

DIALYZERS

DIALYZER™ (Reusable)



Advantages:

- Easy to use
- Reusable
- Autoclavable
- Available for wide range of sample sizes - 10 µl to 5 ml
- High sample recovery
- Rapid dialysis/purification
- Made of Teflon - totally inert
- Low protein binding
- Membranes available with MWCO's to suit almost any application
- Leak-proof

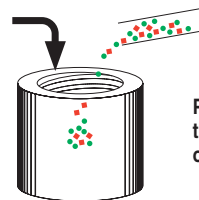
Applications:

- Purification of biomolecules
- Exchange of buffers
- Removal of detergents
- Sample concentration
- HPLC, HPCE
- Removal of excess radiolabel
- Post-PCR clean-up
- GC, GC-MS, NMR

The DIALYZER is a simple single-sided device for dialysis of biological samples. A broad range of DIALYZER sizes are available to accommodate sample volumes ranging from as little as 10 µl up to 5 ml. Pre-cut dialysis membranes are available for the DIALYZER with Molecular Weight Cut-Off ranges from 100 to 300,000 Daltons. The entire unit is constructed of Teflon, a virtually unreactive material, which will not interfere with your valuable samples. Once assembled a Teflon-Teflon seal ensures that the DIALYZER is 100% leak-proof. The DIALYZER is ideal for the simple dialysis of salts, for the exchange of buffers, and for the concentration of samples. Includes chamber with cap.

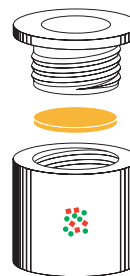
How to Use: DIALYZERS™

Step 1



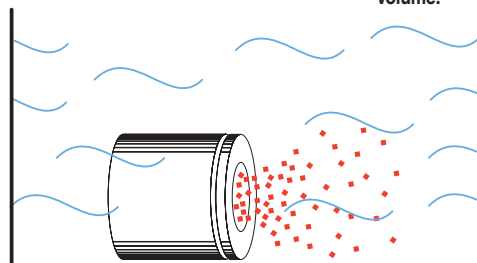
Place the sample in the sample chamber of the DIALYZER

Step 2



Choose a suitable membrane and clamp into place with the DIALYZER cap

Step 3



Place the entire unit into a large beaker of dialysis buffer. Dialysis time is 3 hours to overnight depending upon sample and buffer chemistry, temperature and volume.

DIALYZERS: Ordering Information

Chamber Volume (µl)	Qty. of 1	\$	Qty. of 5	\$
10	BS4 74-0210		BS4 74-0200	
20	BS4 74-0211		BS4 74-0201	
50	BS4 74-0212		BS4 74-0202	
100	BS4 74-0213		BS4 74-0203	
200	BS4 74-0214		BS4 74-0204	
500	BS4 74-0215		BS4 74-0205	
1000	BS4 74-0216		BS4 74-0206	
1500	BS4 74-0217		BS4 74-0207	
3000	BS4 74-0218		BS4 74-0208	
5000	BS4 74-0219		BS4 74-0209	

Key

- Desired Component
- Contaminants
- Dialysis Buffer
- Membrane

For Membrane ordering information, see page N44.

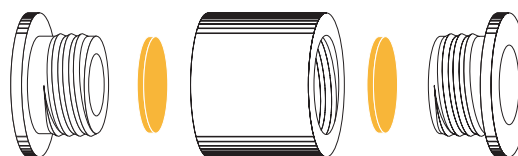
The membrane ordering information is color coded to assist you in selecting the appropriate membrane:

Pink shaded membranes are for products with sample sizes up to 200 µl

Purple shaded membranes are for products with sample sizes ranging from 250 µl to 1,500 µl

Green shaded membranes are for products with sample sizes ranging from 3,000 µl to 5,000 µl

Fast DIALYZER™ (Reusable)



The Fast DIALYZER boasts all the features of the original DIALYZER plus an additional dialysis port. The Fast double-sided DIALYZER thus has two dialysis membranes, one on either side of the sample chamber. The increased membrane surface area results in greater sample exposure and an enhanced rate of dialysis. The Fast DIALYZER includes chamber and two caps.

