EverLUX®
Hydrophilic PES Membrane Filter
The EverLUX® polyethersulfone (PES) filter is designed for very high contaminant capacity, extended service life and high flow with low pressure drop in a wide range of biological fluids.

Optimized for sterile filtration, prefiltration and clarification applications, the permanently hydrophilic EverLUX® filter offers up to 2.5 times higher flow rates than other PES membranes. It also offers exceptional capacity, low protein binding and absolute bacteria retention when filtering moderate to high contaminant liquids.

The EverLUX® filter incorporates the most technologically advanced PES membrane manufactured today. It is produced by a state-of-the-art process, which creates a unique, highly asymmetric structure with the highest contaminant capacity of any PES filter.

The membrane’s asymmetric structure extends its capacity and service life by withstanding higher particle loads and protein concentrations. Increased membrane thickness allows the EverLUX® to retain its sterilizing properties, while its tapered pore structure allows more contaminant capacity than even conventional PES membranes.

The fast-flowing, high-throughput, low-binding and bacteria-retentive properties of the EverLUX® PES membrane make it a very reliable, cost-effective and time-saving filter.

**Design Features and Benefits**

- Unique, patented PES membrane offers very high flow rates and exceptional service life
- Chemical compatibility across pH 1-14
- Low adsorption, high transmission of proteins, active ingredients and preservatives
- Superior throughput in high contaminant fluids, including growth media, serum and protein-containing solutions
- Lower filtration costs through increased service life and contaminant-holding capacity
- Permanently hydrophilic membrane
- Contains no binders, adhesives or other extraneous materials
- 100% integrity tested during manufacture
- Biologically inert and non-toxic, the filter meets FDA requirements for food contact use and passes USP Class VI Plastics biological reactivity tests

**Typical Applications**

EverLUX® filters are ideal for use in a range of low to high contaminant liquids, including:

- Blood products
- Complex biologicals
- Serum
- Cell and tissue culture media
- Process intermediates
- Supernatants
- Vaccines
- Ophthalmics
- Buffers
Materials of Construction
Filter Membrane: Polyethersulfone (PES)
Upstream Support: Polypropylene
Downstream Support: Polypropylene
Core/Outer Guard: Polypropylene
End Caps: Polypropylene
Sealing Method: Thermal bonding
O-ring/Gasket Seal: Buna, EPR, polyethylene, silicone, Teflon® over silicone, Teflon® over Viton®

All materials of construction listed above are FDA approved for food contact use per 21 CFR 177. Filters comply with European Commission Directive 2002/72/EC and subsequent amendments up to 2008/39/EC.

EverLUX® filters are manufactured in conformance to cGMP. EverLUX® filters meet the requirements as specified in the current USP Class VI plastics, physicochemical, oxidizable substances, and cytotoxicity tests. Bacterial endotoxin levels in aqueous extracts of EverLUX® filters are less than 0.5 EU/mL, as determined using the Limulus amebocyte lysate (LAL) test. No binders, adhesives or surfactants are used in the construction of EverLUX® filters. EverLUX® filters are non-fiber-releasing as defined in 21 CFR 210.3(b)(6) and 211.72.

Filtration Ratings
Filter Grade: Absolute Ratings (µm):
SMH 0.2, 0.4, 0.6
STW 0.2
SLH 0.2, 0.4, 0.6
SLW 0.2
SPH 0.1, 0.2, 0.4

Integrity Testing
Minimum Bubble Point, Water
SMH 0.2 µm 62 psi (4.3 bar)
0.4 µm 40 psi (2.8 bar)
0.6 µm 22 psi (1.5 bar)

Maximum Diffusion Rate, Water
STW 0.2 µm 30 mL/min per 10" @ 30 psi
(30 mL min⁻¹ per 25 cm @ 2.07 bar)

Cartridge Dimensions (nominal)
Diameter: 2.75" (7 cm)
Lengths: 10", 20", 30", 40"
(25 cm, 50 cm, 75 cm, 100 cm)

Bacterial Retention
ASTM F838-05 Challenge
SMH 0.4 µm > 10⁷ cfu/cm² Serratia marcescens
0.6 µm > 10⁷ cfu/cm² Saccharomyces cerevisiae
STW 0.2 µm > 10⁷ cfu/cm² Brevundimonas diminuta and meets the FDA definition of a sterilizing grade filter.

