

Introduction to SpinColumns™

Advantages

- Easy to use
- Multiple formats available – from single 10 µl sample volumes to high-throughput 96-well format
- Unrivaled selection of column packing materials
- Single use, disposable centrifuge tube formats
- Quick high sample recovery
- Rapid sample preparation time
- Custom packed columns are available on request

Applications

- Protein purification
- Peptide purification
- DNA purification
- Small molecule, carbohydrate removal
- Radiolabel removal
- Nick translation
- Affinity separation
- Salt removal
- Buffer exchange

Harvard Apparatus offers four sizes of SpinColumns to fit your specific applications:

- **Ultra-Micro SpinColumns**
For sample volumes from 10 µl to 25 µl
- **Micro SpinColumns**
For sample volumes 25 µl to 75 µl
- **Macro SpinColumns**
For sample volumes from 75 µl to 150 µl
- **96-Well SpinColumns**
For high throughput applications with sample volumes from 25 µl to 100 µl

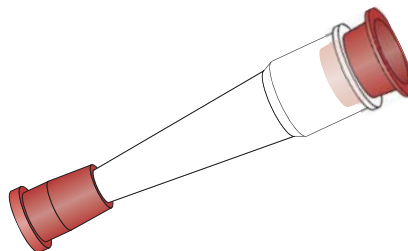
Harvard Apparatus SpinColumn Family



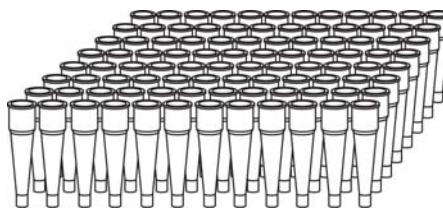
Ultra-Micro SpinColumn
Volumes from 10 µl to 25 µl, see page N18.



Micro SpinColumn™
Handles volumes from 25 µl to 75 µl, see page N19.



Macro SpinColumn™
Handles volumes from 75 µl to 150 µl, see pages N20 and N21.



96-Well SpinColumn™
High throughput sample prep applications, volumes 25 µl to 100 µl, see page N22.

Harvard Apparatus new generation of SpinColumns are designed for the purification of small samples (10 µl to 150 µl) in either single column or high-throughput 96-well format with a standard centrifuge

Our SpinColumns are pre-filled with a wide selection of chromatographic materials including gel-filtration, ion-exchange, silica-based reverse- and normal-phase materials, as well as specific materials, such as charcoal or cellulose contained by frits and/or caps. The columns can also be pre-filled with custom materials based on customer requests.

Simply place the SpinColumn in a centrifuge tube and centrifuge the tube briefly to separate your sample. The column material binds and purifies the sample according to size and shape, chemical composition, charge or other physicochemical properties.

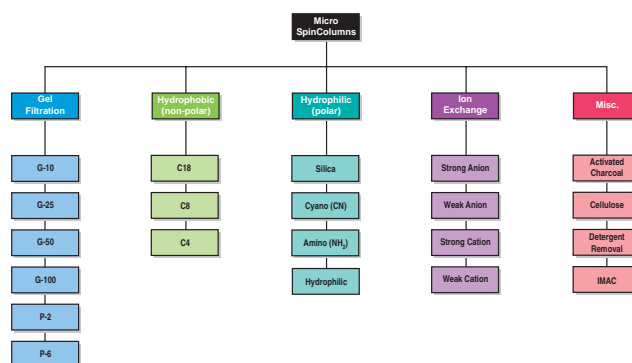
Ultra-Micro SpinColumns™ - Samples from 10 µl to 25 µl

Advantages:

- Rapid sample preparation time
- Micro sample sizes
- Unrivaled selection of column packing materials; custom packed columns are available on request
- High sample recovery

Applications:

- DNA, protein and peptide purification
- Small molecule, carbohydrate, salt and radiolabel removal
- Nick translation
- Affinity separation
- Buffer exchange



Ultra-Micro SpinColumns are best suited for sample volumes from 10 µl to 25 µl. Centrifugation or filtration under vacuum or pressure can be used to run the sample through the columns. Results obtained from the Micro SpinColumns are highly reproducible and there is minimal sample loss. Each column includes two 2 ml centrifuge tubes plus top caps (for Gel Filtration) or frit.

