



## Maximize the Performance of Your UHPLC System

For the highest quality results and minimum system downtime, apply Millipore's extensive laboratory filtration expertise to your UHPLC methods.

Ultra-High Pressure Liquid Chromatography (UHPLC or U-HPLC), an LC technology made possible by the development of sub-2 $\mu$ m particle columns and higher pressure pumps, offers several significant advantages over traditional HPLC:

- increased speed
- improved resolution
- higher peak capacity

Improvements in speed and resolution of 30-50% over standard HPLC separations are typical. As these improvements push detection limits ever lower, there is an increased need for proper preparation of samples and mobile phases. Filtration devices with 0.2  $\mu$ m pore sizes now play an essential role in labs wanting to maximize their investment in UHPLC technology. Manufacturers of these new systems recommend filtration of both samples and mobile phase solutions through a 0.2  $\mu$ m filter "to obtain the

best performance and lifetime from your system and columns."  
– Waters Corporation.

Millipore syringe filters, filter membranes and holders are designed and manufactured to minimize column clogging and maximize UHPLC system performance. Consistent quality, fast flow properties, low extractables, low binding and low hold-up volumes make Millipore filtration devices the ideal choice for sample preparation. In addition to filtration products, scientists around the world rely on lab water systems from Millipore to supply ultrapure water for all aspects of UHPLC methods, from preparation of mobile phases and standards to blanks and samples. Often taken for granted, water is the largest component of mobile phases used in analytical methods, and it must be of the highest quality to ensure accurate, reproducible results.



On a \$400  
UHPLC Column?

Where would you rather  
trap the particles  
in your buffer?

Or a \$1.50  
membrane filter?

## Fast, Effective Sample Preparation with Millex® Syringe Filters

Sample clarification and fine particle removal through filtration is a key step in analytical methods and is essential in reducing signal-to-noise ratios and maintaining clean baselines. With their broad chemical compatibility, low hold up volumes, and consistent quality, Millex filters are an efficient means of preparing samples for UHPLC analysis. Small hold-up volumes make the 4 mm Millex syringe filters ideal for filtering samples < 1 mL. Their stepped outlet facilitates filtration into small receiving vessels. 13 mm Millex filters are available for sample volumes in the range of 1-10 mL.

A tube outlet on the 13 mm Millex filters makes filtration into autosampler vials and vial inserts fast and easy. 33 mm Millex filters are available for larger volume sample prep (10-100 mL).



## MultiScreen® SolvInert Plates Optimized for High Throughput Sample Prep

MultiScreen SolvInert filter plates are designed for sample preparation prior to HPLC, UHPLC or LC/MS/MS as well as many drug discovery applications including total drug analysis and NCE cleavage from solid phase libraries. The plates and membranes demonstrate low binding, low extractables and high recoveries. To accommodate methods using aqueous and non-aqueous samples, MultiScreen SolvInert filter

plates – in deep well and standard well volumes – are available with a choice of either chemically resistant hydrophobic or hydrophilic PTFE membranes.

For chromatographic separations, the MultiScreen Column Loader accessory can be used to create 96 minicolumns in a plate.