The Fast DIALYZER is also suited for a wide spectrum of additional applications including:

- Electro-Elution
- Elution of Proteins and Nucleic Acids from Gels
- Electro-Concentration
- Electro-Dialysis, see page N29

Advantages:

- Twice as quick
- Reusable
- Available for most sample sizes - large or small
- Membranes available with MWCO's to suit almost any application
- Easy to use
- Leak-proof
- Autoclaveable
- Low protein binding
- High sample recovery
- Rapid dialysis/purification
- Made of Teflon - totally inert

Applications:

- Exchange of buffers
- Removal of detergents
- Concentration of samples
- HPLC, HPCE
- Immunoblotting*
- Purification of proteins, DNA and RNA
- Removal of excess radiolabel
- Post-PCR clean-up
- GC, GC-MS, NMR
- Removal of CsCl, agarose, pyridoxal-5-phosphate*
- Removal of silicates after chromatography*
- Complex carbohydrate purification*
- Equilibrium dialysis
- Protein binding assays

* When used in conjunction with the Harvard Apparatus ElectroPrep system.

Fast DIALYZERS: Ordering Information

Chamber Volume (µl)	Qty. of 1	\$	Qty. of 5	\$
50	BS4 74-0408		BS4 74-0400	
100	BS4 74-0409		BS4 74-0401	
200	BS4 74-0410		BS4 74-0402	
500	BS4 74-0411		BS4 74-0403	
1000	BS4 74-0412		BS4 74-0404	
1500	BS4 74-0413		BS4 74-0405	
3000	BS4 74-0414		BS4 74-0406	
5000	BS4 74-0415		BS4 74-0407	

The membrane ordering information is color coded to assist you in selecting the appropriate membrane:

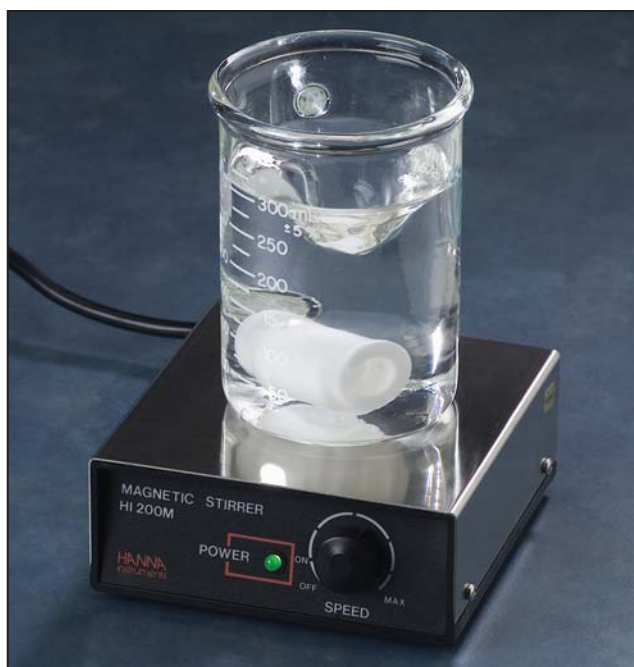
Pink shaded membranes are for products with sample sizes up to 200 µl

Purple shaded membranes are for products with sample sizes ranging from 250 µl to 1,500 µl

Green shaded membranes are for products with sample sizes ranging from 3,000 µl to 5,000 µl

For Membrane ordering information, see page N44.

SpinDIALYZER™ and Fast SpinDIALYZER™ (Reusable)

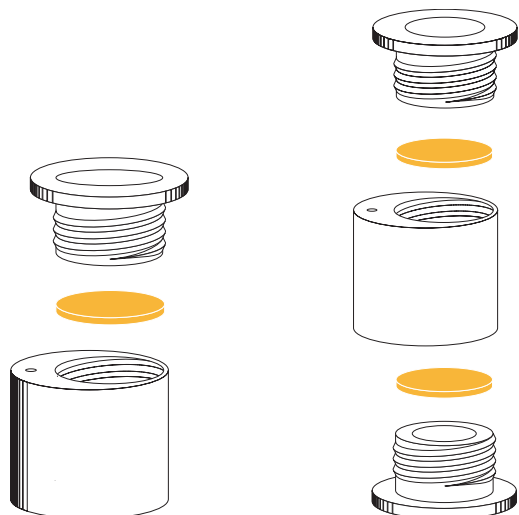


SpinDIALYZER™

The SpinDIALYZER is our high-quality DIALYZER with a magnetic feature incorporated internally and does not require an external stir bar. This enables the entire SpinDIALYZER unit to be rotated during dialysis using a magnetic stir plate (Catalog No. BS4 72-1975). The constant motion of the sample results in dialysis times that are 50 to 100% faster than with the Dialyzer. SpinDIALYZER includes chamber plus cap.