Cat. No.

\$ Product

BS4 74-4421	Empty Columns, 5 µm Frit, Qty. of 25
BS4 74-4420	Empty Columns, 5 µm Frit, Qty. of 100
BS4 74-4401	Empty Columns, 20 µm Frit, Qty. of 25
BS4 74-4400	Empty Columns, 20 µm Frit, Qty. of 100
BS4 74-4431	Empty Columns, 40 µm Frit, Qty. of 25
BS4 74-4430	Empty Columns, 40 µm Frit, Qty. of 100

Ultra-Micro SpinColumns: Ordering Information

Packing Material	Gel Filtration		Silica Based		Ion Exchange		Miscellaneous		\$ for 25	\$ for 100
	Qty. of 25	Qty. of 100	Qty. of 25	Qty. of 100	Qty. of 25	Qty. of 100	Qty. of 25	Qty. of 100		
Gel Filtration										
G-10	BS4 74-7220	BS4 74-7200	-	-	-	-	-	-	-	-
G-25	BS4 74-7221	BS4 74-7201	-	-	-	-	-	-	-	-
G-50	BS4 74-7222	BS4 74-7202	-	-	-	-	-	-	-	-
G-100	BS4 74-7223	BS4 74-7203	-	-	-	-	-	-	-	-
P-2 *	BS4 74-7224	BS4 74-7204	-	-	-	-	-	-	-	-
P-6 *	BS4 74-7225	BS4 74-7205	-	-	-	-	-	-	-	-
Hydrophobic (non-polar)										
C18	-	-	BS4 74-7226	BS4 74-7206	-	-	-	-	-	-
C8	-	-	BS4 74-7227	BS4 74-7207	-	-	-	-	-	-
C4	-	-	BS4 74-7228	BS4 74-7208	-	-	-	-	-	-
Hydrophilic (polar)										
Silica	-	-	BS4 74-7229	BS4 74-7209	-	-	-	-	-	-
Cyano (CN)	-	-	BS4 74-7230	BS4 74-7210	-	-	-	-	-	-
Amino (NH ₂)	-	-	BS4 74-7231	BS4 74-7211	-	-	-	-	-	-
Hydrophilic	-	-	BS4 74-7232	BS4 74-7212	-	-	-	-	-	-
Ion Exchange										
Strong Anion	-	-	-	-	BS4 74-7233	BS4 74-7213	-	-	-	-
Weak Anion	-	-	-	-	BS4 74-7234	BS4 74-7214	-	-	-	-
Strong Cation	-	-	-	-	BS4 74-7235	BS4 74-7215	-	-	-	-
Weak Cation	-	-	-	-	BS4 74-7236	BS4 74-7216	-	-	-	-
Misc.										
Cellulose	-	-	-	-	-	-	BS4 74-7237	BS4 74-7217	-	-
Detergent Removal	-	-	-	-	-	-	BS4 74-7238	BS4 74-7218	-	-
IMAC **	-	-	-	-	-	-	BS4 74-7239	BS4 74-7219	-	-

* Polyacrylamide-based gel filtration ** IMAC (immobilized metal affinity chromatography - for purification of histidine tagged proteins)

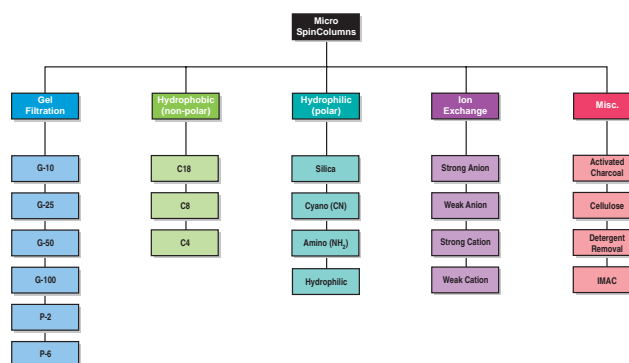
Micro SpinColumns™ - Samples from 25 µl to 75 µl

Advantages:

- Rapid sample preparation time
- Small sample sizes
- Unrivaled selection of column packing materials; custom packed columns are available on request
- High sample recovery

Applications:

- DNA, protein and peptide purification
- Small molecule, carbohydrate, salt and radiolabel removal
- Nick translation
- Affinity separation
- Buffer exchange



Micro SpinColumns are best suited for sample volumes from 25 to 75 µl. Centrifugation or filtration under vacuum or pressure can be used to run the sample through the columns. Results obtained from the Micro SpinColumns are highly reproducible and there is minimal sample loss. Each column includes two 2 ml centrifuge tubes plus top cap (for Gel Filtration) or frit.

