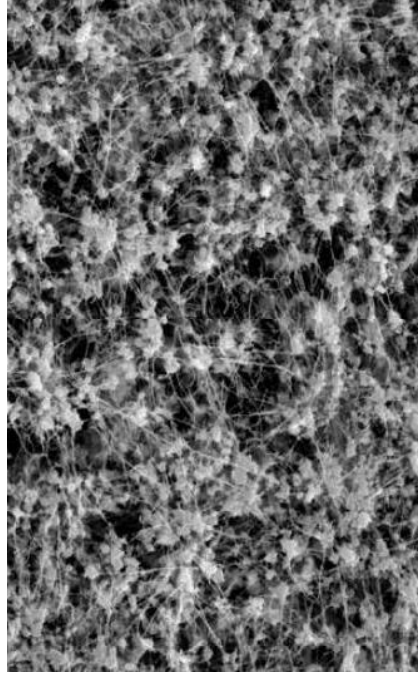


Fig 7. PTFE membranes are hydrophobic, chemically stable, and inert.



Fig 8. ReZist contains a hydrophobic PTFE membrane that is laminated with polypropylene to increase the strength of the membrane.

ReZist syringe filters

Membrane	Pore size	Code no.	Code no.	Quantity
		13 mm diameter with mini-tip	30 mm diameter	
PTFE	0.2 µm	10463703	10463503	100/pack
PTFE	0.2 µm		10463505	500/pack
PTFE	0.45 µm	10463713	10463513	100/pack
PTFE	0.45 µm		10463515	500/pack



Recommended filter with PTFE membrane and prefilters

Whatman GD/X syringe filters

The 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 eliminate sample contamination and allow you to filter even the most difficult samples with less hand pressure (Fig 9).

GMF 150 and GF/F are produced from 100% borosilicate glass microfiber. The graded density GMF 150 medium has a coarse 10 µm top layer meshed with a fine bottom layer that retains particles to 1.0 µm. A GF/F filter retains particles down to 0.7 µm.

Also available with PTFE:

Puradisc – see page 9

Mini-UniPrep – see page 6

Mini-UniPrep G2 – see page 10



Fig 9. GD/X syringe filters can be used to process three to seven times more sample volumes than unprotected membranes.

Whatman GD/X 25 mm syringe filters with glass fiber prefilter



Pore size	Code no.	Code no.	Code no.	Code no.	Quantity
Membrane type	Nylon	PVDF	PTFE	PP	RC
0.2 µm	6870-2502	6872-2502	6874-2502	6878-2502	6887-2502
0.45 µm	6870-2504	6872-2504	6874-2504	6878-2504	6882-2504
0.2 µm	6871-2502	6873-2502	6875-2502		1500/pack
0.45 µm	6871-2504	6873-2504	6875-2504	6879-2504	6883-2504

PVDF

Whatman Polyvinylidene Difluoride (PVDF) is resistant to a broad range of organic solvents (Fig 10).

Like Regenerated Cellulose, PVDF is a good choice for samples that contain mixes of organic and aqueous solvents. Its low protein binding characteristics make it an excellent choice for bio-analytical sample filtration prior to HPLC or UHPLC analysis.

Recommended filter with PVDF membrane

Puradisc syringe filters

Puradisc syringe filters combine quality and economy for filtration of samples up to 100 ml (Fig 11).

Puradisc filters are produced from pigment-free polypropylene with standard inlet (female luer lock) and outlet (male luer) connections (unless otherwise stated). The housing is heat-sealed without the use of glues or sealants. Puradisc Syringe filters are available in 13 mm or 25 mm. For easy filtering into small vials, the 13 mm version is available with a tube tip.

Also available with PVDF:

Whatman GD/X for particulate loaded samples – see page 8
Mini-UniPrep – see page 6

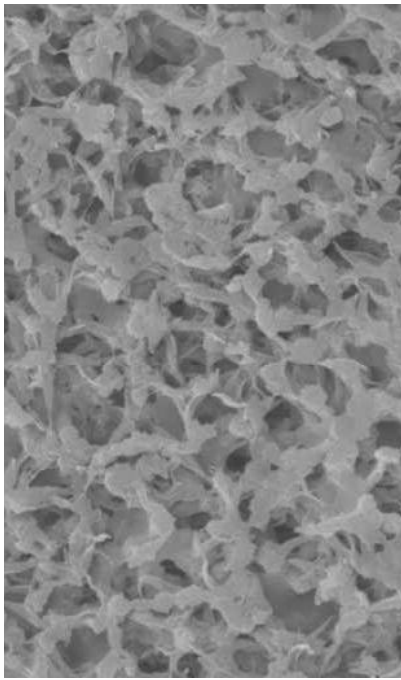


Fig 10. PVDF membrane is hydrophilic and compatible with aqueous solvents.



Fig 11. Puradisc filters are produced from pigment-free polypropylene with standard inlet (female luer lock) and outlet (male luer) connections (unless otherwise stated).



