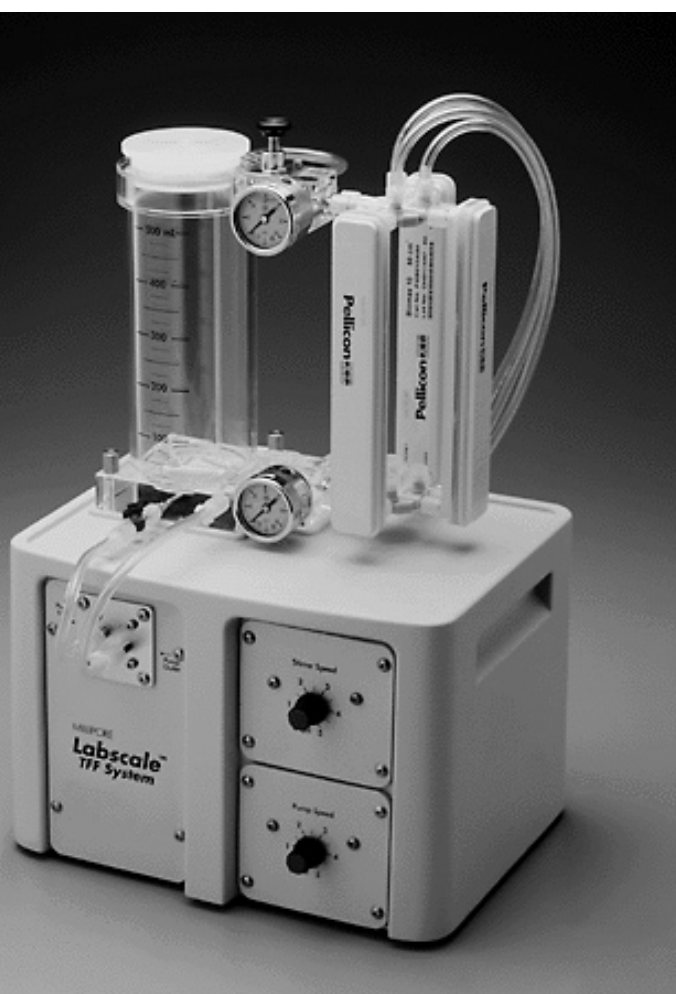


# Pellicon® XL 50 Cassette and Labscale® TFF System

Easy-to-use, high performance, tangential flow filtration cassette and system for process development work at volumes from 50 to 1000 mL



The Pellicon XL 50 cassette couples Millipore's superior ultrafiltration and microfiltration membranes for processing small volumes. Whether you choose a Biomax® ultrafiltration membrane for its high flux and wide pH compatibility or Ultracel® ultrafiltration membrane for its low protein binding and easy cleaning, you are assured of reliable and consistent performance.

The Labscale TFF System is easy to use for sample preparation while also providing the necessary controls for process development and scale-up work. The system can be operated in concentration or continuous diafiltration modes. Specifically designed to operate with the Pellicon XL 50 cassette, the 500 mL system reservoir accepts direct docking of the device, eliminating the need for tubing connections. This feature, in addition to the diaphragm pump assembly, provides a final working volume of <15 mL (depending on starting volume of sample to be concentrated).

## Benefits

- Predictable, superior performance
- Ease to Use
- Same flow path and channel height as larger Pellicon devices
- Ideally suited for process development work

## PELLICON XL 50 CASSETTE

### Predictable, Superior Performance

- Robust thermoplastic construction
- Controlled channel height
- Superior membranes
  - Biomax PES (polyethersulfone) membrane
  - Ultracel PLC (composite regenerated cellulose) membrane

### EASY TO USE

- Self contained – no holder required
- Integral connections
- Can operate with peristaltic pump or the Labscale TFF system

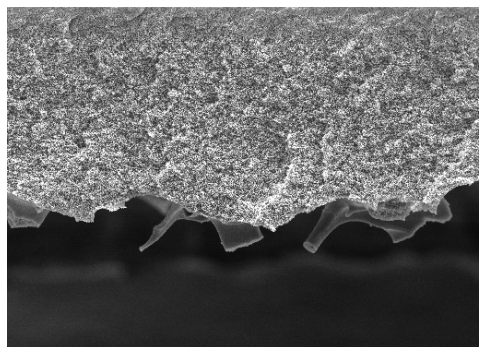
### SPEED TO MARKET

- Same flow path and channel height as larger Pellicon cassettes
- Allows process development and screening

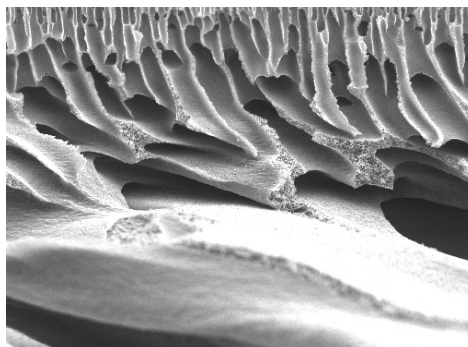
### APPLICATIONS

- Concentration, desalting, and buffer exchange of proteins, polysaccharides, lipid solutions, viruses, colloids, cell suspensions, and mammalian cells.
- Sample preparation
- Membrane selection studies
- Preparation of material for clinical trials
- Small volume manufacturing

### Comparison of void-free UF membranes with conventional UF membranes containing subsurface voids.



Void-free Biomax-10 modified polyethersulfone membrane.