Cat. No.

\$ Product

BS4 74-4421	Empty Columns, 5 µm Frit, Qty. of 25
BS4 74-4420	Empty Columns, 5 µm Frit, Qty. of 100
BS4 74-4401	Empty Columns, 20 µm Frit, Qty. of 25
BS4 74-4400	Empty Columns, 20 µm Frit, Qty. of 100
BS4 74-4431	Empty Columns, 40 µm Frit, Qty. of 25
BS4 74-4430	Empty Columns, 40 µm Frit, Qty. of 100

Micro SpinColumns: Ordering Information

Packing Material	Gel Filtration		Silica Based		Ion Exchange		Miscellaneous		\$ for 25	\$ for 100
	Qty. of 25	Qty. of 100	Qty. of 25	Qty. of 100	Qty. of 25	Qty. of 100	Qty. of 25	Qty. of 100		
Gel Filtration										
G-10	BS4 74-4504	BS4 74-4500	-	-	-	-	-	-	-	-
G-25	BS4 74-4505	BS4 74-4501	-	-	-	-	-	-	-	-
G-50	BS4 74-4506	BS4 74-4502	-	-	-	-	-	-	-	-
G-100	BS4 74-4507	BS4 74-4503	-	-	-	-	-	-	-	-
P-2 *	BS4 74-4808	BS4 74-4802	-	-	-	-	-	-	-	-
P-6 *	BS4 74-4809	BS4 74-4803	-	-	-	-	-	-	-	-
Hydrophobic (non-polar)										
C18	-	-	BS4 74-4607	BS4 74-4601	-	-	-	-	-	-
C8	-	-	BS4 74-4608	BS4 74-4602	-	-	-	-	-	-
C4	-	-	BS4 74-4609	BS4 74-4603	-	-	-	-	-	-
Hydrophilic (polar)										
Silica	-	-	BS4 74-4606	BS4 74-4600	-	-	-	-	-	-
Cyano (CN)	-	-	BS4 74-4610	BS4 74-4604	-	-	-	-	-	-
Amino (NH ₂)	-	-	BS4 74-4611	BS4 74-4605	-	-	-	-	-	-
Hydrophilic	-	-	BS4 74-4811	BS4 74-4805	-	-	-	-	-	-
Ion Exchange										
Strong Anion	-	-	-	-	BS4 74-4704	BS4 74-4700	-	-	-	-
Weak Anion	-	-	-	-	BS4 74-4705	BS4 74-4701	-	-	-	-
Strong Cation	-	-	-	-	BS4 74-4706	BS4 74-4702	-	-	-	-
Weak Cation	-	-	-	-	BS4 74-4707	BS4 74-4703	-	-	-	-
Misc.										
Active Charcoal	-	-	-	-	-	-	BS4 74-4806	BS4 74-4800	-	-
Cellulose	-	-	-	-	-	-	BS4 74-4807	BS4 74-4801	-	-
Detergent Removal	-	-	-	-	-	-	BS4 74-4810	BS4 74-4804	-	-
IMAC **	-	-	-	-	-	-	BS4 74-4812	BS4 74-4813	-	-

* Polyacrylamide-based gel filtration ** IMAC (immobilized metal affinity chromatography - for purification of histidine tagged proteins)

SpinColumns

Macro SpinColumn™ - Samples from 75 µl to 150 µl



How to Use: Macro SpinColumns

Advantages:

- Easy to use
- Unrivaled selection of column packing materials
- High sample recovery
- Rapid sample preparation time
- Custom packed columns are available on request

Applications:

