



# Polyethersulfone Ultrafiltration Cassettes

Protein purification, concentration and diafiltration



## Description

### The Polyethersulfone Membrane

The polyethersulfone membrane (PESU) is a membrane polymer that is well established in the biotechnological and pharmaceutical industries. The PESU membrane is a stable polymer that features a broad pH and temperature range. Its wide temperature range makes it possible to sterilize some of the membrane cut offs by either steam or autoclaving. Membrane regeneration, storage and depyrogenation can be accomplished by using NaOH even at elevated temperatures. Because of these features, the PESU membrane is ideally suited for biotechnological applications. Polyethersulfone membranes are designed for use in the biotechnological and pharmaceutical industries.

They can be used for the following applications:

- IgG
- Blood factors
- Enzymes
- Peptides

## Product Profile

The polyethersulfone membrane has minimal adsorption of proteins, viruses, etc. Membrane retention is unaffected by repeated re-use. PESU ultrafiltration cassettes have been validated to withstand in-line steam sterilization without any loss or changes in membrane retention.

Feature	Benefits
Low adsorption	Minimal loss of proteins
Low protein-binding	High product yield
pH Wide pH and a wide variety of temperature range	Chemicals can be used for the removal of foulants
High flow rates	Economical filtration runs
Self sealing cassette	No gaskets needed
Silicone sealing compound	No glue
Enlarged inlet and outlet hole	Lower pressure drop

## Specifications

### Materials of Construction

Membrane	Polyethersulfone
Gaskets	PVDF
Spacer	Polypropylene
Sealing compound	Silicone grey

### Pore Size | Retention Rate

PESU ultrafiltration cassettes are available in a choice of the following nominal molecular weight cut offs: 1 kD, 5 kD, 8 kD, 10 kD, 30 kD, 50 kD, 100 kD, 300 kD

### Available Sizes

Sartorius Stedim Biotech Crossflow Cassettes are available in **Standard Cassette** size for pilot- | production scale and in **Sartocon Slice** format for reduced volume handling.

### Available Filterholder

Sartorius Stedim Biotech Crossflow Cassettes are designed for Sartorius Stedim Biotech filter holders like Sartocon Slice (0.1 m<sup>2</sup> Cassettes only), Sartocon 2 Plus, Sartoflow 10 and Sartoflow 20 holder.

### Filtration Area

Filter area Sartocon Cassette	0.7 m <sup>2</sup>
Filter area Sartocon Slice Cassette	0.1 m <sup>2</sup>

### Operating Parameters

Feed pressure, P <sub>in</sub>	58 psi   4 bar maximum
Operating temperature	50 °C maximum
Air diffusion rates at P <sub>in</sub> = 15 psi   1 bar	1 k-300 kD: 50 ml air/min for 0.7 m <sup>2</sup> filter area   15 ml air/min for 0.1 m <sup>2</sup> filter area
Cleaning	NaOH, 1 M; 40 °C
Disinfection	NaOH, 1 M, max. 50 °C, 30 min
Storage	NaOH, 0.1 M

### Sterilization

30 kD | 100 kD | 300 kD, 121 °C, 30 min., steaming; 121 °C, 110 min, autoclaving

### Regulatory Compliance

All materials have passed the current USP Biological Test. The filtrate meets or exceeds USP and EP requirements for Sterile Water for Injection with respect to total solids, oxidizable substances, particulate matter, ammonia, chloride, nitrate, sulfate and heavy metals.

### Quality Control

Each filter cassette is individually assigned a serial number, integrity tested and certified.

It complies with cGMP requirements for non-fiber-releasing filters and is filed under the Drug Master File Number DMF 5967 by the Food and Drug Administration, Washington, DC. Validation information is available upon request.

If you use holding devices from other suppliers, please contact our Applications Department. A different torque might be needed due to specific variations in design.

For further assistance, please contact your local Sartorius Stedim Biotech field engineer or our Goettingen-based Applications Department in Germany.

### Technical References:

Validation Guide  
Publication No.: SPC5701-e

Directions for Use (Sartocon Cassettes and Sartocon Slice Cassettes)  
Publication No.: SPC6001-a

### Order Information

Available types and Order Numbers

Cutoff	Sartocon cassettes, 0.7 m <sup>2</sup> filter area	Sartocon Slice cassettes, 0.1 m <sup>2</sup> filter area
1 kD	3021460907E--SG	3051460901E--SG
5 kD	3021462907E--SG	3051462901E--SG
8 kD	3021463407E--SG	3051463401E--SG
10 kD	3021463907E--SG	3051463901E--SG
30 kD	3021465907E--SG	3051465901E--SG
50 kD	3021465007E--SG	3051465001E--SG
100 kD	3021466807E--SG	3051466801E--SG
300 kD	3021467907E--SG	3051467901E--SG

### Retention Rates Polyethersulfone

Substance	Approx. Mol. Wt.	1 kD [%]	5 kD [%]	8 kD [%]	10 kD [%]	PESU <sub>max</sub> kD [%]	30 kD [%]	50 kD [%]	100 kD [%]	300 kD [%]
Vitamin B12	1,200	>70	50 -80	-	-	-	-	-	-	-
Cytocrome C	12,400	-	-	99	>95	-	60 -90	-	-	-
Albumin	67,000	-	-	-	-	>99.9	-	>95	<80	-
γ-Globulin	169,000	-	-	-	-	-	-	>99	≥98	<70
Dextran	2,000,000	-	-	-	-	-	-	-	-	>95

### Average Dynamic Water Flux

Permeate flow rate  $P_{in} = 2$  bar,  $P_{ret} = 0,5$  bar,  $P_{filtrate} = open$

Cut off   Pore size	Polyethersulfone l/h/m <sup>2</sup>
1 kD	13
5 kD	42
8 kD	220
10 kD	300
30 kD	610
50 kD	720
100 kD	800
300 kD	1260

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