Conventional 10 kD polyethersulfone membrane with subsurface voids.

## CONSISTENT HIGH FLUX AND HIGH PRODUCT RECOVERY

### High-quality Ultrafiltration (UF) Membranes

Millipore's Biomax polyethersulfone and Ultracel PLC composite cellulose membranes have a void-free structure that prevents solute leakage through microdefects associated with conventional UF membranes that have voids beneath their thin skins. As a result, Millipore can make these membranes more permeable than conventional UF membranes while maintaining retention – resulting in high-retention, high-flux membranes.

The high quality of Millipore's ultrafiltration membranes is further ensured by our pioneering multiple-solute mixed retention profile test. Millipore's retention profile test, unlike the single-solute protein retention test, measures and ensures reproducible retention performance of our UF membranes over the entire range of molecular weights retained by the membrane, not just at one or two molecular weights.

### Superior Filter Quality

Pellicon XL 50 cassettes are 100% integrity tested in manufacturing to ensure consistent and reliable performance. The integrity test procedure and specifications are supplied in the Certificate of Quality so users can confirm integrity.

### Low Working Volume

The Pellicon XL 50 cassette's low holdup (3.2 mL) and working volumes (as low as 15 mL) permit high concentration factors to be reached and maximize recovery of small sample volumes.

## THE LABSCALE TFF SYSTEM

The Labscale TFF System is sold as a complete, ready-to-use system or you can design your own custom small volume TFF system by selecting only the components you need.

The Labscale TFF System has a graduated 500 mL acrylic reservoir with retentate backpressure valve, feed and retentate pressure indicators, a stirrer assembly and diaphragm pump assembly. All wetted parts meet the requirements of USP Class VI testing and 21 CFR regulations.

## SPECIFICATIONS (Pellicon XL 50 Cassette)

<b>Pellicon XL 50 Cassette</b>	
<b>Materials of Construction</b>	
Membranes	Polyethersulfone (Biomax) Composite regenerated cellulose (Ultracel PLC)
Screens	Polypropylene
Exterior housing	Polypropylene
Fittings/connectors	Polypropylene
Luer caps	Polypropylene
<b>Fittings</b>	Female Luer
<b>Filtration Area</b>	50 cm <sup>2</sup> (0.05 ft <sup>2</sup> )
<b>Device Width</b>	3.0 cm (1.2 in.)
<b>Device Length</b>	18.8 cm (7.4 in.)
<b>Holdup Volume (typical)</b>	3.2 mL
<b>Maximum Operating Pressure</b>	5.6 bar (80 psig)
<b>Maximum Operating Pressure for Scale-Up to Pellicon 2 cassettes (feed to permeate)</b>	2.7 bar (40 psig) up to 45 °C
<b>Optimum Tangential Flow Rate for Polarized Solutions</b>	30 – 50 mL/min
<b>Membrane pH Compatibility</b>	Biomax PES: 1 – 14 Ultracel PLC: 2 – 12
<b>Biocompatibility/Toxicity</b>	All wetted parts have been tested and meet the requirements of the USP Class VI Biological Test for Plastics.
<b>Extractables</b>	Gravimetric extractables level < 7.5 mg/device after RO water flush. USP oxidizables test negative after RO water flush.
<b>Prefiltration Requirements</b>	Prefiltration of sample using 100 µm nominal pore size filter is recommended.
<b>Labscale TFF System</b>	
<b>Footprint</b>	21.6 x 27.9 cm (8.5 x 11 in.)
<b>Height</b>	45.7 cm (18 in.)
<b>Weight</b>	5.9 kg (13 lb)
<b>Maximum Inlet Pressure</b>	4.2 bar (60 psig)
<b>Operating Temperature Range</b>	4 – 45 °C
<b>Feed Flow Rate</b>	10 – 100 mL/min at 60 psi
<b>Minimum Recirculation Volume</b>	20 mL
<b>Power</b>	115V, 60 Hz or 230V, 50 Hz, CE mark
<b>Materials of Construction</b>	
500 mL reservoir	Acrylic
Reservoir cover	Polypropylene
Reservoir gasket	EPDM
Retentate valve diaphragm	EPDM and polypropylene
Luer fittings	316 stainless steel/polypropylene
Tubing	Silicone (platinum cured) and GORE STA-PURE® (platinum cured silicone expanded PTFE) plastic
Diaphragm pump housing	Glass-filled polypropylene
Diaphragm pump diaphragm	PTFE coated
Diaphragm pump check valve	Polypropylene and Simriz® perfluoroelastomer
Housing/enclosure	Polyurethane

## Accessories

- The 100 mL Reservoir can be used with the Pellicon XL 50 cassette for simple separations of small volumes.
- The Multimanifold mounts directly onto the Labscale System reservoir and allows up to three Pellicon XL 50 cassettes to be used for either faster processing or simultaneous testing of three different membranes.
- The Analog Pressure (0 – 60 psi) Gauge Kit can be used with the Pellicon XL 50 cassette for accurate scaling studies.