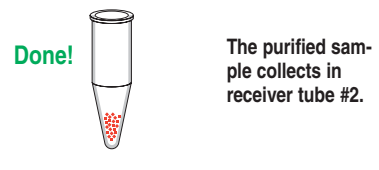
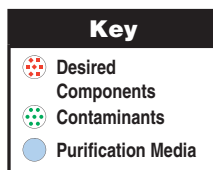
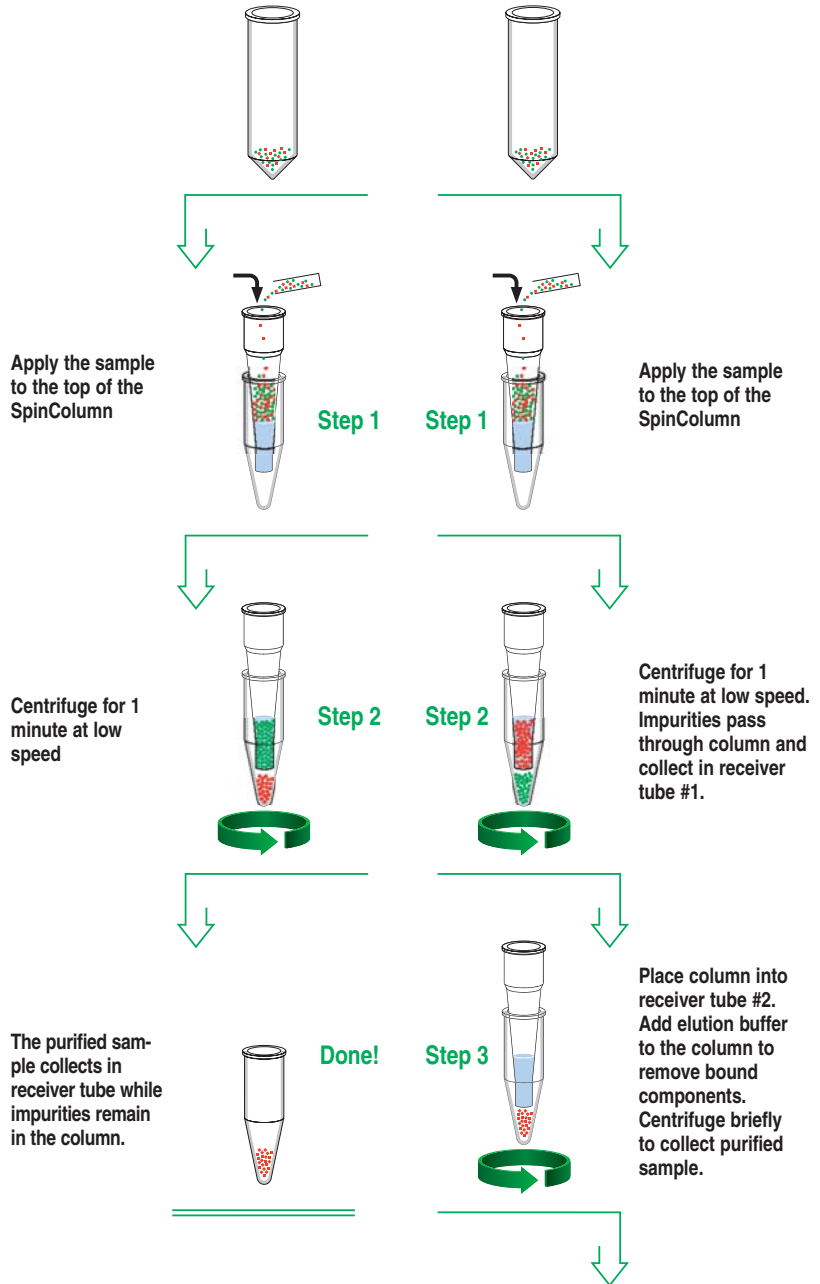
- DNA purification
- Protein purification
- Peptide purification
- Small molecule, carbohydrate removal
- Radiolabel removal
- Nick translation
- Affinity separation
- Salt removal
- Buffer exchange

Simply place the SpinColumn in a centrifuge tube and centrifuge the tube briefly to separate your sample. The column material binds and purifies the sample according to size and shape, chemical composition, charge or other physiochemical properties.

