Protein Ark

FACT: The most competitively priced ultrafiltration membrane discs on the market!

Ultrafiltration Membrane Discs
Datasheet

Protein Ark's ultrafiltration membranes are a series of anisotropic membranes specially selected following research into the performances of existing membrane discs in the market. The membrane has been proprietary-treated to ensure low non-specific protein binding at higher speed.
The membrane discs are available in a complete range of diameters for stirred cells and for other filtration products which require ultrafiltration membranes. The hydrophilic regenerated cellulose (RC) membrane discs offer superior chemical resistance and are preferred for highest protein recovery when handling dilute protein solutions. The polyethersulphone (PES) membrane discs have a more open structure which provides fast separation flux. Use the polyethersulphone membranes for fast protein separation over a broad pH range.

Choice of membrane material:
We offer regenerated cellulose membranes for higher recoveries and polyethersulphone membranes for higher flux.

Choice of different membrane diameters:
We offer membrane discs that will fit most standard stirred cells with sample volumes ranging from 3 ml to 400 ml.

Choice of different MWCOs:
We provide a broad range of MWCOs from 5 kDa through 100 kDa to cover > 95% of protein sizes.

Wide range of applications:
Membrane discs are used to concentrate, buffer exchange and de-salt all proteins and other macromolecules. Examples of samples tested include serum, tissue culture supernatant, plasma and purified protein solutions.

Greater Recoveries:
The proprietary-treated low protein binding membrane ensures high target protein.

Preparation of the Membrane:

- The white membrane discs are shipped in glycerine and sodium azide to prevent the membrane drying during shipping. It is therefore, normal for the membrane to appear a little moist and to curl up slightly.
- Remove the white membrane from the bag and, by carefully holding the edge of the membrane, rinse both sides under warm tap water first followed by distilled water. Alternatively, you can place the membrane shiny side up into the stirred cell and pass a sufficient quantity of water through the membrane for at least 5 minutes at 50 psi.

Specification:

Membrane material:	Regenerated cellulose (RC) and Proprietary-treated polyethersulphone (PES)
MWCOs (molecular weight cut-offs):	10 kDa, 30 kDa (RC) 5 kDa, 10 kDa, 30 kDa, 50 kDa, 100 kDa (PES)
Filter disc diameter (mm):	25 mm, 44.5 mm, 62 mm, 76 mm, 90 mm
Maximum operating pressure:	75 psi (5 bar)
Maximum operating temperature:	60 ˚C
Working pH range:	pH 3-12 (RC) pH 1-14 (PES)
Storage:	Store at room temperature
Membrane wetting agent:	Shipped dry in glycerine and sodium azide
Storage after use:	Store in 10 % ethanol made up in distilled water or 0.1 % sodium azide at +4 ˚C
Sterilization:	Sterilize using 70 % ethanol or a mixture of 0.5 % formalin and 25 % ethanol or 5 % formalin.
Cleaning membrane discs:	Rinse the RC or PES membrane in 0.1 M NaOH, 100 ppm NaOCl followed by washing with copious amounts of distilled water. For strongly bound proteins, soak the membrane in 0.1 % protease solution and then wash the membrane thoroughly with distilled water.
Quantity of discs per pack:	10

Operating Instructions:

- By carefully holding the edge of the membrane, place the membrane **shiny side up** in the stirred cell. For maximum recovery, ensure that the protein has a molecular weight at least twice the MWCO of the membrane. As a rule of thumb, if two proteins are to be separated completely by ultrafiltration, a 10 fold difference in the size of two proteins is recommended.
- Do note that various factors affect the flow rate through the membrane. These are the molecular weight cut off of the membrane, the concentration of the sample, temperature, pressure, overall sample charge, fouling of the membrane and the pH.
- The maximum operating pressure for the PES and RC membranes is 75 psi (5 bar). As the flux rate slows down during the concentration step, it may be necessary to adjust the operating pressure as the protein solution becomes more concentrated.
- Many stirred cell operations are conducted in the cold room. However, flux rates do increase with an elevated operating temperature. This is attributed to an increase in solute diffusivity and a lower solute viscosity.
- Always ensure that the stir bar is stirring at the slowest speed throughout the run in order to minimize the risk of foaming and protein denaturation.
- When the concentration step is near-completion, always keep the membrane moist. Do not let the membrane dry out and, if possible, try and recover the concentrate with a plastic transfer pipette to minimize the risk of puncturing the membrane *in situ.*