Puradisc 25 mm* syringe filters

Pore size	Code no.	Code no.	Code no.	Quantity
Membrane type	Nylon	PVDF	PTFE	PP
0.2 µm	6751-2502	6747-2502	6785-2502	6788-2502
0.45 µm	6751-2504	6747-2504	6785-2504	6788-2504
0.45 µm	6752-2504			
0.2 µm	6753-2502		6798-2502	6790-2502
0.45 µm	6753-2504	6749-2504	6798-2504	6790-2504

*Please contact your GE Healthcare representative for other diameters and pore sizes.

Innovative filter featuring PVDF membrane

Mini-UniPrep G2 syringeless filters

The Whatman Mini-UniPrep G2 syringeless filter prepares samples for HPLC/UHPLC analysis three times faster than the traditional syringe filter method. And thanks to the new glass design, your sample will be as pure as possible with minimal risk of plastic leachables. Like the original Mini-UniPrep it also reduces solvent and laboratory waste.

Mini-UniPrep G2 includes an integral borosilicate glass vial housed within the plunger (Fig. 12) and a borosilicate glass chamber for holding the unfiltered liquid. During the filtration step, the plunger is compressed into the glass chamber containing the unfiltered liquid. As the plunger travels downward, liquid flows through the filtration membrane to the top of the plunger and drops into the glass collection vial housed within the plunger.

Therefore, the sample only contacts plastic for a very short period of time (i.e, only while the plunger is being compressed through the unfiltered liquid). Once compressed, the Mini-UniPrep G2 is ready to be loaded directly into the autosampler.[†]

Mini-UniPrep G2 with inner glass storage vial

Pore size	Housing	Cap	Code no.	Code no.	Code no.	Code no.	Quantity
Membrane			PTFE	PVDF	Nylon	PP	
0.2 µm (HC)	Translucent	Standard	GN203NPEORGSP	GN203NPEAQUSP	GN203NPENYLSP	GN203NPEPPSP	100/pack + HC
0.2 µm	Translucent	Standard	GN203NPEORG	GN203NPEAQU		GN203NPEPP	100/pack
0.45 µm (HC)	Translucent	Standard	GN203NPUORGSP	GN203NPUAQUSP			100/pack + HC
0.45 µm	Translucent	Standard	GN203NPUORG	GN203NPUAQU			100/pack
0.2 µm (HC)	Amber	Standard	GN203APEORGSP	GN203APEAQUSP			100/pack + HC
0.2 µm (HC)	Translucent	Slit septum	GS203NPEORGSP				100/pack + HC
0.45 µm (HC)	Translucent	Slit septum	GS203NPUORGSP				100/pack + HC

HC = includes one hand compressor

Mini-UniPrep G2 compressors*

Description	Code no.	Quantity
Hand Compressor - 1 position	MUPG2PWC1	1/pack
Multi Compressor - 8 positions (includes 1 Tray)*	MUPG2MCPWC8	1/pack
Multi Compressor Tray*	MUPG2MCWT8	1/pack

*Mini-UniPrep G2 multicompressor will be available during 2013. Please contact your GE Healthcare representative for more information.

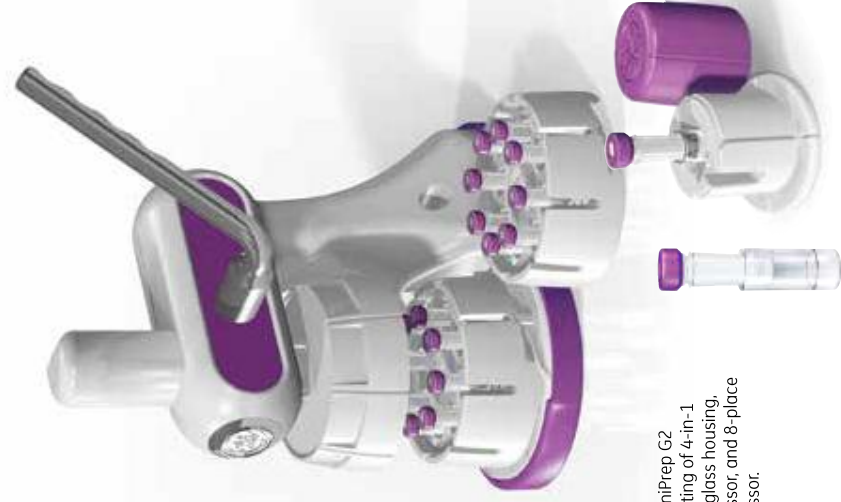


Fig 12. Mini-UniPrep G2 system consisting of 4-in-1 filter vial with glass housing, hand compressor, and 8-place multi-compressor.



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GE Healthcare UK Limited
Amersham Place
Little Chalfont, Buckinghamshire
HP7 9NA, UK



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GE Healthcare UK Limited, Amersham Place, Little Chalfont, Buckinghamshire, HP7 9NA
UK GE Healthcare Europe, GmbH, Munzinger Strasse 5, D-79111 Freiburg, Germany

GE Healthcare Bio-Sciences AB, Björkgatan 30, 751 84 Uppsala, Sweden

GE Healthcare Japan Corporation, Sanken Bldg., 3-25-1, Hyakunincho, Shinjuku-ku, Tokyo 169-0073 Japan