## MEMBRANE SELECTION GUIDE AND PELLICON XL 50 CASSETTE ORDERING INFORMATION

### Biomax membranes – polyethersulfone

- Suitable for storage in alkaline and acidic solutions
- pH range 1 – 14
- Hydrophilic and low protein binding
- Void-free for higher yield and reliability

### Ultracel PLC membranes – composite regenerated cellulose

- The most hydrophilic and lowest protein binding
- Stable, reproducible flux and resistance to fouling by proteins, lipids, and antifoams
- Easiest UF membranes to clean

Membrane	NMWCO kDa or microns	Approximate molecular weight range of solutes retained >99%, kD	Pellicon XL 50 Cassette Catalogue No.
<b>Polyethersulfone</b>			
Biomax-5	5	5 – 12 (growth factors, hormones)	PXB0 05A 50
Biomax-8	8	25 – 50 (growth factors, hormones)	PXB0 08A 50
Biomax-10	10	50 – 100 (growth factors, hormones)	PXB0 10A 50
Biomax-30	30	100 – 140 (enzymes)	PXB0 30A 50
Biomax-50	50	140 – 300 (IgGs)	PXB0 50A 50
Biomax-100	100	300 – 500 (small viruses and antigens)	PXB1 00C 50
Biomax-300	300	>500 (IgMs, large viruses)	PXB3 00C 50
Biomax-500	500	>.03 µm (colloids, particulates)	PXB5 00C 50
Biomax-1000	1,000	>.03 µm (colloids, particulates)	PXB0 1MC 50
<b>Composite Regenerated Cellulose</b>			
Ultracel-5 PLCCC	5	8 – 18 (proinsulin, hematopoetic factors)	PXC0 05C 50
Ultracel-10 PLCGC	10	18 – 60 (hemoglobin, enzymes)	PXC0 10C 50
Ultracel-30 PLCTK	30	60 – 200 (monoclonal IgGs)	PXC0 30C 50
Ultracel-300 PLCMK	300	>500 (large viruses, IgMs)	PXC3 00C 50
Ultracel-1000 PLCXK	1,000	>.03 µm (colloids, particulates)	PXC0 1MC 50

Each Pellicon XL 50 cassette is packaged one per box and includes Operating Instructions, an Accessory Kit and a Certificate of Quality.

## ORDERING INFORMATION

Description	Catalogue No.
<b>Labscale TFF System</b>	
Labscale Systems include a stirbase module, a 500 mL reservoir with gauges and a diaphragm pump module.	
115V	XX42 LSS 11
230V	XX42 LSS 12
230V (Great Britain)	XX42 LSS 13
<b>Labscale System Stirbase</b>	
115V	XX42 STR 11
230V	XX42 STR 12
230V (Great Britain)	XX42 STR 13
Labscale System 500 mL reservoir	XX42 RES 01
Labscale System pump module (requires a Labscale stirbase)	XX42 PMP 01
<b>Compatible Pumps and Pump Head</b>	
Peristaltic pump drive, variable speed, 60 – 600 rpm	
115V	XX82 001 15
230V	XX82 002 30
Pump head, 480 mL/min (3 roller) with 6 mm (¼ in.) OD, 3 mm (⅛ in.) ID tubing	XX80 ELO 03
Silicone (platinum cured) 6 mm (1/4 in.) OD, 3 mm (1/8 in.) ID and GORE STA-PURE® LS 15 plastic tubing, 7.6 m (25 ft)	XX80 LFL 25
<b>Accessories</b>	
Pellicon XL 50 Cassette accessory kit 4 Luer barb fittings, 4 tubing clamps, 1 retentate clamp, LFL Tygon® tubing, 1.2 m (4 ft)	XXPX LFT KT
Pellicon XL 50 Cassette stand	XXPX LST ND
Gauge kit 1 pressure gauge, 0 – 60 psi, and connection fittings	XXPX LGA GE
Multimanifold	XXMU LTI MN
100 mL Reservoir	XX42 RES 05
Stand for mounting 100 mL Reservoir on the Labscale System	XXRE S05 ST



For technical assistance, contact Millipore:  
**1-800-MILLIPORE (1-800-645-5476)**  
E-mail: [tech\\_service@millipore.com](mailto:tech_service@millipore.com)



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