Fast SpinDIALYZER™

The Fast SpinDIALYZER is our high-quality Fast DIALYZER with a magnetic feature incorporated internally. This enables the entire Fast SpinDIALYZER unit to be rotated during dialysis using a magnetic stir plate (Catalog No. BS4 72-1975). The constant motion of the sample results in dialysis times that are 50 to 100% faster than with the Fast DIALYZER. As with the Fast DIALYZER, the Fast SpinDIALYZER has two dialysis ports and includes chamber plus two caps.



Advantages:

- Faster dialysis times due to an internal magnet
- Reusable
- Available for most sample sizes- large or small
- Membranes available with MWCO's to suit almost any application
- Easy to use
- Leak-proof
- Autoclaveable
- Low protein binding
- High sample recovery
- Rapid dialysis/purification
- Made of Teflon - totally inert

Applications:

- Exchange of buffers
- Removal of detergents
- Concentration of samples
- HPLC, HPCE
- Immunoblotting*
- Purification of proteins, DNA and RNA
- Removal of excess radiolabel
- GC, GC-MS, NMR
- Removal of CsCl, agarose, pyridoxal-5-phosphate*
- Removal of silicates after Chromatography*
- Complex carbohydrate purification*

*When used in conjunction with the Harvard Apparatus ElectroPrep system.

SpinDIALYZERS and Fast SpinDIALYZERS: Ordering Information

Chamber Volume (µl)	SpinDIALYZER Qty. of 1	SpinDIALYZER Qty. of 5	Fast SpinDIALYZER Qty. of 1	Fast SpinDIALYZER Qty. of 5
10 \$	BS4 74-0308	BS4 74-0300	-	-
20 \$	BS4 74-0309	BS4 74-0301	-	-
50 \$	BS4 74-0310	BS4 74-0302	BS4 74-0506	BS4 74-0500
100 \$	BS4 74-0311	BS4 74-0303	BS4 74-0507	BS4 74-0501
200 \$	BS4 74-0312	BS4 74-0304	BS4 74-0508	BS4 74-0502
500 \$	BS4 74-0313	BS4 74-0305	BS4 74-0509	BS4 74-0503
1000 \$	BS4 74-0314	BS4 74-0306	BS4 74-0510	BS4 74-0504
1500 \$	BS4 74-0315	BS4 74-0307	BS4 74-0511	BS4 74-0505

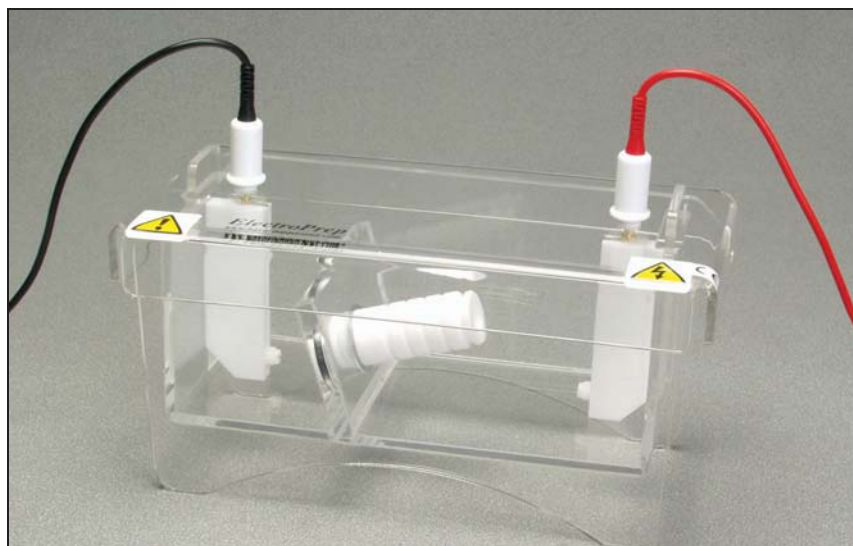
The membrane ordering information on page N44 is color coded to assist you in selecting the appropriate membrane:

Pink shaded membranes are for products with sample sizes up to 200 µl

Purple shaded membranes are for products with sample sizes ranging from 250 µl to 1,500 µl

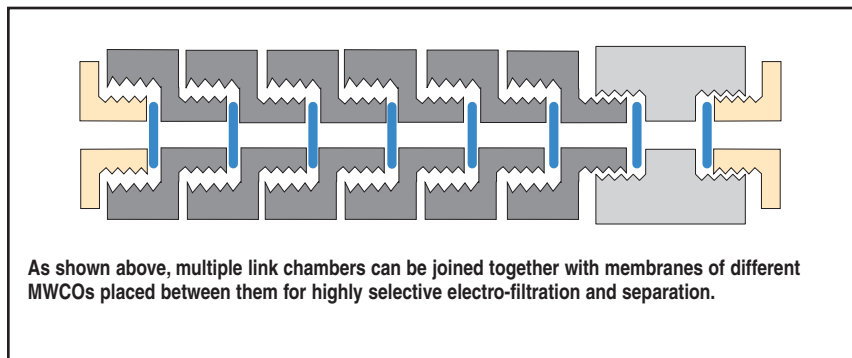
Green shaded membranes are for products with sample sizes ranging from 3,000 µl to 5,000 µl

ElectroPrep™







ElectroPrep (BS4 74-1101) with Multiple Link-Chambers (sold separately)

The ElectroPrep system from Harvard Apparatus is an extremely versatile patented sample prep technology based on (2D) electrophoresis/dialysis. This ElectroPrep system is ideal for the rapid purification of proteins, nucleic acids, carbohydrates and other biomolecules. With a run-time of 5 to 10 minutes, ElectroPrep provides speed and convenience, even at the very low currents (5 to 10 mA) used with this system. The sample chambers are made of Teflon, a completely inert material especially suited for high sample recovery. Membranes of different MWCO (molecular weight cut off), from 100 to 300,000 Daltons, can be used for selective elution, filtration, dialysis, fractionation and concentration. Fast DIALYZER can be joined with multiple link chambers in different combinations (see pages N30 and N31) and membranes (see page N44).



* see page N44 for membrane selection and ordering information.

Key	
	Link-Chamber
	BioDialyzer Chamber
	Membrane
	Teflon Cap

Advantages

- Faster dialysis times due to movement of charged molecules in the electric field
- Re-usable
- Available for most sample sizes - large or small
- Membranes available with MWCO's to suit almost any application
- Easy to use
- Leak proof
- Autoclaveable
- Low protein binding
- High sample recovery
- Made of Teflon - totally inert

Applications

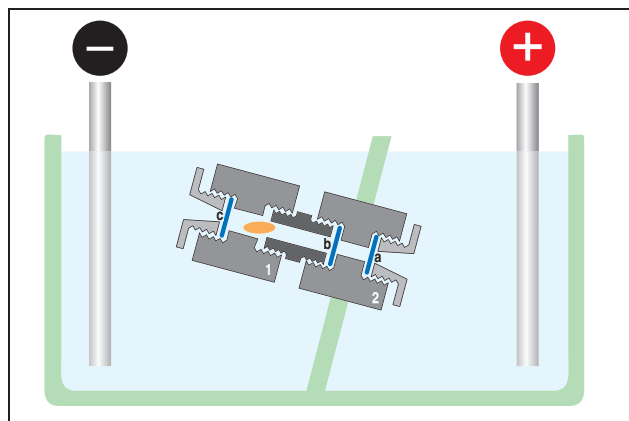
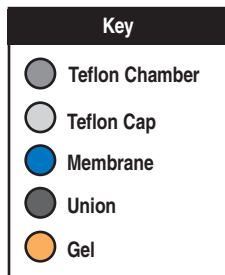
- Electro-elution from gels and solutions
- Electro-dialysis (with an average buffer exchange time of 5 to 10 minutes)
- On-line electro-dialysis
- Electro-concentration
- Selective electro-filtration
- Size fractionation
- Primer removal
- Salt removal
- Detergent removal
- Dye-Terminator removal
- See some examples on the following pages

For Membrane ordering information, see page N44.