Specialized Tools For Bioresearch

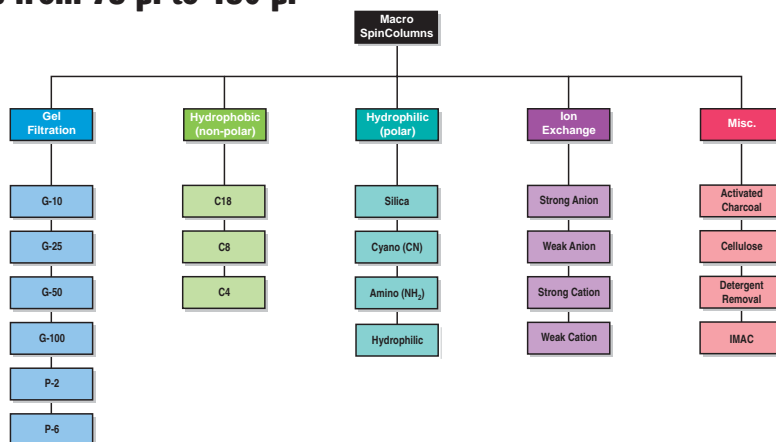
Size exclusion chromatography SpinColumns

Solid phase extraction SpinColumns



Macro SpinColumn™ - Samples from 75 µl to 150 µl

Macro SpinColumns are best suited for samples with volumes from 75 to 150 µl. In addition to the standard packing materials described in the ordering information, Macro SpinColumns can be filled with custom packing materials as desired. Each column includes two 2 ml centrifuge tubes and top and bottom caps.



Macro SpinColumns: Ordering Information

Packing Material	Gel Filtration		Silica Based		Ion Exchange		Miscellaneous		\$ for 25	\$ for 100
	Qty. of 25	Qty. of 100	Qty. of 25	Qty. of 100	Qty. of 25	Qty. of 100	Qty. of 25	Qty. of 100		
Gel Filtration										
G-10	BS4 74-3904	BS4 74-3900	-	-	-	-	-	-	-	-
G-25	BS4 74-3905	BS4 74-3901	-	-	-	-	-	-	-	-
G-50	BS4 74-3906	BS4 74-3902	-	-	-	-	-	-	-	-
G-100	BS4 74-3907	BS4 74-3903	-	-	-	-	-	-	-	-
P-2 *	BS4 74-4308	BS4 74-4302	-	-	-	-	-	-	-	-
P-6 *	BS4 74-4309	BS4 74-4303	-	-	-	-	-	-	-	-
Hydrophobic (non-polar)										
C18	-	-	BS4 74-4107	BS4 74-4101	-	-	-	-	-	-
C8	-	-	BS4 74-4108	BS4 74-4102	-	-	-	-	-	-
C4	-	-	BS4 74-4109	BS4 74-4103	-	-	-	-	-	-
Hydrophilic (polar)										
Silica	-	-	BS4 74-4105	BS4 74-4100	-	-	-	-	-	-
Cyano (CN)	-	-	BS4 74-4110	BS4 74-4106	-	-	-	-	-	-
Amino (NH ₂)	-	-	BS4 74-4111	BS4 74-4104	-	-	-	-	-	-
Hydrophilic	-	-	BS4 74-4311	BS4 74-4305	-	-	-	-	-	-
Ion Exchange										
Strong Anion	-	-	-	-	BS4 74-4204	BS4 74-4200	-	-	-	-
Weak Anion	-	-	-	-	BS4 74-4205	BS4 74-4201	-	-	-	-
Strong Cation	-	-	-	-	BS4 74-4206	BS4 74-4202	-	-	-	-
Weak Cation	-	-	-	-	BS4 74-4207	BS4 74-4203	-	-	-	-
Misc.										
Active Charcoal	-	-	-	-	-	-	BS4 74-4306	BS4 74-4300	-	-
Cellulose	-	-	-	-	-	-	BS4 74-4307	BS4 74-4301	-	-
Detergent Removal	-	-	-	-	-	-	BS4 74-4310	BS4 74-4304	-	-
IMAC **	-	-	-	-	-	-	BS4 74-4312	BS4 74-4313	-	-
Empty Columns										
	Qty. of 25	Qty. of 100							\$ for 25	\$ for 100
5 µm Frit	BS4 74-3821	BS4 74-3820								
20 µm Frit	BS4 74-3841	BS4 74-3840	-	-	-	-	-	-	-	-
40 µm Frit	BS4 74-3801	BS4 74-3800	-	-	-	-	-	-	-	-