Chemical Compatibility

Solution	RC	PES
Acetic Acid (25.0%)	OK	OK
Acetone (10.0%)	NR	NR
Acetonitrile (10.0%)	OK	OK
Ammonium Hydroxide (5.0%)	OK	OK
Ammonium Sulfate (saturated)	OK	OK
Benzene (100%)	OK	NR
n-Butanol (70%)	OK	OK
Chloroform (1.0%)	?	?
Dimethyl Formamide (10.0%)	?	NR
Dimethyl Sulfoxide (5.0%)	OK	OK
Ethanol (70.0%)	OK	OK
Ethyl Acetate	OK	NR
Formaldehyde (30%)	OK	OK
Formic Acid (5.0%)	OK	OK
Glycerine (70%)	OK	OK
Guanidine HCl (6M)	OK	OK
Hydrocarbons, aromatic	?	NR
Hydrocarbons, chlorinated	?	?
Hydrochloric Acid (1M)	NR	OK
Imidazole (300mM)	OK	OK
Lactic Acid (50.0%)	OK	OK
Mercaptoethanol (1.0 M)	OK	NR
Methanol (60%)	OK	OK
Nitric Acid (10.0%)	NR	OK
Peracetic Acid (0.2%)	OK	OK
Phenol (1.0%)	?	?
Phosphate Buffer (1.0M)	OK	OK
Polyethylene Glycol	OK	OK
Pyridine	NR	?
Isopropanol (70%)	OK	OK
Sodium Carbonate (20%)	OK	OK
Sodium Deoxycholate (5.0%)	OK	?
Sodium Dodecylsulfate (0.01M)	OK	OK
Sodium Hydroxide (2.5M)	NR	OK
Sodium Hypochlorite (200ppm)	?	OK
Sodium Nitrate (1.0%)	OK	OK
Sulfamic Acid (5.0%)	NR	OK
Tetrahydrofuran (5.0%)	?	NR
Toluene (1.0%)	OK	NR
Trifluoroacetic Acid (10%)	NR	OK
Tween 20 (0.1%)	OK	OK
Triton X-100 (0.1%)	OK	OK
Urea (8M)	OK	OK

Key Code	
Acceptable:	OK
Questionable:	?
Not Recommended:	N

FAQ's

1. Are there any other additives added to the membrane discs?
Apart from glycerine (wetting agent) and sodium azide (bacteriocide), there are no other additives.

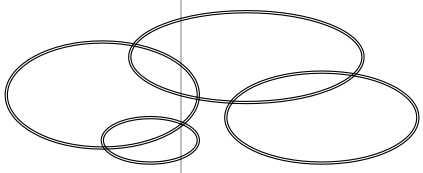
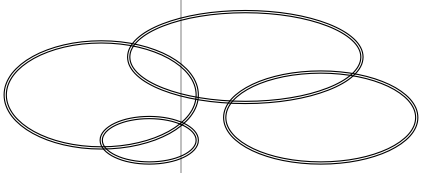
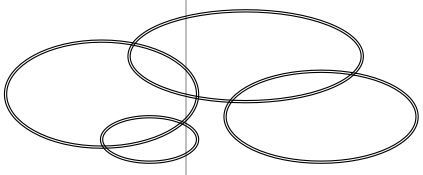
2. Is it important that the correct side of the membrane faces upwards?
The shiny (glossy) side of the membrane must be facing upwards for effective concentration of your target species.

3. Can the membrane discs be re-used?
The membrane discs can be re-used. Please refer to the Specifications Section for a protocol for cleaning and storing used membrane discs. However, always ensure that the membrane is kept wet.

4. If I need to de-salt 10 ml protein sample, how many concentration steps do I need to perform to remove greater than 99 % salt?
Concentrate 10 ml to 1 ml and then add distilled water to a final volume of 10 ml. Repeat the concentration step. Continue topping up with distilled water and concentrating the sample a further 2 times. Small initial volume concentration steps are effective and rapid methods for de-salting all proteins.

5. What is the highest protein concentration achieved in a stirred cell?
In practice, a 10 % w/v (100 g/l) protein concentration is achievable.

Ordering Information:

Filter diameter	LIST PRICES FOR STIRRED CELLS			
(mm)	RC*	PRICE (excl. VAT)	PES**	PRICE (excl. VAT)
5,000 MWCO				
25 mm (10 discs)			PES-25-05	£55.00
44.5 mm (10 discs)			PES-44-05	£70.00
62 mm (10 discs)			PES-62-05	£80.00
76 mm (10 discs)			PES-76-05	£94.00
90 mm (10 discs)			PES-90-05	£99.00
10,000 MWCO				
25 mm (10 discs)	RC-25-10	£60.00	PES-25-10	£55.00
44.5 mm (10 discs)	RC-44-10	£75.00	PES-44-10	£70.00
62 mm (10 discs)	RC-62-10	£90.00	PES-62-10	£80.00
76 mm (10 discs)	RC-76-10	£102.00	PES-76-10	£94.00
90 mm (10 discs)	RC-90-10	£110.00	PES-90-10	£99.00
30,000 MWCO				
25 mm (10 discs)	RC-25-30	£60.00	PES-25-30	£55.00
44.5 mm (10 discs)	RC-44-30	£75.00	PES-44-30	£70.00
62 mm (10 discs)	RC-62-30	£90.00	PES-62-30	£80.00
76 mm (10 discs)	RC-76-30	£102.00	PES-76-30	£94.00
90 mm (10 discs)	RC-90-30	£110.00	PES-90-30	£99.00
50,000 MWCO				
25 mm (10 discs)			PES-25-50	£55.00
44.5 mm (10 discs)			PES-44-50	£70.00
62 mm (10 discs)			PES-62-50	£80.00
76 mm (10 discs)			PES-76-50	£94.00
90 mm (10 discs)			PES-90-50	£99.00
100,000 MWCO				
25 mm (10 discs)			PES-25-100	£55.00
44.5 mm (10 discs)			PES-44-100	£70.00
62 mm (10 discs)			PES-62-100	£80.00
76 mm (10 discs)			PES-76-100	£94.00
90 mm (10 discs)			PES-90-100	£99.00

* RC: Regenerated Cellulose ** PES: Polyethersulphone

Please visit **www.proteinark.com** for further information or contact us via:

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