ElectroPrep™

Electro-Elution of DNA, Proteins or other Biomolecules from Gel Pieces

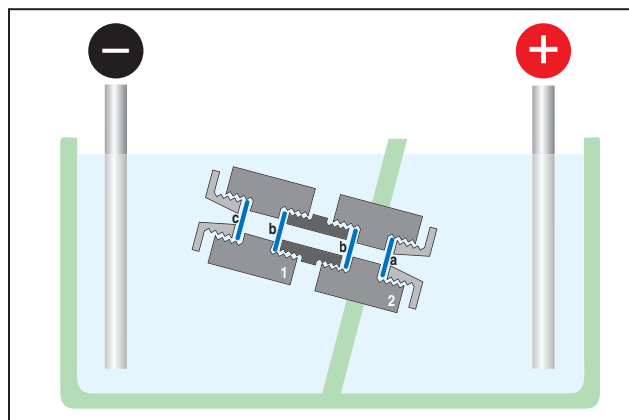
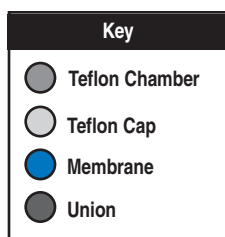
Using the ElectroPrep system in the illustrated configuration, elution of DNA, proteins, or any other biomolecules from a gel slice/plug can be achieved quickly and easily with excellent recovery. Chambers can be joined in any combination necessary to accommodate the required gel volume. Samples can be concentrated if desired, by choosing a receiving chamber of suitable volume. The MWCO (molecular weight cut off) of the membranes (a and b) can also be chosen to achieve very selective filtration or size fractionation during the electro-elution process.



Electro-Elution of DNA, Proteins or other Biomolecules from Gel Pieces

Selective Electro-Filtration/Concentration/Separation Based on Different Charges on Biomolecules

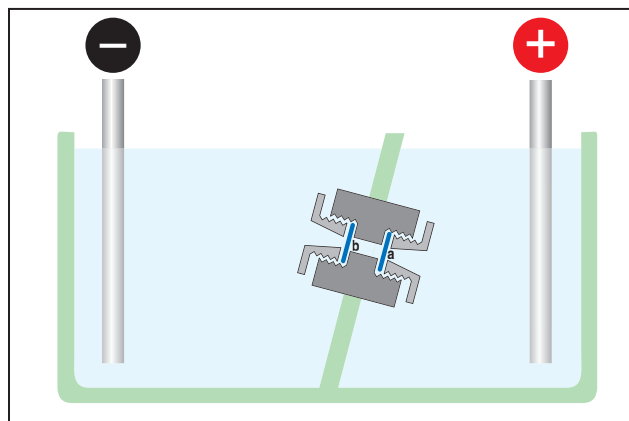
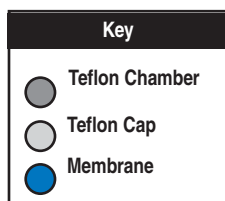
In this configuration of the ElectroPrep, the sample is placed in a sample compartment between two membranes (b), both of which should have a MWCO larger than the desired biomolecules. Membranes (a) and (c) should have MWCOs smaller than the biomolecules. Based on their charges, the biomolecules will move to either chamber (1) or chamber (2). Biomolecules with unknown isoelectric points can also be separated and purified using this method.