* Polyacrylamide-based gel filtration

**IMAC (immobilized metal affinity chromatography - for purification of histidine tagged proteins and other phospho proteins/peptides)

96-Well SpinColumns™ - Samples from 25 µl to 100 µl



Advantages:

- Easy to use
- Unrivaled selection of column packing materials
- High sample recovery
- Rapid sample preparation time
- Custom packed columns are available on request

Applications:

- DNA purification
- Protein purification
- Peptide purification
- Small molecule, carbohydrate removal
- Radiolabel removal
- Nick translation
- Affinity separation
- Salt removal
- Buffer exchange

Our 96-well SpinColumn brings speed and simplicity to high-throughput micro-sample preparation. The 96-well SpinColumn is for 25 to 100 µl sample sizes and includes two 96-well collection plates (1.5 ml per well).

The 96-well SpinColumns are available with our complete range of packing materials or can be pre-packed with custom requested materials.

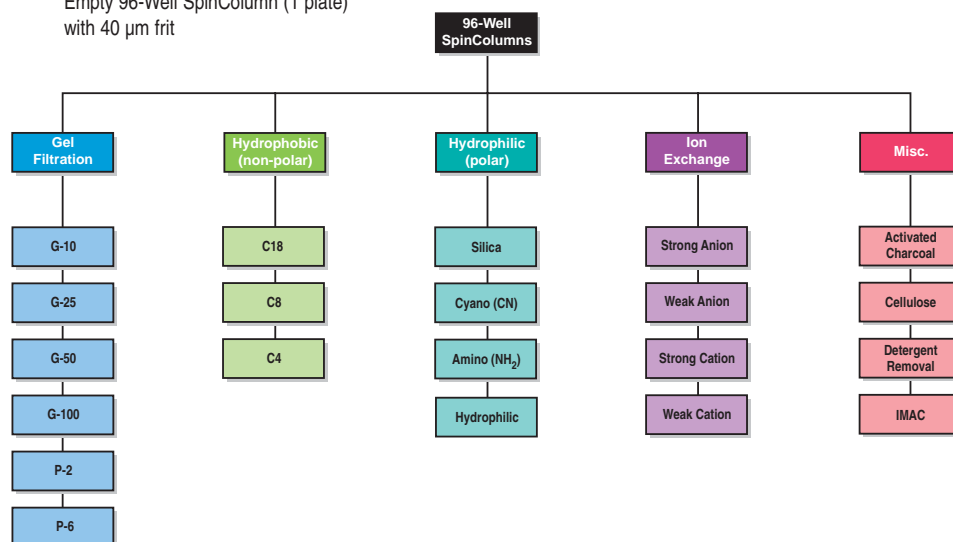
Catalog No.	\$	Product
BS4 74-5502		Empty 96-Well SpinColumn (1 plate) with 5 µm frit
BS4 74-5500		Empty 96-Well SpinColumn (1 plate) with 20 µm frit
BS4 74-5501		Empty 96-Well SpinColumn (1 plate) with 40 µm frit