## Membranes and Holders for Reliable Contaminant Removal

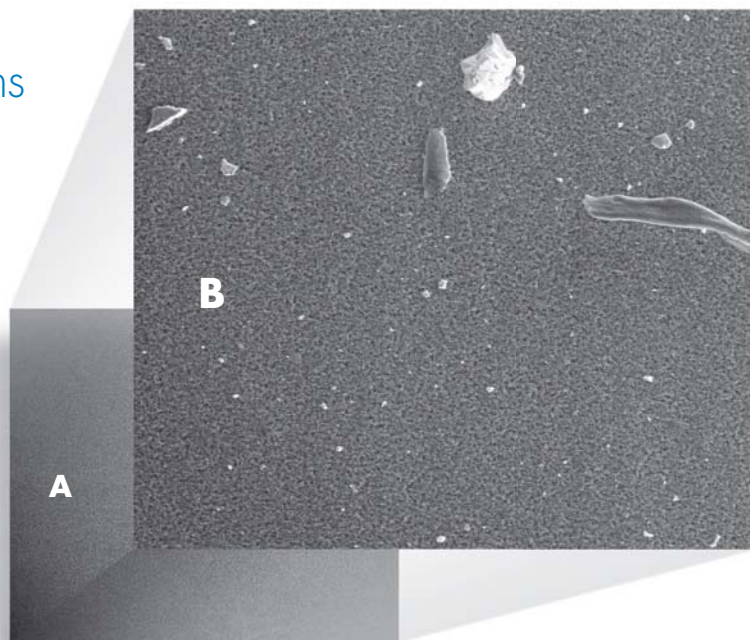
Millipore offers a wide variety of 0.2 µm pore size membranes with holders ideally suited for the filtration of common solvents and buffers used in UHPLC methods.

High-quality manufacturing procedures assure accurate pore size ratings which ensures the

consistent removal of sub-micron particles. The result is more reproducible data and the continuous protection of expensive columns and instrumentation. Select products are designed specifically to exhibit low levels of extractables for this sensitive application.

## Filtration can Protect Expensive UHPLC Columns from Clogging

The importance of clean mobile phases can be seen by filtering 2 L of 50 mM sodium bicarbonate buffer solution through a 0.2  $\mu\text{m}$  PVDF membrane. The significant amount of trapped particles (B) would contaminate and potentially clog a costly UHPLC column. Samples obtained from various sources could introduce an even greater amount of particulate contamination if not carefully prepared. Filters were analyzed by SEM. (A) Blank membrane



## High Quality Water for all Critical Laboratory Applications

Now that detection limits down to ppt levels are achievable, special care is needed with the experimental environment as well as with the quality of the reagents used for separations. Ultrapure water plays an essential role for running blanks, diluting samples, mixing buffers, and preparing standards.

The Milli-Q® Advantage Water Purification system has been






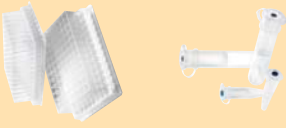






designed to deliver high-quality, ultrapure water that meets the requirements of UHPLC methods.

The compact, flexible Q-POD® technology simplifies daily life in the lab by conveniently delivering the ultrapure water crucial to achieving high-quality, consistent UHPLC results.