Selective Electro-Filtration/Concentration/Separation Based on Different Charges on Biomolecules

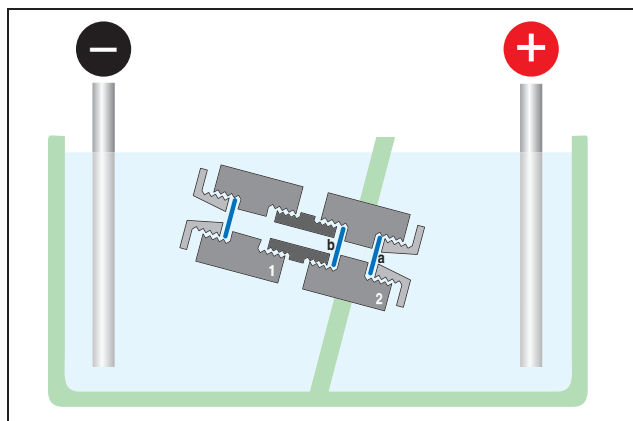
Electrodialysis through Simultaneous Exchange of Buffers

A sample is placed in the sample compartment between membranes (a) and (b), both of which have MWCOs lower than the molecular weight of the desired biomolecules. The sample is dialyzed through the simultaneous exchange of buffers in the electric field. This method is very fast and very effective. For example, after a PCR reaction, it can be used to rapidly (5 to 10 minutes) remove 100% of the primer. Electrodialysis is also effective for desalting neutral molecules that do not move in an electric field (such as sugars) or charged molecules at their isoelectric point.



Electrodialysis through Simultaneous Exchange of Buffers

ElectroPrep™



Rapid and Selective Electro-Filtration/Concentration

Fast DIALYZERS™

The ElectroPrep must use at least one Fast DIALYZER (range of 50 μ l to 1,500 μ l volume). The joining of multiple Fast DIALYZER units requires a union of the appropriate size. Link Chambers can be easily attached to Fast DIALYZER.

Fast DIALYZERS™				
Chamber Volume (μ l)	Qty. of 1	\$	Qty. of 5	\$
50	BS4 74-0408		BS4 74-0400	
100	BS4 74-0409		BS4 74-0401	
200	BS4 74-0410		BS4 74-0402	
500	BS4 74-0411		BS4 74-0403	
1000	BS4 74-0412		BS4 74-0404	
1500	BS4 74-0413		BS4 74-0405	

Link-Chambers

Link-Chambers can be joined together in different combinations without the need for a union. The 25 μ l, 50 μ l, and 100 μ l can be joined together and the 250 μ l can be joined to the 500 μ l size. A union (BS4 74-0102) can be used to join a 25, 50 or 100 μ l chamber to a 250 or 500 μ l chamber.

Link Chambers				
Chamber Volume (μ l)	Qty. of 1	\$	Qty. of 5	\$
25	BS4 74-1619		BS4 74-1620	
50	BS4 74-1611		BS4 74-1615	
100	BS4 74-1612		BS4 74-1616	
250	BS4 74-1613		BS4 74-1617	
500	BS4 74-1614		BS4 74-1618	

For Membrane ordering information, see page N44.

Key	
	Teflon Chamber
	Teflon Cap
	Membrane
	Union

Rapid and Selective Electro-Filtration/Concentration

The sample is placed in the sample compartment comprised of a chamber (1) and the union. The MWCO of membrane (b) should be larger than the molecular weight of the biomolecules and the

MWCO of membrane (a) should be smaller. Upon the passage of electric current, the biomolecules will pass through membrane (b) and collect in chamber (2) while smaller molecules will pass through membrane (a). This is a fast and effective method for the concentration of small samples and for selective filtration.

Catalog No. \$ Description

BS4 74-1101	ElectroPrep Tank, 4 x 8 x 3 in
BS4 68-0609	Power Supply, mini 25-200 V, 100 mAmp

Unions and Other Accesories

Catalog No. \$ Description

BS4 74-0100	Union which Joins Two Chambers with Volumes from 10 to 200 μ l (volume = 350 μ l)
BS4 74-1105	Union which Joins Two Chambers with Volumes from 500 to 1,500 μ l (volume = 2500 μ l)
BS4 74-0102	Union which Joins a 10 to 200 μ l Chamber to a 500 to 1,500 μ l Chamber (volume = 1500 μ l)
BS4 74-1112	Mini Vacuum Dessicator for Sample Concentration, see page N36

The membrane ordering information is color coded to assist you in selecting the appropriate membrane:

Pink shaded membranes are for products with sample sizes up to 200 μ l

Purple shaded membranes are for products with sample sizes ranging from 250 μ l to 1,500 μ l

Green shaded membranes are for products with sample sizes ranging from 3,000 μ l to 5,000 μ l