96-Well SpinColumns: Ordering Information

Packing Material	Gel Filtration (1 plate)	Silica Based (1 plate)	Ion Exchange (1 plate)	Misc. (1 plate)	\$
Gel Filtration					
G-10	BS4 74-5600	-	-	-	
G-25	BS4 74-5601	-	-	-	
G-50	BS4 74-5602	-	-	-	
G-100	BS4 74-5603	-	-	-	
P-2 *	BS4 74-5902	-	-	-	
P-6 *	BS4 74-5903	-	-	-	
Hydrophobic (non-polar)					
C18	-	BS4 74-5701	-	-	
C8	-	BS4 74-5702	-	-	
C4	-	BS4 74-5703	-	-	
Hydrophilic (polar)					
Silica	-	BS4 74-5700	-	-	
Cyano (CN)	-	BS4 74-5704	-	-	
Amino (NH ₂)	-	BS4 74-5705	-	-	
Hydrophilic	-	BS4 74-5905	-	-	
Ion Exchange					
Strong Anion	-	-	BS4 74-5800	-	
Weak Anion	-	-	BS4 74-5801	-	
Strong Cation	-	-	BS4 74-5802	-	
Weak Cation	-	-	BS4 74-5803	-	
Misc.					
Active Charcoal	-	-	-	BS4 74-5900	
Cellulose	-	-	-	BS4 74-5901	
Detergent Removal	-	-	-	BS4 74-5904	
IMAC **	-	-	-	BS4 74-5906	

* Polyacrylamide-based gel filtration

**IMAC (immobilized metal affinity chromatography - for purification of histidine tagged proteins and other phospho proteins/peptides)



NEW Membrane-Bottom Filter Plates - Samples from 50 μ l to 5 ml



Harvard Apparatus' new 96-WELL and 384-WELL FILTER PLATES bring speed and high throughput to sample filtration on a microliter to milliliter scale. The membrane-bottom individual sample wells or chambers have separate high-strength single or dual filter membranes to provide rapid filtration rates and to eliminate leakage or cross-talk between adjacent wells.

All Filter Plates feature rigid polypropylene construction for chemical resistance and low binding and meet SBS footprint for use in robotic systems. Standard filter media include: glass fiber, PVDF polypropylene, polyethylene and polyether sulfone. Patent pending sealing process guarantees no well-to-well cross talk and weeping and allows superior recovery performance.

96-Well Ultra-Filtration Plates with 6.24mm well size and 19.35 sq mm filter area are good for size exclusion, to concentrate, purify and desalt proteins, peptides, oligos, DNA and RNA and also to recover proteins, oligos and RNA from polyacrylamide gels. Plates comply with industry standard for automation and are available with 10,000 and 30,000 MWCO membranes.

96-Well 2 ml Filter Plates with 8.23 mm well size come with Polypropylene membrane for organic synthesis and with UHMW Polyethylene membrane good for solid phase extraction.

Distinctively constructed 384-Well Filter Plates have short drip directors, square to round wells for maximum working volumes and variety of filtration media and can also be used robotically as well as for vacuum or centrifuge filtrations.

Application specific Filter Plates and Filtration Devices to the Biopharmaceutical industry can be custom ordered. Other package sizes and bar-coding are available.

Catalog No.	\$	Product
Filter Plates		
BS4 74-5551		96-Well, Ultra Filtration, PES membrane, 10K MWCO, pkg. of 5
BS4 74-5552		96-Well, Ultra Filtration, PES membrane, 30K MWCO, pkg. of 5
BS4 74-5553		96-Well, 300 μ l, GF 1.2 μ m, Short drip, pkg. of 10
BS4 74-5554		96-Well, 300 μ l, Hydrophilic PVDF 0.45 μ m, Short drip, pkg. of 10
BS4 74-5555		96-Well, 400 μ l, Hydrophilic PVDF 0.45 μ m, Long drip, pkg. of 5
BS4 74-5556		96-Well, 800 μ l, Hydrophilic PVDF 0.45 μ m, Long drip, pkg. of 5
BS4 74-5557		96-Well, 2 ml, PP 0.45 μ m, Long drip, pkg. of 5
BS4 74-5558		96-Well, 2 ml, UHMW PE 25 μ m, Long drip, pkg. of 5
BS4 74-5559		48-Well, 5 ml, PE frit 25 μ m, Long drip, pkg. of 5
BS4 74-5560		384-Well, 35 μ l, 0.45 μ m, Short drip, pkg. of 5

Advantages:

- High recoveries of both filtrates and particulate retentates
- Multi-well format for simultaneous filtration of 96 or 384 different samples
- Individual filter membranes to avoid cross-talk between adjacent wells
- High well-to-well reproducibility
- Membrane pore sizes of 0.45 – 25 μ m (other pore sizes available on request)
- Suitable for vacuum manifold filtration or centrifugal filtration

Applications:

- Nucleic Acid Binding
- DNA Binding
- DNA/RNA Purification
- Purification of PCR Products
- High-Throughput Preparation of YAC DNA
- High-Throughput Synthesis of Drugs
- Bead/Resin Based Assays
- Cell-Based Receptor Binding Assays
- Size exclusion
- Concentrate, purify and desalt proteins, peptides, oligos, DNA and RNA
- Recover proteins, oligos and RNA from polyacrylamide gels
- Filtration and Filtrate Collection

How to use 96-Well or 384-Well Filter Plate

Step 1

Fill the wells of Filter Plate with the samples.