Sterilization
Steam-in-place (SIP):
saturated steam @ 121-135 °C, 30-60 minutes
[15 psi (1bar) to 30 psi (2 bar), 30-60 minutes]
Autoclave: 121-135 °C, 30-60 minutes

EverLUX® cartridges are capable of repeated sterilization cycles without loss of integrity. For applications requiring autoclave/SIP, a stainless steel reinforcement ring must be ordered. See "Reinforcement Ring Option" within Ordering Information.

Maximum Operating Temperatures and Pressures
\[ \Delta p \ 80 \text{ psi @ 32 °F to 100 °F} \]
(\[ \Delta p \ 5,5 \text{ bar @ 0 °C to 38 °C} \])

\[ \Delta p \ 60 \text{ psi @ 150 °F} \]
(\[ \Delta p \ 4,1 \text{ bar @ 66 °C} \])

\[ \Delta p \ 30 \text{ psi @ 180 °F} \]
(\[ \Delta p \ 2,1 \text{ bar @ 82 °C} \])

Typical Water Flow Rates per 10" Cartridge

![Typical Water Flow Rates per 10" Cartridge](chart.png)
**End Cap Configuration**

- **-226 O-ring**: External -226 O-rings with locking tabs; open end for C6 and F6 SOE configurations
- **-222 O-ring**: External -222 O-rings; open end for C2 and F2 SOE configurations
- **-226 nO-Ring**: External -226 nO-Ring® with locking tabs; open end for C5 and F5 SOE configurations
- **-222 nO-Ring**: External -222 nO-Ring®, open end for C1 and F1 SOE configurations

- **Flat Gasket**: Flat Gasket; open end for GS and GL DOE configurations
- **Internal O-ring**: Internal O-ring; open end for DN and DA DOE or RN and RA SOE configurations
- **Button Cap**: Button Cap; closed end for C1, C2, C5 and C6 SOE configurations
- **Alignment Fin**: Alignment Fin; closed end for F1, F2, F5 and F6 SOE configurations
- **Recessed Cap**: Recessed Cap; closed end for RN and RA SOE configurations

**Ordering Information**

**Filter Grade** | **Absolute Rating (μm)** | **Cartridge Length** | **End Cap Configuration** | **Reinforcement Ring Option** | **Seal Material (O-ring or Gasket)**
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SMH | 0.2, 0.4, 0.6 | 1 = 10" (25 cm) | GS = DOE; flat gaskets (9.75", 19.5", 29.25", 39" length filters) | (Blank) = Standard - no reinforcement ring | O-ring Seal
STW | 0.2 | 2 = 20" (50 cm) | GL = DOE; flat gaskets (20", 30", 40" length filters) | R = Reinforcement ring; required for autoclave/ SIP applications | B = Buna
SLH | 0.2, 0.4, 0.6 | 3 = 30" (75 cm) | C1 = SOE; -222 nO-Ring®, button cap end | S = Silicone | E = EPR
SLW | 0.2 | 4 = 40" (100 cm) | C2 = SOE; -222 O-rings, button cap end | T = Teflon® over silicone | T = Teflon®
SPH | 0.1, 0.2, 0.4 | | F1 = SOE; -222 nO-Ring®, fin end | V = Viton® | V = Viton®

**Grade Descriptions**

- **SMH**: This standard, single layer PES membrane features a highly asymmetric pore structure. It is 100% integrity tested and flushed during manufacture. It is suited for critical applications when regulatory documentation requirements are minimal.
- **STW**: This pharmaceutical validated, sterilizing grade filter features two serially layered, highly asymmetric PES membranes with the coarser upstream layer optimized for prefiltration. This filter meets full traceability requirements for the pharmaceutical industry. Each STW filter is shipped with a Certificate of Quality stating exact quality control criteria and test performance results.
- **SLH**: This single layer PES membrane features a highly asymmetric pore structure, but is not 100% integrity tested or flushed during manufacture. It is offered as an economical pre-filter or final filter that provides longer life in biological solutions.
- **SPH**: This is an absolute, particulate rated filter. It is 100% integrity tested and DI flushed during manufacture.

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