# Ensure the Highest Quality Results from Your UHPLC System.

Buffer Filtration		Solvent Filtration		Sample Preparation	
Description	Catalog Number	Description	Catalog Number	Description	Catalog Number
 <p>0.2 µm Durapore® PVDF Membrane Filter, 47 mm            0.2 µm Durapore PVDF Membrane Filter, 90 mm            0.2 µm Millipore Express® PLUS PES Membrane Filter, 47 mm            0.2 µm Millipore Express PLUS PES Membrane Filter, 90 mm</p>	<p>GVWP04700            GVWP09050            GPWP04700            GPWP09050</p>	 <p>0.2 µm Omnipore™, PTFE Membrane Filter, 47 mm            0.2 µm Omnipore, PTFE Membrane Filter, 90 mm            0.2 µm Nylon Membrane Filter, 47 mm</p>	<p>JGVWP04700            JGVWP09025            GNVWP04700</p>	 <p>0.2 µm PTFE Millex Filter, 4 mm            0.2 µm PTFE Millex Filter, 13 mm            0.2 µm Nylon Millex Filter, 4 mm            0.2 µm Nylon Millex Filter, 13 mm            0.2 µm Nylon Millex Filter, 33 mm</p>	<p>SIFGR04NL            SIFG013NL            SIGNR04NL            SIGN013NL            SIGND033NS</p>
 <p>47 mm, all glass filter holder with 250 ml funnel            90 mm filter holder with 1 L funnel            Stericup®-GP filter, 500 mL            Steritop™-GP filter, 500 mL  <i>Additional volumes available</i></p>	<p>XX1504700            XX1009020            SCGPIU05RE            SCGFS05RE</p>	 <p>47 mm, all glass filter holder with 250 ml funnel            90 mm filter holder with 1 L funnel</p>	<p>XX1504700            XX1009020</p>	 <p>Multiscreen Solvent Filter Plate, Hydrophilic PTFE            Multiscreen Solvent Filter Plate, Hydrophobic PTFE            MultiScreen Deep Well Solvent Plate, Hydrophilic PTFE            MultiScreen Deep Well Solvent Plate, Hydrophobic PTFE            Ultrafree®-WC, centrifugal filter 0.5 mL            Ultrafree-CL centrifugal filter, 2.0 mL</p>	<p>MSRIN0410            MSRPNO410            MDRIN005            MDRPN0405            UFC30GY0S            UFC40GV00</p>
 <p>Filter Forceps</p>	<p>XX6200006</p>	 <p>Chemical Duty Vacuum Pump            WP6111560 (115 V)            WP622050 (220 V)            MilliVac™ Vacuum Pump            SDIM001V00 (115 V)            XF5423050 (230 V)</p>	<p>WP6111560 (115 V)            WP622050 (220 V)            SDIM001V00 (115 V)            XF5423050 (230 V)</p>	 <p>Filter Forceps</p>	<p>MSVWHT500</p>
 <p>Filter Forceps</p>	<p>XX6200006</p>	 <p>Milli-Q® advantage A10 Ultrapure Water purification system            G-Pod® Remote Dispenser</p>	<p>Z00G0V0VVW*            ZMGSP0D01</p>	 <p>MultiScreen Vacuum Manifold</p>	<p>MSVWHT500</p>

\* Contact your local Millipore sales representative for a country-specific part number. For information on the chemical compatibility of these products, see table on back cover.

Filter with Millipore for Fast, High Quality Results.

# Chemical Compatibility of Millipore Products

Solvent Type	Solvent	Filter Materials			
		PTFE polytetrafluoroethylene	PVDF polyvinylidene fluoride	PES polyether sulfone	NYL nylon
UHPLC System Recommended Solvents	Methanol (MeOH)	R	R	R	TST
	Water	R	R	R	R
	Acetonitrile (ACN)	R	LTD	NR	R
	MeOH/Water Mixtures	R	R	R	TST
	ACN/Water Mixtures	R	LTD	NR	R
	Isopropanol (IPA)	R	R	R	TST
Additional Sample Diluents	Dimethyl Sulfoxide (DMSO)	R	NR	NR	R
	Dimethyl Formamide (DMF)	R	NR	ND	R
UHPLC System Additives/Modifiers	0.2% Formic Acid	R	R	ND	NR
	0.1% Triethylamine (TEA)	R	R	R	R
	10 mM Phosphate Buffer	R	R	R	R
	50 mM Ammonium Hydroxide	R	R	NR	TST
	0.1% EDTA	R	R	R	R
	0.1% Trifluoroacetic Acid (TFA)	R	R	R	NR
	10 mM Ammonium Bicarbonate	R	R	ND	R
	50 mM Ammonium Acetate	R	R	ND	R
UHPLC System Cleaners	Phosphoric Acid (=30%)	R	R	ND	R
	Sodium Hydroxide (=1M)	R	R	R	R

R = Recommended  
 LTD = Limited compatibility  
 NR = Not recommended  
 TST = Test prior to use  
 ND = No data available

## To Place an Order or Receive Technical Assistance

For additional information call your nearest Millipore office:

In the U.S. and Canada, call toll-free  
**1-800-MILLIPORE (1-800-645-5476)**

In the U.S., Canada and Puerto Rico, fax orders to  
**1-800-MILLIFX (1-800-646-5439)**

Outside of North America, contact your local office.

To find the office nearest you:

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Tech Service: [www.millipore.com/techservice](http://www.millipore.com/techservice)

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