Step 2

Place a Filter Storage/Collection Plate inside the Manifold Filtration unit and then insert the filled Filter Plate.

Step 3

Apply vacuum to collect the filtrates in the Storage Plate wells.

Step 4

Remove the filtrates and/or re-suspend. Recover the retentate from the membranes for further analysis. Or use collected filtrate in appropriate applications.

Filtration Plates

NEW Filter Plate Accessories



Reservoirs, Storage Plates and Lid

Reservoirs and Storage/Collection Plates constructed of natural polypropylene are low binding, resistant to heat, chemicals and biological materials and robotic friendly with industry standard dimensions. Pyramid or V-bottom format is for maximum recovery. Plate Seals and Seal Strips for every format are available.

Filtration is generally done in a custom-designed Manifold Filtration System (Catalog # BS4 74-5572) allowing both collection of the filtrates in a Filter Bottom Plate and retention of the particulates on the membrane. Optionally, low-speed centrifugation in microplate baskets may be used instead of vacuum filtration. Both the filtrates and the retentates are recovered at high recoveries and with high well-to-well reproducibility for further analysis.

A complete system includes Filter Plate, Storage/Collection Plate, Lid and Vacuum Manifold.

Catalog No.	\$	Product
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Reservoirs

BS4 74-5561		96 Well, Pyramid Bottom, pkg. of 5
BS4 74-5562		384 Well, Low Profile, Pyramid Bottom, pkg. of 5
BS4 74-5563		12 Partitioned, Pyramid Bottom, pkg. of 5
BS4 74-5564		8 Row, Partitioned, Pyramid Bottom, pkg. of 5

Storage/Collection Plates

BS4 74-5565		96 Well, 1.1 ml, Square Well, "V" Bottom, pkg. of 5
BS4 74-5566		96 Well, 2 ml, Square Well, Pyramid Bottom, pkg. of 5
BS4 74-5567		48 well, 5 ml, Rectangle Well, Pyramid Bottom, pkg. of 5
BS4 74-5568		384 Well, 35 µl, Square Well, Conical Bottom, pkg. of 10

Accessories

BS4 74-5569		Universal Lid, Polystyrene, Clear, pkg. of 10
BS4 74-5570		96 Well, Pierceable Plate Seal for 2 ml Storage Plate, pkg. of 10
BS4 74-5571		96 Well, Solid Plate Seal for 2 ml Storage Plate, pkg. of 10

Note: Other configurations for Plates and accessories are also available upon request.



Advantages:

- Collect into 2 ml storage plates
- Spacer included to collect into SBS standard microplates
- Robot compatible
- Cross talk prevention due to minimal distance between filter plate and collection plate
- Compatible with most filter plates
- Touch free start up

Applications:

- Combinatorial chemistry cleavage
- Final filtration for SPE
- High throughput screening preparation
- Sample preparation
- DNA purification
- Receptor binding assays
- Plasmid lysate cleaning

Manifold Filtration System

Manifold Filtration System fits all standard filter plates, collects into any storage plate and is adaptable for robot handling. The Manifold System is for adjustable vacuum and easy access to filtrate and comes with easy to remove seals.

Specifications

Materials of Construction:

Top and Bottom	Anodized Aluminum
Middle Section	Natural Delrin
Gaskets and O-rings	Viton
Outlet Port	Polypropylene

Dimensions:

L x W x H	158.75 x 117.48 x 60.43 mm
Filtration Gap	1.5 mm

Catalog No.	\$	Product
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BS4 72-5568		Manifold Filtration System, Aluminum + Delrin
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